



EVERYDAY TONALITY

*towards a tonal theory of
what most people hear*

II

Philip Tagg



EVERYDAY TONALITY II



*Tonical neighbourhood phone
(Fig. 56, p. 300)*

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For my comrade and colleague
Franco Fabbri, for his students,
and for anyone who wants to
bring music theory out of its
nineteenth-century closet.

EVERYDAY TONALITY II

—Towards a tonal theory of what most people hear—

by
Philip Tagg

version 2.6.1



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Preface

Why this book?

It was in 2005 that Franco Fabbri first asked me to produce a book based on some encyclopedia articles I'd written between 1998 and 2000.¹ I was slow to respond because I didn't then see how repackaging that work could have much positive impact on music studies. Two things made me change my mind.

The first was when Franco showed me an Italian music theory textbook. 'Look', he said, 'this is all my students have to go by'. Skimming through its pages I realised that, like equivalents in other languages, it dealt only with *certain* tonal elements of EUROCLASSICAL music² and that it paid particular attention to conventional notions of harmony within that tradition. Glancing through that textbook, I was reminded of a problem I'd often had to confront when writing the original encyclopedia articles: how to talk about common tonal practices that don't conform to the sort of tonal theory taught in many seats of musical learning. Explaining something as common and as ostensibly simple as the *La Bamba* chord loop (as in *La Bamba*, *Guantanamera*, *Wild Thing*, *Pata Pata*, *Twist & Shout* etc.) in terms of tonic, subdominant and dominant had for some time struck me as about as productive as using theories of combustion to explain electricity. And yet some music scholars still try to apply Schenkerian notions of harmonic directionality to tonal configurations in which notions like 'dominant' and 'perfect cadence' are at best questionable, if not altogether irrelevant.³

If restricted notions of tonality were the only problem with institutionalised traditions of musical learning in the West, things would not be so bad. Unfortunately the problems go much deeper because that same tradition has focussed almost exclusively on tonal

1. See *EPMOW – Encyclopedia of Popular Music of the World – vol. II* (Tagg, 2002).
2. Throughout this book I use EUROCLASSICAL to refer to *European classical music*; see p. 16 and Glossary (p. 488) for explanation of this term.
3. See video *Dominants and Dominance* (Tagg 2009c).

issues and tended to steer clear of parameters like metricity, periodicity, timbre, groove and sonic staging, which some scholars still earnestly believe to be of secondary importance. There's no room here to explore conventional European music theory's predilection for harmonic, melodic and thematic parameters that can, at least to some extent, be graphically represented on the page as blobs, lines and squiggles, except to say that Western staff notation developed to scribally encode aspects of music in the euroclassical tradition that were difficult to memorise, rather than to record the specifics of other music cultures. This tonal fixation has promoted a mindset according to which monometric music, whose pitches can be arranged in octaves consisting of twelve equal intervals each, is analysable because it is notatable; other types of music are, so to speak, neither. Indeed, even the downbeat anticipations and 'neutral' thirds often heard in English-language popular music from the twentieth century look incongruous in Western notation, while aspects of sound treatment essential to the expressive qualities of music we hear on a daily basis — echo, delay, reverb, saturation, phasing, etc. — are conspicuous by their absence.⁴ Conventional approaches to music analysis in the West may serve some use in helping us appreciate how a sense of narrative works in sonata form ('diataxis', the 'extensional' aesthetic), but they have done very little to help us understand other equally important aspects of form that exist inside the extended present ('synchrisis', 'intensional' aesthetics).⁵

The first edition of this book was published in 2009 since when I mainly worked on *Music's Meanings: a modern musicology for non-musos* (Tagg, 2013). In that book I also tried to right a few of the graphocentric wrongs just mentioned, but I regret that so much

4. See, for example, the semantic contortion of 'inverse' (♯♯.) v. 'normal' (♯. ♯) in the *Harvard Dictionary of Music* (1958) entry for *dotting*, even though ♯♯. ('inverse' dotting) is identified as 'usual' in certain types of music.
5. *Intensional* and *extensional* are two useful concepts, first coined by Andrew Chester (1970). For short definition of the *extended present*, see Glossary and Tagg (2013: 252-3). *Diataxis* and *synchrisis*, see Glossary and Chapters 11 and 12 in Tagg (2013: 383-484).

more needs to be done. It's a task that would involve several lifetimes of research and result in several books of this size. Still, at least one thing became clear when working on *Music's Meanings*: I would have to rewrite and expand *Everyday Tonality*.

Why 'Everyday Tonality II'?

There are at least seven answers to that question.

[1] Half the first edition of *Everyday Tonality* consisted of reworked encyclopedia entries that were too short to allow for substantial treatment of several of the book's topics. That is certainly the case with the exposé about quartal harmony which has increased in size from a dozen pages in the 2009 edition to a sixty-page chapter in this one. Quartal harmony is simply a much more widespread and multi-faceted phenomenon of everyday tonality than could reasonably fit into just a few pages.

[2] Some common aspects of everyday tonality were not covered at all in the first edition, for example bass lines and hexatonic modes. While bass lines aren't the focus of much attention in this edition either —it's the topic of another book— hexatonic modes *are*. I wanted to understand why terms of structural designation existed for pentatonic and heptatonic but not for hexatonic modes. I never found out why, but at least I'm able in this edition to propose a system for understanding the mechanics of some commonly used hexatonic modes.⁶

[3] The modes discussed in the previous edition were mainly diatonic and heptatonic —the 'church' modes, including the ionian— while others were absent. I felt I had lapsed into a tonally ethnocentric default mode (pun intended) that needed correction if my critique of conventional music theory's ethnocentrism were to have any credibility. That's why this edition addresses some 'non-European' modes, particularly those containing flat twos and/or augmented seconds, in order to explain how they work, including their role as tonal embodiment of an exotic 'Other'. Due to the correction

6. The whole-tone scale is also hexatonic and tonal (it contains six tones) but it is not tonical: it contains no perfect fifth and has no hierarchy of scale steps. Like the octatonic scale, it can only be transposed to one other position.

of this omission, to the theorisation of hexatonic modes and to the improved theorisation of penta- and heptatonic modes, the size of the chapters on (melodic) mode has increased from one twelve-page chapter to two chapters covering more than ninety pages.

[4] The 2009 edition contained a few factual errors and lacunae that have been put to right in this edition.⁷

[5] Due to restrictions of space, time and copyright legislation, the original encyclopedia entries included very few music examples. Even though there were more examples in the 2009 edition than in the encyclopedia articles, I still felt there was insufficient musical meat on the theoretical bone. That's why I've radically increased the number of music examples and reset them using better notation and image-processing software. This expansion of space devoted to 'actual music' will, I hope, make the book more convincing and more fun to read. I've also tried to include, wherever permissible, links to online recordings of the music cited as notation (see 'Musical source references', p. 28).

[6] The 2009 edition contained a few passages where I fell into the trap of terminological inertia and inexactitude. Particularly embarrassing was the occasional use of 'mode' in the absurdly restricted sense of any heptatonic mode except the ionian (whoops!), and the occasional confusion of 'tonical' (having a tonal centre) with 'tonal' (having a tone or tones). Such terminological lapses have been rigorously expunged from this edition.

[7] Most importantly, the concepts of tonality circulating in Western academies of music, whatever their canonic repertoire, are still all too often inadequate, illogical and ethnocentric. They simply don't do much to help music students living in a multicultural, internet-linked, 'global' world to get to grips with the tonal nuts and bolts of all those musics that don't fit the conceptual grid of categories developed to explain certain aspects of the euroclassical or classical jazz traditions.

7. One error concerns my apparent misunderstanding of Glarean's theory about the hypomodes. I have removed that short section from this edition because it's quite peripheral to the issues under discussion (see fnnt. 48, p. 113).

Reason number 7 is also why I try in this book to bring some order into terms denoting important *general* aspects of tonal structuration. To do that I have to explain widely used concepts like *tone*, *melody*, *accompaniment* and *harmony* in ways that relate those phenomena, not just to the music of certain minorities living in certain parts of a certain continent during a certain short period of its history (the euroclassical tradition from c.1730 to c.1910;), but to a much wider range of musics and people. Of course, that tradition is, along with the jazz canon, an essential ingredient in the everyday tonality of millions, and its unique characteristics need clear explanation in a book devoted to the ‘everyday’. But such explanation is also impossible if the specific dynamic of those canonic traditions cannot be understood *in relation to* the panoply of other tonalities in everyday circulation. The difficulty is that the vast majority of those other musics is under-theorised, in the sense that existing music theory often seems to have either misleading terms or no terms at all to designate their specific tonal dynamics.

The reform and de-ethnocentrification of music theory is an uphill battle in the context of institutions whose existence relies on musical traditions that have to be socially dead, or at least moribund, in order for them to become fixed as canons – for example, the euroclassical canon, the jazz canon, the ‘academic safari’ canon and, more recently, the rock canon. Such fixation of repertoire, of its aesthetics and structural theory, is more often than not understood as a necessity in institutions that repeat course content from one year to the next in the name of consistency or cost cutting, and that are subjected to ‘league tables’ of ‘excellence’ that have to be concocted on the basis of a consensus about ‘what everybody does’ or ‘always has done’ to function at all. If EXCEL means to surpass, to stand out, etc., excellence based on league tables is a blatant *contradictio in terminis*. I hope this book can contribute, at least in a small way, to exposing ‘excellence’ as the destructive oxymoron of mediocrity it really is.⁸

8. *Oxymoron*: an intentional *contradictio in terminis* used for comic effect.

Basic terms

Before going any further I'd better explain what I mean by certain terms that recur throughout the book, right from the start, one even in its title. The following list gives no more than terse, temporary definitions of terms explained in greater detail at various points in the book or in the Glossary (p. 479, ff.).

- NOTE: single discrete sound of finite duration in music;
- TONE: *NOTE* with discernible fundamental pitch;
- TONAL: having the properties of a *TONE*;
- TONALITY: system according to which *TONES* are configured;
- TONIC: musical keynote or reference *TONE*;
- TONICAL: having a *TONIC* or keynote.
- MODE: abstraction of *TONAL* vocabulary reduced to single occurrences of its constituent *TONES*.
- MODAL: having the characteristics of a *MODE*;
- POLYPHONY: music in which at least two sounds of differing pitch or timbre are heard at the same time;
- POLYPHONIC: having the characteristics of *POLYPHONY*;
- CHORD: simultaneous sounding of at least two differently named tones;
- TRIAD: *CHORD* consisting of three differently named tones;
- THIRD: pitch interval of three or four semitones (minor/major);
- FOURTH: pitch interval of five semitones ('perfect');
- TERTIAL (of *CHORDS*): based on the stacking of *THIRDS*;
- QUARTAL (of *CHORDS*): based on the stacking of *FOURTHS*;
- SHUTTLE: repeated to-and-fro movement between two chords;
- LOOP: short repeated sequence of typically three or four different chords.

Other recurrent terms requiring initial explanation are EUROCLASSICAL and KEY-CLOCK.

I use EUROCLASSICAL when referring to the European classical music tradition because not all classical music is European (e.g. Tunisian *nouba*, the *rāga* traditions of India, Cambodian court music, the *yǎyùè* – 雅乐 — of imperial China, etc; see also Glossary, p. 488). I avoid ART MUSIC labels because these tend to imply that musics without the label involve no art.

I tend to use the expression KEY CLOCK more often than CIRCLE OF FIFTHS because (a) it's shorter; (b) it's easier to use adjectivally, e.g. 'key-clock distance' rather than 'circle-of-fifths distance' or 'distance round the circle of fifths' (see Glossary, p. 493).

Words and expressions like HOMOPHONY, HETEROPHONY, COUNTER-POINT, COUNTERPOISE, RÉ-PENTATONIC, LA-HEXATONIC, HIJAZ, MAJORISED PHRYGIAN are all defined in the GLOSSARY.

Basic conventions for the abbreviated indication of scale degrees and chords are presented under 'Tonal denotation' (pp. 30-37).

Who's the book for?


This book contains many short music examples, so it's really for anyone who can decipher Western staff notation in the G and F clefs. Although not totally essential, some acquaintance with the rudiments of music theory, including conventional euroclassical or jazz harmony, is probably an advantage. In fact, when writing this book, I've mainly had in mind the music students I've met since 1971, and the conceptual problems they've seemed to encounter when they've met me for the subjects I've taught (chiefly related to 'popular' music, including music and the moving image). However, this book should also interest anyone who, with some notational literacy, wants to understand the tonal mechanisms of several widely disseminated types of music.

Caveats about the title and contents

The repertoire I draw on for illustration and generalisation must invariably be music that I'm in some way familiar with because there's no point in writing about things of which I have little or no knowledge. That means, just as invariably, that the 'everyday tonality' in the book's title can never be everyone's everyday everywhere at all times. The problem is that *SOME TONAL ELEMENTS IN WIDELY HEARD MUSIC DIFFUSED IN MAINLY, BUT BY NO MEANS EXCLUSIVELY, ENGLISH-LANGUAGE CULTURES IN THE LATE TWENTIETH CENTURY, i.e. MUSIC THAT PHILIP TAGG HAS PLAYED, SUNG OR HEARD* is not a very catchy book title. I therefore apologise to readers who feel I have shortened the book's title in an untoward manner. However, that abbreviation is,

I think for several reasons, not entirely misleading. [1] Significant amounts of the everyday musical fare of individuals in many parts of the world in the late twentieth century was of Anglo-US origin.⁹ [2] My notion of everyday music is not stylistically restricted: I refer not only to The Beatles but also to Bach and to popular music from the Balkans, Latin America, etc. [3] With substantial experience of non-anglophone cultures, I'm probably able to refer to more non-anglophone music than many other native speakers of my mother tongue.¹⁰

Here I have to include another caveat about this book's content. It concerns the EVERYONE'S AN EXPERT AT SOMETHING syndrome. I mention this because students who are devotees of a particular artist, composer or musical style have sometimes been outraged by the fact that I didn't include their area of expertise or objects of enthusiasm in my teaching, or that their musical interests were under-represented. Confronted like that in teaching situations, I would normally apologise and explain my choices while encouraging their enthusiasm and learning from their expertise. Since that sort of interaction is not viable in the author-reader relationship, I have to apologise in advance if you find my choice of material unsatisfactory. I can only suggest that you write me a short email suggesting improvements that come to mind.¹¹ My only excuse for the omissions that may outrage you is that I've had to cover an extensive range of music and musicians in order to avoid the ethnocentric trap; and that meant investigating music about which I was previously less familiar. Indeed, I should clarify that before rewriting this book I knew precious little about, for example, Arab *maqamat*, Greek *dromoi*, Copland's film music, flamenco, klezmer, the banjo, alternate guitar tunings or extreme metal, and

-
9. i.e. music for films, teleproducts, video games, and for recordings in, or influenced by, jazz, blues, pop, rock and other related English-language styles.
 10. Specialising in 'popular music', I have since 1971 taught music[ology] in tertiary education in Sweden, the UK and Francophone Canada. I have also since the 1980s had frequent contact with colleagues in Italy and Latin America.
 11. To contact me, go to  tagg.org, click *Contact* under *Personal*, then, under *Email*, click to send me a short message.

that I needed to improve on that ignorance to write anything at all coherent about, say, the phrygian mode or quartal harmony. Besides that, I felt obliged to try and transcribe relevant excerpts by artists like Sokratis Málamas, Ermálak, King Crimson, The Bothy Band and Joni Mitchell. The sounds I transcribed were always interesting (sometimes also moving) but the process of investigation and transcription was time-consuming. It's in this light that I ask readers outraged by my omission of their favourite music to understand that I've done what I could to widen the repertoire I've qualified as 'everyday'. Besides, I'm only one person and I haven't had any Superman illusions since some time around 1962!

Basic structure and contents

Rationale and reservations

Apart from this preface and the various appendices, which I'll explain shortly, this book consists of fifteen chapters, many of which deal with issues of harmony. That focus might seem odd, given that so many euroclassical scholars have already written so much about harmony. The trouble is that 'harmony' as an institutionalised body of learning in the West was often unable to help with the hands-on music analysis I had to do to make sense of my own 'everyday tonality': I just couldn't apply its theoretical grids and taxonomies to a significant part of what I've played and heard in my life. I had to grapple with preconceived notions about harmonic impoverishment, with assumptions about unitonicity (that you can only have one keynote at a time), unidirectionality (that harmonic motion 'normally' proceeds anti-clockwise round the key clock), and with several value-laden and often misleading terms like 'tonality', 'modality', 'dominant', 'subdominant', 'suspension' and 'perfect cadence'. Of course, those notions can work well if you want to examine the tonality of Mozart quartets, parlour song, *Schlager* or jazz standards, but they can be serious epistemic obstacles when dealing with *La Bamba*, *Sweet Home Alabama*, blues-based rock, folk rock, post-bop jazz, news jingles, *Huayno*, *rebetiki*, *son*, or a twelve-bar blues.

New terms and compromise

I've tried to include as much as possible of useful pre-existing ideas when addressing the problems just mentioned, for example Carlos Vega's concept of bimodality (1944), Allan Moore's useful lists of harmonic departures in rock and pop (1992), Esa Lilja's theory of power chords (2009), etc. Even so, I've had to introduce home-grown terms and ideas in efforts to make some theoretical sense of my 'everyday tonality'. Those efforts inevitably led to neologisms like *tertial*¹² (as opposed to *quartal*), *counterpoise* (tonal counterweight to a given tonic) and *bimodal reversibility* (tonal sequences in one mode which, when reversed, become sequences in another mode). All such terms, including those covered in *Music's Meanings* (e.g. *anaphone*, *genre synecdoche*, *episodic marker*, *diataxis*, *syncrisis*, *extensional*, *intensional* and *the extended present*; see Tagg, 2013) are explained at relevant points in this book and/or given a short definition in its Glossary.

Despite valiant attempts to fuse useful pre-existing ideas with my own observations, I regret that much remains to be done before a comprehensive theory of 'everyday tonality' can be produced. Readers are therefore asked to take this book as 'work in progress' that I hope others, reacting to its probable inconsistencies and definite lacunae, will be able to improve on.

12. I introduced TERTIAL into my teaching around 1997 and have been using it ever since. It featured in materials about harmony that I put on line in 1999 and which eventually became the *harmony* article in EPMOW (Tagg, 2002). In 2010 I was pleased to discover that others had seen the need to designate chords characterised by the stacking of thirds, but was taken aback to see they'd adopted the word 'tertian' (*sic*) to do the job. Why choose the *-an* suffix when the *-al* in QUARTAL (not 'quartan'!) already existed as the qualifier of chords based on stacked fourths. Adjectives ending in *-tian* or *-cian* are either geo-ethnic — Alsatian, Croatian, Grecian, Haitian, Phoenician, Venetian etc. — or qualify belief systems — Christian, Confucian, etc; *-[i]al* endings send no such signals! There's a clear difference between *martial law* or *martial arts* on the one hand and *Martian law* or *Martian arts* on the other. Besides, businesses are commercial, not 'commercian' and most grown-ups have *facial*, not 'facian', hair.

Restriction of subject area

I've also had to restrict, for reasons of space and clarity, the tonal areas I deal with, especially concerning questions of harmony. I chose to omit discussion of medium- and long-term tonal narrative (diataxis) and to *concentrate on harmonic processes containable within the extended present* (syncrisis), more particularly on 'one-chord changes', chord shuttles (two chords) and chord loops (three or four).¹³ There are three other reasons for this focus on 'now sound'. [1] Since these phenomena are, thanks to their alleged harmonic simplicity, unlikely to provoke much interest among conventionally trained musos, they're in greater need of theorisation. [2] Since the same phenomena are widely diffused, their popularity may become less puzzling if they are viewed from a less conventional musicological angle. [3] Since shuttles and loops are phenomena relating to the extended present, they highlight short-term tonal processes less commonly studied in conventional music scholarship. Theorising these issues of *intensional* structuration (Chester 1970; Glossary p.492) brings to light structural detail of importance in the understanding of 'groove' and in the identification of units of musical meaning (*museme stacks*; Glossary, p. 496).

Now, this sort of attention to intensional detail is, I believe, necessary but it does mean that I've not been able to pursue my main musicological interest (semiotic music analysis) because —and it's a vicious circle— I think that better structural theory relevant to the issue needs to be developed. I admit lapsing into semiotic mode on several occasions but I've exercised some restraint and tried to focus otherwise on structural theory.¹⁴

This focus means that I've been unable to consider in any detail longer durational units (MATRICES; see Glossary, p. 494) like the 12-bar blues, the 32-bar jazz standard, or even the 8- and 16-bar tonal units so common in popular music. I also had to abandon my original rash idea to include an overview of what is probably the most

13. For a discussion of *diataxis* and *syncrisis*, see Chapters 11 and 12 in *Music's Meanings* (Tagg, 2013).

14. I tried to confront semiotic issues in *Music's Meanings* (Tagg, 2013).

widely heard source of everyday tonality: film, TV and games music. Finally, I've not been able to include discussion of the CONJUNCT-LINE TROPES (Glossary, p. 483) at the basis of many popular chord sequences; I'm afraid I have to postpone that topic for another publication.

All these omissions are in my view regrettable and unsatisfactory but I hope readers will agree with 10cc (1975) that '4% of something's better than 10% of nothing'.

Surprising discoveries

When rewriting this book I came across a lot of music I'd either never heard before or which I'd forgotten from way back when. Most of this music never made it into the book but it kept me busy and was always interesting. Here are some more personal surprises that may (or may not) be of interest.

- I found next to no systematic theory of hexatonic modes, even though the basically doh-hexatonic tune *It's Not Unusual* (Tom Jones, 1965) is itself decidedly not unusual.
- Since Bartók is one of my favourite composers, I was delighted to find out how many celebrated jazz and prog musicians were also fans of his work.
- I was surprised to discover and saddened to realise how conservative jazz theory can be in its terminology, and how much it seems stuck in the time warp of bebop and II-V-I thinking.
- I was gobsmacked to discover how conservative, ethnocentric and notation-fixated music theory teaching can still be.¹⁵

Overview of chapters

Chapter 1 (pp. 45-64). There is much confusion about very basic terms in music theory. NOTE, PITCH and TONE are three of them. This chapter discusses and defines those terms. Extra attention is paid to cleaning up the conceptual chaos of the words TONAL and TONALITY as they are used in conventional Western music theory.

15. I even heard of students chided for referring to the phrygian minor second in E as $b\hat{2}$ ('flat two') because $f\sharp$ (flat two in E) has no 'b' when notated! See *Troubles with Tonal Terminology* (Tagg, 2013b:) for more.

CHAPTER 2 (pp. 65-84) continues with notions of PITCH, focussing on questions of TUNING and the OCTAVE. This chapter is the most acoustic-physics-orientated of them all and provides a theoretical basis for understanding how *tones* (as in ‘tonality’) work.

CHAPTER 3 —HEPTATONIC MODES (pp. 85-149)— is the first of two about the mainly melodic aspect of modes. It starts with a definition of MODE, raises the issue of IONIANISATION, critiques conventional notions of MODALITY and explains why 7 is such a ‘magic number’ in modal theory. The first half of the chapter is then entirely devoted to the heptatonic ‘church’ modes and includes numerous music examples, as well as a critique of the major-minor ‘happy-sad’ dualism. The second half deals with non-diatonic heptatonic modes, in particular those containing FLAT TWO and/or an *augmented second*. Some rudiments of MAQAM theory, including the theoretical centrality of tetrachords, are presented as useful tools in the understanding of modal richness outside the euroclassical, jazz and related repertoires. There is particular focus on the PHRYGIAN and HIJAZ modes in *flamenco* and *Balkan* music, as well as on ‘Bartók’ modes, including the *lydian flat seven* and its similarity to blues modes. The chapter concludes with a 14-point summary and a short ‘WHAT-IF?’ thought experiment.

CHAPTER 4 (pp. 151-178) is about NON-HEPTATONIC MODES. After a short section on *tri- and tetratonic* melody, the widespread practice of PENTATONICISM, especially its anhemitonic variants, is discussed in some detail. This section also explains the workings of the *doh- and la-pentatonic* BLUES MODES. A systematic theory of tonal HEXATONIC MODES comes next, followed by an overview of non-tonal hexatonic modes (whole-tone and octatonic). The chapter ends with reflexions on the perception of modes.

CHAPTER 5 (pp. 179-203) is on MELODY. After an exposition of its defining characteristics, melody is presented according to two typologies, one based on *contour* (patterns of up and down), the other on *connotation*. Melodic identity is discussed in terms of tonal vocabulary, bodily movement, spoken language, varying patterns of repetition and, using concepts from rhetoric, its varying modes of presentation. The chapter ends with brief section on *melisma*.

CHAPTER 6 (pp. 205-217) is a short chapter on POLYPHONY. It starts by trying to clear up the conceptual mess in conventional Western music theory about what *polyphony* actually means. After that, various categories of polyphony are defined and explained, including *drone-accompanied music*, *heterophony*, *homophony* and *counterpoint*.

CHAPTER 7 (pp. 219-244) is called 'CHORDS'. After the customary definition section, this chapter enumerates, describes and explains how a wide variety of tertial chords can be referred to in two complementary and useful ways: ROMAN NUMERAL designation and LEAD-SHEET CHORD shorthand. The chapter includes several extensive tables, including: [1] a table of all roman-numeral triads in all 'church' modes; [2] a chord recognition chart and a key to over fifty lead-sheet chords, all with the same root note. The principles of both roman-numeral and lead-sheet chord designation are explained in detail, complete with anomalies and exceptions.

CHAPTER 8 (pp. 245-271) is the first of several on HARMONY. A brief definition and history of the concept is followed by a presentation of (European) 'CLASSICAL HARMONY'. After tidying up another conceptual mess relating to notions like '*functional*' and '*triadic*', the essential term TERTIAL is introduced. The basic rules and mechanisms of classical harmony, central to many popular styles, are also presented. Furthermore, the chapter addresses notions of harmonic *directionality*, as well as the principles of the *circle of fifths* or '*key clock*'.

CHAPTER 9 (pp. 273-292) is about NON-CLASSICAL TERTIAL HARMONY, i.e. third-based harmony that does not follow the euroclassical harmony rule book. After a discussion of *non-classical ionian* harmony, it explains things like the importance of *major common triads* in establishing the identity of the 'church modes', the option of *permanent Picardy thirds* in the tonic triad of minor-key modes, and the link between *la-pentatonics* and *dorian rock harmony*. There's also a useful chart of typical progressions in each mode and of some well-known recordings in which they occur.

CHAPTER 10 (pp. 293-351) is devoted entirely to QUARTAL HARMONY. After initial definitions it sets out the basics of quartal triads, how they can be designated and how they differ from tertial triads. The notion of TONICAL NEIGHBOURHOOD is introduced as a way of un-

derstanding the relatively *fluid tonal centrality* of quartal harmony and how that fluidity can be used to generate harmonic movement. The blurring of borders between quartal and tertial harmony as more fourths are added to quartal chords is used as a way of understanding *chords of the eleventh* and their importance in North American music. Distinction is made between quartal harmony and the quartal *voicings* of postwar jazz. Numerous examples illustrate instances of quartal everyday tonality, from Bartók to banjo tuning, from Debussy to Stravinsky to corporate jingles, from McCoy Tyner to Joni Mitchell and King Crimson, etc. The chapter ends with demonstrations of the link between droned accompaniment patterns and quartal harmony, plus an 18-point summary of the chapter's main ideas.

CHAPTER 11 (pp. 353-369) is called ONE-CHORD CHANGES because it shows how one single chord is, in many types of popular music, rarely just one chord. After refuting prejudices about harmonic impoverishment in popular music and describing the theoretical rudiments of the *extended present*, one single common chord —G major— is examined in sixteen different popular recordings and found to consist of between two and four chords on each occasion. I argue that the tonal elaboration of 'single' chords is an intrinsic part of the musician's aural work and essential to the 'groove' identifying both a particular piece and a particular style.

CHAPTER 12 —'CHORD SHUTTLES' (pp. 371-400)— increases the number of chords from one to two. Drawing mainly on English-language popular song, a TYPOLOGY OF CHORD SHUTTLES is presented (*supertonic, dorian, plagal, quintal, submediantal, aeolian and subtonic*). Examination of shuttles in several songs, including a track from Pink Floyd's *Dark Side of the Moon* (1973) and the Human League hit *Don't You Want Me Baby* (1981), shows that chord shuttles often involve *ambiguous tonics* and that no overriding key-notes can be established. I argue that chord shuttles are dynamic *ongoing tonal states*, not narrative processes. They are by definition non-transitional and constitute building blocks in the harmonic construction of diataxis in many types of popular song.

CHAPTER 13 — CHORD LOOPS 1 (pp. 401-420)— expands the number of chords from two to three and four. After defining LOOP, the VAMP, one of the most famous loops in anglophone popular song, is examined. Distinction is made between *loop* and *turnaround*. The chapter ends with an explanation of the gradual but radical historical shift from the vamp's V-I directionality to other, less ionian, types of harmony in rock-, soul- and folk-influenced styles.

CHAPTER 14 — CHORD LOOPS AND BIMODALITY (pp. 421-450)— attacks the problem of understanding how non-classical tertial harmony works, with how the same chord sequence can be heard in two different modes, etc. Starting with distinction and confusion between *ionian* and *mixolydian*, this chapter sets out ways of establishing, where relevant, a single tonic for particular sequences, the role of individual chords within loops, etc. It then examines *aeolian* and *phrygian* loops, and proposes a model of BIMODAL REVERSIBILITY in efforts to conceptualise harmonic practices quite foreign to what is generally taught to music theory students. The chapter's final section distinguishes between various mediantal loops like the '*rock dorian*', the '*folk dorian*', the '*narrative ionian mediantal*'.


CHAPTER 15 — THE YES WE CAN CHORDS (pp. 451-478)— focuses on the chord loop used in the online video supporting Obama's 2008 presidential campaign. It discusses the *connotative value* of the loop and its contribution to creating the sort of cross-cultural unity that the Obama campaign wanted to forge. The main point is that analysing music's tonal parameters should not be an arcane technical exercise foisted on music students but instead a contribution to answering the basic question of music semiotics: 'why and how does who communicate what to whom and with what effect?'.

Appendices

Glossary


The GLOSSARY (pp. 479-504) includes explanations of abbreviations and definitions of terms whose meaning may need clarification. The definitions often refer to pages in the main text for a more detailed explanation. It also contains a few substantial entries that should have been footnotes but did not fit on the relevant page.

Reference appendix

To save space and to avoid confusion about which appendix to consult when checking source references, this book has only *ONE* REFERENCE APPENDIX (p. 505, ff). Reasons for including ‘everything’ in one appendix are given in *Guidelines for Producing a Reference Appendix for Studies of Music in the 21st Century* ( tagg.org/xpdfs/RefAppxs.pdf). That document also explains the referencing system used in this book.

Internet references

To save space in the Reference Appendix and footnotes, URLs are shortened by replacing the internet address prefixes <http://>, <https://>, <http://www>. etc. with the download icon . Dates of access to internet sites are six-digit strings inside square brackets. Thus, ‘tagg.org [150704]’ means a visit to <http://www.tagg.org> on the 4th of July, 2015.

YouTube references are reduced in length from 42 to 13 characters by using the 11-character code appearing in their absolute URL addresses, preceded by the YouTube icon . For example:

<http://www.youtube.com/watch-v=msM28q6MyfY> (42 chars.)

becomes just ‘msM28q6MyfY’.¹⁶

Index section

The INDEX SECTION consists of: [1] an ALPHABETICAL INDEX (p. 561); [2] NUMERICAL INDEXES listing: [a] *scale-degree sequences* (‘ $\hat{b}^2 \hat{1}$ ’, ‘ $\hat{8} \hat{b}^7 \hat{b}^6 \hat{5}$ ’, etc., p. 595); [b] chord abbreviations (e.g. ‘4[#]’, ‘m^{7b5}’, p. 598); [c] chord sequences (‘I-vi-ii/IV-V’, ‘bVII-IV-I’, etc., p. 599). The ALPHABETICAL INDEX gives page references to all proper names appearing in the book, and to titles of musical works, songs, tracks, albums, films, TV productions, etc. It also includes page references to all major topics and concepts covered in the book’s preface, chapters and glossary. Footnote text is also included in the indexes. Symbols used in the indexes are explained on page 561.

16. If you copy the 11 characters of a unique YouTube file identity (e.g. msM28q6MyfY) and paste it into YouTube’s search box, you will be taken to that video and none other. You will not be told what else ‘you might enjoy’.

Formal and practical

Cross-referencing and order of topics

Some parts of this book are based on encyclopedia articles. This means that insights readers might gain from those passages are more likely to derive from conceptual rather than perceptual learning. That in its turn requires quick access to the meaning of terms other than those under current discussion. That's one reason why this book includes many internal cross-references.

Another reason is that it's impossible to introduce all terms and ideas in the right order for all readers. For example, although roman-numeral chord shorthand makes a short appearance on pages 36 and 72, it isn't fully explained until page 220, in the chapter on chords. That will cause no problems for those familiar with the rudiments of conventional harmony but others may want to first read pages 220-225 and to consult Table 14 (p.222). Similarly, readers with no knowledge of lead-sheet chord shorthand (E7, F#m7^b5 etc.) should perhaps read the relevant section (pp.229-244) if they have trouble following those symbols earlier in the book.

Musical source references

Reference system

Musical source references follow the same basic system as bibliographical source references. For example, 'Beatles (1967b)' refers uniquely to publishing details, located on page 510 in the Reference Appendix, for the *Sergeant Pepper* album.

Sometimes it's necessary to refer to a whole string of tunes in the text. For example, instead of writing 'in tunes like *Jingle Bells* (Pierpoint, 1857), *La Marseillaise* (Rouget de Lisle, n.d.) and *Satisfaction* (Rolling Stones, 1965)', I would tend to lighten up the text by just writing 'in tunes like *Jingle Bells*, the *Marseillaise* and *Satisfaction*'. In such cases the title of each tune will be found, listed in alphabetical order, in the Reference Appendix, either complete or with at least cross-reference to the complete publishing details elsewhere in the appendix. Complete publishing details are provided so that readers will know, in cases where more than one recording exists of the

same work, to which version I am referring. Such information is important when I provide timings pinpointing musical events within recorded works.

Accessing and using musical sources

Online recordings


The majority of musical works referred to have at one time or another been published as recordings. In the early 1990s it would have been absurd to expect readers to have access to more than a very small proportion of those recordings. Today, however, it is usually a simple matter. Fearing prosecution for inducement to illegal acts, I can't be more precise here than to say that you can hear online recordings of the majority of music I refer to in this book. For example, using Google to search for |Police "Don't Stand So Close To Me"| (with the inverted commas) produced 3,180,000 hyperlinks [2014-08-05], several of which took me to actual online recordings of the original issue of *Don't Stand So Close To Me* (Police, 1980). Using the on-screen digital timer provided by the site hosting the recording, I was able to pinpoint the song's change from the E \flat →Gm to the D→A shuttle at 1:48. The whole process of checking a precise musical event in just one of innumerable songs took me a few seconds. Of course, it should be remembered that while it is *not illegal to listen* to music posted on the internet, *downloading* copyrighted music without payment or permission may well be.¹⁷

I've checked many of the recordings referred to in the book to see if they could be heard online. Some I didn't check at all because I'm certain they'd be easy to find but others I had to put online myself. These 'others' include: [1] short extracts from recordings under copyright that seemed to be unavailable on line; [2] rudimentary audio recordings I produced using my own equipment to illustrate particular points discussed in the text. All these 'other examples' can be accessed via my website at tagg.org. Click *Audio*, bottom right under 'Audiovisual', then *Music examples in "Everyday Tonality"*

17. Thanks to Bob Clarida for clarifying these simple legal points. Clarida is media and copyright attorney at Reitler, Kailas & Rosenblatt (New York) and co-author of *Ten Little Title Tunes* (Tagg & Clarida, 2003).

ity". Then you'll see a list of the relevant audio examples on my site. Click on the relevant title to hear the example you need (mostly in MP3 format, a few as MIDI files). If you object to any posting on grounds of copyright ownership, please contact me and I will remove the offending item or contact my lawyer for advice.¹⁸

Online notation

In order to minimise hard-copy production costs, music examples appear in pocket-score size on the page. The image resolution of notation images is mostly 300 d.p.i and the maximum width of the printed page is 10.3 cm, allowing for an image width of 1220 pixels. Some readers may find the miniature-score format problematic. If so, almost every music example in this book can be viewed at, or downloaded full-size from,  tagg.org/pix/MusExx/MusExxIdx.htm. If you're reading this electronically you can of course just use your device's zoom function to make the notation larger.

'Cit. mem.'

Some notated music examples are marked '*cit. mem.*', meaning that they are cited from (my) memory. I use *cit. mem.* if no single definitive, authoritative or original recording of the piece exists, and if my own memory does not diverge too radically from the essence of how others hear it.

Tonal denotation

As mentioned briefly on page 16, the 'everyday tonality' of this book covers a much wider range of tonal practices than those normally considered in standard Western music theory. The problem is that terms and concepts developed to denote and explain the tonal workings of the euroclassical repertoire cannot realistically be expected to do the same for all other types of tonality. To claim otherwise would be like insisting that concepts developed to explain rules of the English language automatically apply to, say, Chinese or Finnish. The obvious consequence for this book is that

18. You can contact me by visiting  tagg.org and clicking 'Contact' under 'Personal'. My copyright lawyer is Bob Clarida (see footnote 17).

conventions of tonal denotation cannot only be those of standard Western music theory. It means that some of that theory's terminology needs adaptation or redefinition, while some is best avoided altogether. It also means that I have to introduce terms and abbreviations unfamiliar to those raised on Schenker, Riemann or their acolytes.¹⁹ This section of the Preface does little more than summarise, with minimal discussion, the basic conventions of tonal denotation and abbreviation in this book.

Note names

To distinguish between, for example, E as the note E, E as lead-sheet chord shorthand for a tertial major triad with the note E as its root, and E as the key or mode in which the note E is tonic, the following typographical conventions are used. For extra clarity a natural sign (♮) is sometimes added after a note name, e.g. 'a♮, f♮, b♮' instead of just 'a, f, b'.

Table 1. Basic typographical conventions for pitch-specific note and chord names

<i>Denotation type</i>	<i>Symbol</i>	<i>Typography</i>	<i>Example</i>
note	e	lower-case sans-serif	e is a major third above C
lead-sheet chord	E	upper-case sans-serif	... from B7 to E...
key (<i>Tonart</i>)	E	upper-case serif	...is a V-I cadence in E.

Names of OPEN STRINGS are given according to instrumental convention, e.g. EADGBE for standard guitar tuning and DADGAD for DADGAD, g'dgbd' for banjo open G tuning, etc.

Please note that TONIC SOL-FA NOTE NAMES (*doh ré mi fa sol la ti*) are, according to anglophone convention, relative or movable, e.g. 'Doh=Bb', 'Doh=E', 'ré-pentatonic mode in G'.²⁰ Roman-letter note names (e.g. a b♭ b♮ c♯ d e f♯ g) designate pitch in absolute (fixed) terms. For further explanation see p. 45, ff.

19. See authoritative Wikipedia entries for 'Heinrich Schenker' and 'Hugo Riemann'. See also *ftnt.* 25, p. 35, for influential Schenkerian Felix Salzer.
20. RÉ is used in preference to RE so as to avoid eventual misreadings involving the common prefix RE — *repentant, re-pentatonic, repetitive, re-mode, remodel*, etc.

Scale degrees, scale steps and intervals

When dealing with tonality inside and outside the euroclassical sphere of tertial-ionian, major-minor music, *comparison of tonal vocabulary is an absolute necessity*. Such comparison involves reasoning based on the placement of SCALE DEGREES within the octave, which, in its turn, requires a concise way of referring *relatively* to notes and chords. (See also *INTERVALS*, p. 34 and Table 5, p. 70).

As shown in the left column of Table 2 (p. 33), the heptatonic SCALE DEGREES OF INDIVIDUAL NOTES can be expressed as simple arabic numerals topped with a circumflex accent — $\hat{1} \hat{2} \hat{3} \hat{4} \hat{5} \hat{6} \hat{7}$ [$\hat{8}=\hat{1}$]. Scale-degree numbering requires the identification of a tonic (key-note) as scale degree 1 — $\hat{1}$. Since pitch differences between $\hat{1}$ and the other six scale degrees ($\hat{2} \hat{3} \hat{4} \hat{5} \hat{6} \hat{7}$) are variable (see Table 2, p. 33; Fig.16, p. 97), scale degree numbering follows the following conventions (§§ 1-7).

[1] *Minor and major scale degrees.* $\hat{3}$, $\hat{6}$ and $\hat{7}$ are the most frequently varied scale degrees in the ‘everyday tonality’ covered in this book. To avoid ambiguity and to save space, scale degrees on the minor third, sixth and seventh are preceded by ‘b’ ($b\hat{3}$, $b\hat{6}$, $b\hat{7}$), those on the major third, sixth and seventh by ‘Δ’ ($\Delta\hat{3}$, $\Delta\hat{6}$, $\Delta\hat{7}$).²¹

[2] Since $\hat{2}$ is less prone than $\hat{3}$, $\hat{6}$ and $\hat{7}$ to variation, the scale degree on the major second is usually indicated by a simple ‘ $\hat{2}$ ’, without the qualifier ‘Δ’, while ‘ $b\hat{2}$ ’ designates a scale degree on the minor second (‘flat two’).

[3] *‘Perfect’ scale degrees.* $\hat{4}$, $\hat{5}$ and $\hat{8}$ indicate, without qualification, scale degrees on the perfect fourth, fifth and octave respectively.

[4] *Diminished and augmented scale degrees.* ‘b’ is used to indicate a diminished and ‘#’ an augmented interval. For example, $\#\hat{4}$ (‘sharp four’) is a scale degree on the augmented fourth, $b\hat{5}$ (‘flat five’) on

21. ‘Δ’ stands for *major*, in line with the conventions of lead-sheet chord shorthand where, for example, $C\Delta^7$ indicates the C major seven chord (also abbreviated C^Δ , or C^{maj7} or C^{maj} ; see pp. 232-237). ‘#’ qualifies only scale-degrees on augmented intervals (e.g. $d\#$ as $\#\hat{2}$ in C; see §4).

the diminished fifth. ‘# $\hat{2}$ ’ (augmented second) is also used; for example, in the key of C ($\hat{1}$), $d\#$ is # $\hat{2}$, $d\flat$ is $\hat{2}$ (or $\Delta\hat{2}$) and $d\flat$ is $b\hat{2}$.

Table 2. *Scale degree abbreviations with c and e[\flat] as tonic ($\hat{1}$).²²*

SCALE DEGREE			TERTIAL COMMON TRIAD						Scale degree
<i>n</i> ^o	$\hat{1}=c$	$\hat{1}=e$	$\hat{1}=c$ $\hat{1}=e$			$\hat{1}=c$ $\hat{1}=e$			as spoken popularly
	note name		<i>n</i> ^o	MAJOR		<i>n</i> ^o	MINOR		
$b\hat{2}$ $\hat{2}$ or $\Delta\hat{2}$ $\#\hat{2}$	$d\flat$ $d\flat$ $d\#$	$f\flat$ $f\#$ $f\#$	b II II	$D\flat$ D	F F#	b ii ii	$C\#m$ Dm	Fm F#m	‘flat two’ ‘[major] two’ ‘sharp two’
$b\hat{3}$ $\Delta\hat{3}$	$e\flat$ $e\flat$	$g\flat$ $g\#$	b III III	$E\flat$ E	G G	b iii iii	$E\flat m$ Em	Gm G#m	‘flat three’ ‘major three’
$\hat{4}$ $\#\hat{4}$	f f#	a a#	IV #IV	F F#	A A#	iv #iv	Fm F#m	Am Bbm	‘four’ ‘sharp four’
$b\hat{5}$ $\hat{5}$ $\#\hat{5}$	$g\flat$ $g\flat$ $g\#$	$b\flat$ $b\flat$ $b\#$	b V V	$G\flat$ G	$B\flat$ B	b iv v	F#m Gm	$B\flat m$ Bm	‘flat five’ ‘five’ ‘sharp five’
$b\hat{6}$ $\Delta\hat{6}$	$a\flat$ $a\flat$	$c\flat$ $c\#$	b VI VI	$A\flat$ A	C C#	b vi vi	$A\flat m$ Am	Cm C#m	‘flat six’ ‘major six’
$b\hat{7}$ $\Delta\hat{7}$	$b\flat$ $b\flat$	$d\flat$ $d\#$	b VII VII	$B\flat$ B	D D#	b vii vii	$B\flat m$ Bm	Dm D#m	‘flat seven’ ‘major seven’

[5] *Microtonal scale degrees*. ‘ \flat ’ indicates that the designated scale degree is pitched ONE QUARTER TONE BELOW its value in the ionian mode, as in the ‘neutral’ blues third ($\flat\hat{3}$), or as in *maqam Rast* (ascends $\hat{1} \hat{2} \flat\hat{3} \hat{4} \hat{5} \flat\hat{6} \flat\hat{7}$).

[6] *Unqualified scale degree numbers*. The circumflexed numeral without symbol prefix refers to either [1] a GENERIC HEPTATONIC SCALE DEGREE —for example a ‘ $\hat{3}$ ’ that could be $\Delta\hat{3}$, $b\hat{3}$, $\flat\hat{3}$ or $\#\hat{3}$ — or [2] a scale degree number requiring no qualification (e.g. perfect fourth, fifth and octave, as well as major second ($\hat{4}$, $\hat{5}$, $\hat{8}$, $\hat{2}$, see =§§2-3).

22. Please note that many of the tertial common triads in this table contain notes outside the euroclassical keys of C and E major and minor, e.g. b II contains two notes foreign to the ionian or ‘major key’ ($b\hat{2}$, $b\hat{6}$), and b ii contains two foreign to the euroclassical ‘minor key’ ($b\hat{2}$, $b\hat{4}$). On the other hand, b II is the fully compatible common triad on $b\hat{2}$ in the phrygian and Hijaz modes.

[7] If preceded by the expression ‘scale degree’, or if the context is otherwise unambiguous, the scale degree[s] in question may lack the circumflex. ‘Scale degrees 1 \flat 2 \sharp 3’ (e.g. c d \flat e \sharp in Hijaz C) is in other words the same as just ‘ $\hat{1}$ $\flat\hat{2}$ $\sharp\hat{3}$ ’. The latter is simply shorter.²³

SCALE STEPS, the intervals between adjacent scalar notes in a mode, are expressed in tones: ‘ $\frac{1}{4}$ ’ means a quarter-tone, ‘ $\frac{1}{2}$ ’ a semitone, ‘ $\frac{3}{4}$ ’ three quarters of a tone, ‘1’ a whole tone (literally 1 tone), and either ‘ $1\frac{1}{2}$ ’ —one-and-a-half tones— or ‘ $\frac{3}{2}$ ’ —three semitones—, i.e. an augmented second or minor third.²⁴

INTERVALS (differences of pitch), are mainly designated as ordinals, qualified where necessary, for example *second*, *third*, *minor third*, *augmented fourth*, *diminished fifth*, *octave*. Intervals and scale degrees specific to the euroclassical and related tonal idioms are sometimes referred to using the vocabulary of conventional Western music theory (*supertonic*, *mediant*, etc.). Those labels and their equivalents as numeric scale degrees are set out in Table 5 on page 70.

Octave designation and register

When referring to REGISTER it is sometimes necessary to indicate in which octave notes are pitched. In such cases I’ve used the MIDI convention of numbering octaves from a_0 at the bottom of an 88-note piano keyboard (27.5 Hz) to c_8 (4186 Hz) (see p. 68, ff.). Octave numerals are subscripted to avoid confusion with the superscripted characters used in chord shorthand, footnote flags, etc.).

23. Fonts used here are downloadable at tagg.org/zmisc/FontKeys.html [140308].

24. The use of $\frac{1}{2}$, 1, $1\frac{1}{2}$, etc. replaces three other conventions: [1] T = tone, S = semitone; [2] W = whole tone, H = half tone; [3] ‘1’ = semitone, ‘2’ = whole tone, ‘3’ = three semitones. [3] is not as anglocentric as alternatives [1] or [2], but it is counterintuitive to equate a *half*-tone ($\frac{1}{2}$, *semi*, 50%) with the integer 1 and a whole-tone (1 tone) with 2 ($\times 2$, 200% of 1). Besides, ‘ $\frac{1}{2}$ ’ is available on computer keyboards (Unicode U+00bd, ASCII 171). For more information, see tagg.org/zmisc/FontKeys.html [140906].

Scale degree chord shorthand

SCALE DEGREE CHORD SHORTHAND (ROMAN NUMERALS) follows principles similar to those used for scale degrees (p. 32, ff.). As will become evident, concepts like ‘dominant’, ‘subdominant’, ‘perfect cadence’, ‘functional harmony’, etc. are irrelevant to much of what most people hear on a daily basis. That’s why Salzer’s euroclassically focussed *Structural Hearing* (1952) is absent from this book. Nor are readers forced to endure hieroglyphics like ‘Sp’, ‘Dp’ or ‘~~DD~~-9’.²⁵ Nevertheless, the roman-numeral denotation of chords is used extensively (see Table 2, p. 33 and §3, below).

Chords

Three systems are used for the concise denotation of chords: [1] *lead-sheet shorthand*, [2] *quartal chord designation* and [3] the *roman numeral system*.

1. Lead-sheet chord shorthand

A LEAD SHEET is a piece of paper displaying the basic information necessary for performance of a piece of Western popular music (see pp. 229-230). LEAD-SHEET CHORD SHORTHAND is the system of chord symbols used on lead sheets. Lead-sheet chord shorthand for TERTIAL HARMONY (A, Bm⁷b⁵, Ebm⁴⁹, etc.) is explained in detail in Chapter 7 (pp. 229-244) and presented in tabular form on pages 232-233. For QUARTAL CHORD SHORTHAND, see chapter 10.

All chord symbol root names are in sans-serif capitals while names of keys (*tonalité*, *Tonart*) are, as shown in Table 1 (p. 31), in upper-

25. Felix Salzer is largely responsible for establishing the teachings of Austrian musicologist Heinrich Schenker (d. 1935) in the USA where it is still an obligatory part of ‘music theory’ in the academy. It can be useful for understanding structural narrative in a Mozart symphony but is quite useless if you want to know how the tonalities of rebetiko or redneck rock (and countless other non-euroclassical idioms) work. At the Göteborg (Sweden) College of Music (*Musikhögskolan*, 1971-91), I had to teach harmony from a Riemann-inspired manual (Söderholm, 1959) in which ‘Sp’ and ‘Dp’ were abbreviations of ‘Subdominant’ and ‘Dominant Parallel’ respectively (e.g. Dm as Sp and Em as Dp in C). ‘~~DD~~-9’ was the the book’s weirdest hieroglyphic: it was a ‘double dominant’ minor ninth chord with its root note deleted, for example, in C, the notes d f# a c eb (without the d), i.e. a bog-standard F#dim (#iv^{o7}).

case serif, for example, [1] ‘Mozart’s Symphony n^o 41 is in C: its final chord is C’; [2] ‘the vocal line of Steeleye Span’s 1970 recording of *The Lowlands Of Holland* (ex. 84, p. 157) starts on a g[#] and is in la-hexatonic C[#]: its final chord is C[#]2’.

2. Quartal chord designation symbols

QUARTAL CHORD DESIGNATION symbols (C⁴, F⁴, B^b2, etc.) are explained separately in Chapter 10 (p. 294, ff; p. 302, ff.).

3. Roman-numeral chord shorthand

The ROMAN-NUMERAL CHORD SHORTHAND system is explained in Chapter 7 (pp. 220-225) and set out in Table 14 (p. 223). A ‘HEWN-IN-STONE’ font is used to make these chord symbols easier to spot in the text, even if there’s little visual difference between ‘I’ (me) and ‘I’ (roman n^o 1).

Unlike lead-sheet chord shorthand, but *like* scale-degree abbreviations, ROMAN-NUMERAL CHORD DESIGNATION IS RELATIVE, in that each roman number designates, in any key or mode, THE SCALE DEGREE ON WHICH THE CHORD IS BUILT (see Table 2, p. 33). The superscripted arabic numerals indicate alterations to the basic tertial common triad built on that scale degree, for example: I (contains $\hat{1}-\Delta\hat{3}-\hat{5}$), I7 ($\hat{1}-\Delta\hat{3}-\hat{5}-b\hat{7}$), ii^{7b5} ($\hat{2}-\hat{4}-b\hat{6}-\hat{8}$), bIII⁵ ($b\hat{3}-b\hat{7}$), IV⁶ ($\hat{4}-\Delta\hat{6}-\hat{8}-\hat{9}$), V⁶ ($\hat{5}-\Delta\hat{8}-\dagger\Delta\hat{3}$), V7 ($\hat{5}-\Delta\hat{7}-\hat{9}-\dagger\hat{4}$), bVI ($b\hat{6}-\hat{8}=\dagger\hat{1}-\dagger b\hat{3}$).

- LOWER-CASE ROMAN NUMBERS indicate a **MINOR COMMON TRIAD**. For example, ii in C, as a minor triad based on the second degree (on $\hat{2}$), is a D minor triad (‘Dm’, containing d-f \sharp -a).
- UPPER-CASE ROMAN NUMERALS indicate either a **MAJOR COMMON TRIAD** or a **POWER CHORD**. For example, V in C, as a major triad on $\hat{5}$, is a simple ‘G’, containing g-b \sharp -d, while, still with C as tonic, bIII⁵, as a chord based on the flat third scale degree ($b\hat{3}$), is the dyad Eb⁵, containing eb and bb.
- I, ii, iii, etc. DESIGNATE CHORDS ON THE SCALE-DEGREE POSITIONS of Western music theory’s DEFAULT MODE — the IONIAN.
- Chords based on ANY SCALE DEGREE OTHER THAN THOSE INTRINSIC TO THE IONIAN MODE MUST BE PRECEDED BY THE REQUISITE

ACCIDENTAL, almost always ‘b’, for example $bVI-bVII-I/i$ (aeolian cadence) or $bII-I/i$ (or $bvii-I/i$) (phrygian cadence).²⁶

An aside about the ionian as default mode

Euroclassical music theory’s preoccupation with the ionian is historically explicable but hardly logical. Taking the seven white notes of a piano keyboard octave — $c d e f g a b$ — and re-arranging them in clockwise order round the circle of fifths — $f c g d a e b$ —, it’s clear that the two extremes are separated inside the octave by a tritone ($f\sharp-b\flat$) and, more importantly, that C is situated next to the left-hand extreme ($f c g d a e b$), not in the central position occupied by d ($f c g d a e b$). With the dorian D -mode as default for the scale-degree and roman-numeral shorthand systems, there would have been three modes sharpwards (aeolian, phrygian, locrian) and three flatwards (mixolydian, ionian, lydian); and the assignment of apposite accidentals would have been more equitable.²⁷

Music examples (notated)

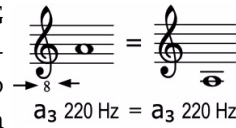
This book contains hundreds of notated music examples and figures containing musical notation. As explained earlier, many music examples cited as notation in this book can also be both heard as audio and viewed in better resolution on line (see p. 29).

I’m not a guitarist. Sometimes I transcribe as a typical keyboard player. I apologise if my voicings of guitar chords are wrong. However, guitarists Diego García Peinazo, Jacopo Conti and Franco Fabbri have helped with the transcription of several guitar-based examples.²⁸

-
26. Unlike scale-degree symbols ($b\hat{3}$, $\Delta\hat{3}$, etc.), roman-number chord shorthand does not use ‘ Δ ’ to indicate chords built on major scale degrees. For example, ‘ III ’ or ‘ iii ’ always indicates a common triad based on $\Delta\hat{3}$.
27. It would also have aligned with notions of *modus protus plagalis* or *authenticus*. This historical anomaly may explain the proliferation of b s and the paucity of \sharp s (or Δ , $\+$, etc.) in front of roman-numeral chord designations but it doesn’t explain why Western music theory became so ionianised in the first place.
28. Drumkit parts are not included in this book about tonality.

8va and 15ma bassa

The TENOR CLEF, familiar to guitarists, is a G clef (♯) with an ‘8’ underneath. It’s USED FREQUENTLY in music examples covering the MID REGISTER. The idea is to save space, cut down on leger lines, and to avoid switching between G and F clefs. Please look for the little ‘8’ (*8va bassa* = octave below): the two notes shown in Figure 1 sound at exactly the same pitch.²⁹ On a few occasions ‘15ma bassa’ is used to indicate notes sounded two octaves lower.

Fig. 1. *8va bassa**Progressions and sections*

Note names or chord designations occurring in sequence are usually separated by HYPHENS or by a simple space (e.g. ‘d g f# a’ or ‘d-g-f#-a’; ‘C Am F G’ or ‘D-Bm-G-A’; ‘I vi ii V’ or ‘I-vi-IV-V’).

To highlight the *unidirectional aspect of TONAL PROGRESSIONS*, a right-pointing arrow is sometimes used, e.g. ‘ii→V→I’, ‘Gm7→C7→F’. A *chord shuttle* (oscillation between two chords) is indicated by a double-headed arrow, e.g. ‘i↔IV’, ‘Gm7↔C’. *Chord loops* — short repeated sequences of usually three or four chords— are delimited by arrows turning horizontally through 180° before and after the relevant sequence, e.g. ‘↵I-vi-IV-V↵’, ‘↵F-Dm-Bb-C↵’.

DIAGONAL ARROWS are used to indicate PITCH DIRECTION, e.g. the descending character of an Andalusian cadence $iv \searrow bIII \searrow bII \searrow I$. They are also used to distinguish between intervallic leaps like $c \searrow e$ (a falling minor sixth) and $c \nearrow e$ (a rising major third).

Confusion can arise between capital letters indicating key (*Tonart*) and those acting as label for a SECTION in the music under discussion; for example, ‘A is in B and B in A in this AABA tune by Abba’. As a general rule I put *musical section letters in italics between single quotes* (e.g. “the ‘A’ section in [the key of] A” [roman, no quotes]), or refer to it as ‘V’ (for verse), or ‘R’ for refrain, etc.³⁰

29. C clefs are not used in this book.

30. I once used letters from the end of the alphabet to label sections (WXYZ) but it was problematic. Should AABA become WWXW or ZZZY (reverse order)?

Language and typography

Pronunciation

A phonetic font is occasionally used to suggest the UK pronunciation of words according to the symbols shown in Table 3.

Table 3. *Phonetic symbols for ‘BBC English’*

ɑ:	<u>ah!</u> , <u>harp</u> , <u>bath</u> , <u>laugh</u> , <u>half</u>	ɔ	<u>hot</u> , <u>what</u> , <u>want</u> , <u>Australia</u>
æ	<u>hat</u> , <u>cat</u> , <u>map</u> , <u>Africa</u>	o:	<u>or</u> , <u>oar</u> , <u>awe</u> , <u>war</u> , <u>all</u> , <u>taught</u> , <u>ought</u>
aɪ	<u>eye</u> , <u>I</u> , <u>my</u> , <u>fine</u> , <u>high</u> , <u>hi-fi</u>	ɔɪ	<u>boy</u> , <u>coil</u> , <u>Deutschland</u>
aʊ	<u>down</u> , <u>about</u> , <u>Bauhaus</u> , <u>cow</u> , <u>now</u> (not <i>know</i> [nəʊ]), <u>plough</u> (cf. o: and əʊ)	ə	<u>about</u> , <u>killer</u> , <u>tutor</u> , <u>nation</u> , <u>currant</u> , <u>current</u> , <u>colour</u> , <u>fuel</u> , <u>little</u> , <u>liar</u> , <u>lyre</u> , <u>future</u> , <u>India</u> , <u>confer</u> , <u>persist</u> , <u>adapt</u>
ð	<u>the</u> , <u>that</u> , <u>breath<u>e</u></u> , <u>clothes</u> , <u>alth<u>o</u>ugh</u> , <u>weath<u>e</u>r</u> (cf. θ)	ə:	<u>circumspect</u> , <u>fern</u> , <u>fir</u> , <u>fur</u> , <u>learn</u> ,
dʒ	<u>jazz</u> , <u>John</u> , <u>gin</u> , <u>footage</u> , <u>bridge</u> , <u>Fiji</u> , <u>Django</u> (cf. ʒ)	əʊ	<u>no</u> , <u>know</u> , <u>toe</u> , <u>toad</u> , <u>cold</u> , <u>low</u> , <u>alth<u>o</u>ugh</u> , (cf. aʊ, o:)
ɛ	<u>help</u> , <u>better</u> , <u>measure</u> , <u>leisure</u>	ʃ	<u>sh<u>i</u>rt</u> , <u>stat<u>i</u>on</u> , <u>Sean</u> , <u>champagne</u> , <u>Niš</u>
ɛ:°	<u>air</u> , <u>bear</u> , <u>bare</u> , <u>there</u> , <u>they’re</u>	tʃ	<u>ch<u>u</u>rch</u> , <u>cello</u> , <u>future</u> , <u>Czech</u> , <u>háček</u>
ɛɪ	<u>date</u> , <u>day</u> , <u>wait</u> , <u>station</u> , <u>email</u> , <u>patient</u> , <u>hey!</u>	θ	<u>th<u>i</u>nk</u> , <u>th<u>r</u>ow</u> , <u>noth<u>i</u>ng</u> , <u>cl<u>o</u>th</u> (cf. ð)
ɪ	<u>it</u> , <u>fit</u> , <u>minute</u> , <u>pretend</u>	ʌ	<u>but</u> , <u>luck</u> , <u>won</u> , <u>colour</u>
i:	<u>sees</u> , <u>seas</u> , <u>seize</u> , <u>Fiji</u> , <u>email</u>	u:	<u>food</u> , <u>cool</u> , <u>rule</u> , <u>rude</u> , <u>through</u> , <u>threw</u>
ɪ:°	<u>hear</u> , <u>here</u> , <u>beer</u> , <u>pier</u>	ʊ	<u>foot</u> , <u>look</u> , <u>bush</u> , <u>put</u>
j	<u>yes</u> , <u>use</u> , <u>Europe</u> , <u>Göteborg</u> , [jɔetsə'bo:ɹj], <u>Jaroslav</u> [ˈjɑrɔslav]	ju:	<u>use</u> , <u>few</u> , <u>future</u> , <u>new music</u> , <u>tune</u> , <u>queue</u> [kju:]
ŋ	<u>singing</u> , <u>synchronise</u> , <u>think</u> , <u>gong</u> , <u>incredible</u> ,	ʒ	<u>genre</u> [ˈʒɑ:nrə], <u>vision</u> , <u>measure</u> , <u>João</u> , <u>montage</u> , <u>Rózsa</u> , <u>Zhivago</u> , <u>Žižek</u>
° = start of stressed syllable		: = long vowel	

Spelling and punctuation

Spelling generally follows the in-house style of the Cambridge University Press journal *Popular Music*, for example REALISE, ADVERTISEMENT, ORGANISATION, COLOUR, TRAVELLED, FOCUSsing, CENTRE, PROGRAMME, etc. (not REALIZE, COLOR, TRAVELED, CENTER, etc.).

Default quotes are single ‘like this’, while quotes within quotes are double, ‘I mean “like this” inside this’.

Capitals and italics

CAPITALS are in general used according to the norms set out in section 6.9 of *Assignment and Dissertation Tips* (Tagg, 2001).

Mode names

In written English, distinction is made between *Roman*, which means relating to Rome or its inhabitants, and *roman*, which does not, as in ‘roman font’ or ‘roman letters’.³¹ It also applies to the difference between *Lydian*, meaning relative to the province or people of Lydia, and *lydian*, as in the ‘lydian mode’, as well as to the distinction between *Phrygian* and *phrygian*, *Dorian* and *dorian*, etc. Since those cultures and ethnic identities are long gone, the modes named after them have for many centuries been a mere convention bearing no relation to the peoples whose names they once bore. That’s why *ionian*, *dorian*, *phrygian*, *lydian*, *mixolydian*, *aeolian* and *locrian* start with a lower-case letter when qualifying modes. Other mode names like *Gypsy*, *Kurd* and *Hijaz* do relate to existing places, peoples or cultures and *are* spelt with an initial capital.

Small capitals

SMALL CAPITALS are used for four purposes, the first three of which occur in the main body of text.

[1] To save space and to avoid having to insert hyphens or inverted commas when introducing a short string of words, often used adjectivally, to denote an integral concept, for example: *The MUSIC IS MUSIC myth lives on in the jazz conservatoire*.³²

[2] To highlight an IMPORTANT TERM, especially when it’s introduced for the first time.

[3] To save page space with frequently recurring capital-letter abbreviations, e.g. DVD and MIDI instead of DVD and MIDI.

[4] To facilitate quicker identification of alphabetically ordered entries in the Reference Appendix.

Italics

Italics are in general used according to the norms set out in section 6.10 of *Assignment and Dissertation Tips* (Tagg, 2001).

31. Roman letters are so named regardless of where such script may have originated. *Rōmanji*, Japanese for *roman*, means roman lettering (like here) as opposed to more indigenous types of script (*katakana*, *hiragana*, *kanji*).
32. This convention is derived from Lakoff and Johnson (1979).

*Other practicalities**Abbreviations*

Abbreviations are explained in the Glossary (p. 479, ff.).

Timings and durations


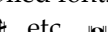

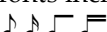
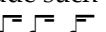










Most recordings exist in digital form and digital playback equipment includes real-time display. That's why the exact indication of musical events is mainly presented in terms of timecode location. With '0:00' indicating the start of the recording in question, '0:56' means at a point 56 seconds after 0:00. Durations are expressed in the same form, e.g. '4:33' meaning 4 minutes and 33 seconds.

Footnotes

The software used to produce this book, Adobe FrameMaker v8.0, has an irritating bug: if there isn't enough room at the bottom of the page for the complete text of a footnote, the software puts the entire footnote text at the bottom of the following page, rather than starting the footnote text at the bottom of the correct page and continuing it on the next one. Therefore, if there is no text at the bottom of the page on which a footnote flag number occurs in the main body of text, do not be alarmed. The complete footnote text will appear at the bottom of the following page.

Occasionally the same footnote number³³ occurs twice in succession, like this.³³ That is intentional. Both refer to the same footnote.

Fonts

I have been asked about the fonts I use in my writings. I compile them from various sources. They can be downloaded for free. Go to  tagg.org/zmisc/FontKeys.html and look under 'Four useful home-compiled fonts'. The fonts include such characters as x ♯ # ♭ ♮ d ♯ # ♯, etc., , etc., , etc.,  ♯ ♭ maj add dim sus aug omit no + - - 1 1 1 2 2 2 3 3 3 3 ♭ # # ♯, etc.,  4[♯] 4_♯ 4_♭ 4[♯] 4[♯] 5[♯] 5_♯ 4_♯ 4_♯ 4_♯ 5_♯ 6_♯ 7_♯ 7_♯ 7_♯ 8_♯ 8_♯ 9_♯ 9_♯ 2 4 5 8 etc.,    (R) (P) (P)        etc. You'll also find a pho-

33. Both in-text references are intended to link to this same single footnote.

netic font [fəʊ^hɛtɪk] (used in Table 3, p. 39), as well as both a Cyrillic (Кириллица) and a Greek polytonic keyboard (ὁ ὕθμός, ἡ ἄρμονία, ἡ ᾠδή, ἡ μελογραῖφία) plus instructions for producing simplified Chinese characters, e.g. 中国音乐通 . You can also type *Dvořák* (real Czech name) rather than ‘Dvorak’ (anglocentric), *leçon* (decent) rather than ‘leçon’ (obscene), *Ångström* (real Swedish name) instead of ‘Angstrom’ (anglocentric), etc.

Acknowledgements

I'd like to thank Franco Fabbri (Milano) for having persuaded me to start on this book and for encouraging me in my struggle with it. He has helped on several occasions in preparing this edition with his guitar-playing skills, his knowledge of Richard Thompson's oeuvre and with general advice about what and what not to include. He and Bob Davis (Leeds) have been my main 'go-to' people whenever I got stuck or felt unsure if I was on the right track. I'm also indebted to Kaire Maimets (Tartu) for her critical reading of this edition, for her corrections and constructive suggestions, as well as for encouragement and moral support.

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1. *Note, pitch, tone*

Many languages have no direct equivalent to the word MUSIC but no culture is without what we call ‘music’. In several European languages MUSIC, or its equivalent, seems to mean a form of inter-human communication based on non-verbal sound, a symbolic system often associated with other forms of communication like language, dance and drama.¹ Since this book is about the tonal elements of everyday music and since tones are a particular subset of musical sounds, I’ll obviously need first to define *tone* and *tonal* but it’s difficult to do that without using two very basic musical terms: *note* and *pitch*.

Note

When talking about music, *note* can mean three different things:

1. any single, minimal, discrete sound of finite duration in a piece of music;
2. such a sound with discernible fundamental pitch (p. 61, ff.);
3. the duration, relative to the music’s underlying pulse (tempo), of any such sound, pitched or unpitched.

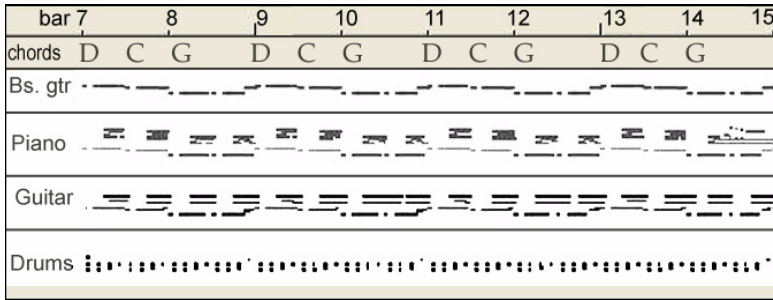
According to the third meaning, and as evidenced by German and North American uses of the word, *note* can refer solely to the relative *duration* of a minimal musical sound event, for example *ganze Note* or ‘whole note’ (♩, semibreve, *ronde*, etc.), *Viertel* or ‘quarter note’ (♪, crotchet, *noire*, etc.). This use of *note* in the sense of ‘note value’ – and with *value* in this sense relating only to duration – is of marginal interest to the definition of *tone*, so let’s concentrate on the first two meanings of *note*.

Note in its musical sense originally referred to the scribal marking of a minimal element of articulation on the page, but the word has in English come to denote any discrete minimal sonic event in music without reference to lines, blobs or squiggles on paper. It is this meaning that is used in, for example, MIDI sequencing where a note

1. For more about concepts of *music*, see Tagg (2013: 44-73).

is identified by such factors as: [i] the points at which a given sound event will start and end in a piece of music; [ii] the type of sound (timbre, volume, attack, envelope, decay) that will occur at that point in time; [iii] (if the note is pitched) the frequency at which the sound will be articulated.

Fig. 2. *Sweet Home Alabama* (intro extract): partial MIDI piano roll view (Lynyrd Skynyrd, 1974)



The horizontal aspect of Figure 1 shows some variation of note length in all parts except for the drumkit with its regular hi-hat, snare and kick drum hits. Little dots indicate not only those very brief events but also the very short anacrusic notes in the bass and piano parts. Small horizontal bars show the relative duration of normal-length notes. The *pitch* of each note is visualised vertically for all instruments except for the drumkit, each of whose constituent parts (hi-hat, snare, etc.) is assigned its own ‘pitch’ line with the bass drum at the bottom and cymbals plus hi-hat on top. Other encoded note information — volume, timbre, attack, envelope, decay, etc. — is not shown in MIDI piano roll screens.

According to this, the first and most important meaning of the term, a NOTE is, as stated above, *any single, discrete sound of finite duration within a musical continuum*. It can have any timbre and it can be long, short, high, low, loud, soft, etc. However, although a note may theoretically have any duration, it is difficult to perceive as such if it sounds for less than about thirty milliseconds (♩ at ♩=120) or for more than about ten seconds (♩ at ♩=120). This seems to be why certain types of ornamentation, which from a technical viewpoint involve more than one ‘note’, are generally

perceived as single notes of a particular type (e.g. drum rolls, tremolandi, vibrati, fast trills), while extremely long notes are heard as pedals or drones. Similarly, every note played on a mandolin or twelve-string guitar consists strictly speaking of two ‘notes’ because each string pitch is doubled and because those two strings can never be in total unison. The same goes for several other instruments, including the French *accordéon musette* whose every note consists of two pitches very slightly out of tune with each other to create the instrument’s characteristic sound. In all these cases the STRICTLY SPEAKING TWO (OR MORE) PITCHES TO EACH NOTE phenomenon is intrinsic to the identity of the sound as a single entity and should in general be regarded as just one note.² In any case that’s how musicians tend to treat those sounds and that’s how listeners identify them. Still, it’s really the second meaning of *note* that relates most directly to the subject of this book: —a discrete sound of finite duration... with easily *discernible fundamental pitch*.³

Pitch

In acoustic terms, PITCH is that aspect of a sound which is determined by the rate of vibrations producing it and which can be denoted in acoustic terms as a frequency, for example ‘440 cycles per second’ or ‘440 Hertz’. 440 Hz also happens to be standard concert pitch in the West and is situated four octaves⁴ above the bottom note on most pianos (a = 27.5 Hz) and three octaves below the instrument’s highest a (3520 Hz). Words like ‘above’, ‘below’, ‘top’ and ‘bottom’, not to mention the French and German words for musical pitch (*hauteur* and *Tonhöhe*),⁵ all indicate that our cultures conceptualise pitch on a vertical axis covering the range of low, medium and high frequency sounds that humans can hear. This metaphor of vertical placement —high-frequency sounds on top, low-frequency sounds down below— is so strong that we use

2. Differences between *tone* and *timbre* are discussed on p.58, ff.
3. The two main note-naming systems are explained on p.49, ff. Fundamental pitch is explained on pages 61-62.
4. *Octave*: see Chapter 2, p.65, ff.
5. French *hauteur* = lit. height; German *Tonhöhe* = lit. tone height.

terms like ‘high e’ to designate the guitar string situated lowest in playing position and ‘low e’ when referring to what is visually the top string when making music on the guitar. This anomaly suggests that synaesthesia may be more important than visual observation in our spatial conceptualisation of pitch. High pitch is in general much more likely to be associated with light in both the ‘not dark’ and ‘not heavy’ senses of the word, not least because small gusts of wind can scatter feathers, leaves, plastic bags and other small, light objects, blowing them up into the air —towards the sky, the clouds and the sun— whereas heavy objects tend to be larger, more difficult to move and therefore more likely to stay down on the ground, which is understandably imagined as darker and heavier than air. Indeed, not only do large heavy objects tend to need lots of energy —a tornado or vast amounts of jet fuel, for example— to get them off the ground; their very weight and inertia makes them appear less volatile and less mobile, more likely to be understood as heavy, dark and massive rather than quick, light and small.⁶ Besides —and with apologies for the tautology— babies and small children have smaller bodies and vocal equipment producing ‘higher’, ‘lighter’ sounds than grown-ups. The process whereby male voices break and descend an octave or so at adolescence further reinforces the synaesthetic patterning just described, as does the fact that singers tend to use the head register to produce high notes, the chest register for low ones.

Moreover, you are much more likely to feel the vibrations of a loud bass instrument in the stomach whereas, for example, dissonant high-pitched sounds are often used in film music as a sort of sonic headache to accompany scenes of madness, relentless sunlight, etc. Whatever the reasons may be for spatially conceptualising pitch vertically rather than horizontally, it is clear that pitch, —low, medium or high— is, along with volume and timbre, an essential element allowing humans to distinguish between sounds, for example between a hi-hat and a big gong struck in the same way or

6. In French, for example, high and low pitch are referred to as *aigu* (= ‘sharp’, ‘acute’) and *grave* (= ‘deep’, ‘solemn’) respectively.

between the top notes of a piccolo and the lowest ones played on alto flute played at the same volume with the same sort of attack for the same duration.

There’s an obvious problem at the end of the previous paragraph because the high or low pitch of flute notes is different from the high or low pitches of cymbals or gongs, even though the sound of a big gong contains a lot of low frequencies and the hi-hat sounds high. We’ll return to that contradiction at the start of the section *Tone, tonal, tonality* on page 51.

Tonal note names

It’s impossible to explain concepts of tone and tonality without referring to notes by name. There are two basic ways of referring to those ‘single, discrete sounds of finite duration and with easily discernible fundamental pitch’: *absolute* or *fixed* and *relative* or *movable*.

Fig. 3. *Absolute (fixed) note names in English, French and German*

ENGLISH	A	B double flat	B flat	B (natural)	C	C sharp	D flat	D	D sharp
FRENCH	La	Si double dièse	Si bémol	Si bécarre	Do	Do dièse	Ré bémol	Ré	Ré dièse
GERMAN	A	Bes	B	H	C	Cis	Des	D	Dis

ENGLISH	E flat	E	F	F sharp	F double sharp	G flat	G	G sharp	A flat
FRENCH	Mi bémol	Mi	Fa	Fa dièse	Fa double dièse	Sol bémol	Sol	Sol dièse	La bémol
GERMAN	Es	E	F	Fis	Fisis	Ges	G	Gis	As

Absolute note names in English and German occupy the first few letters of the alphabet. They usually designate notes of previously and unequivocally determined fundamental pitch, like the note **a** at 440 hz or **c#** at 554.37 hz.⁷ The Latin convention, exemplified by French names in Figure 3, and used in parts of Eastern Europe as well as throughout the Latin world, serves the same purpose but can cause confusion with the *relative* pitch names of TONIC SOL-FA

7. Transposing instruments produce named notes at other pitches. For example, the three notes **c-d-e** played on a **Bb** trumpet sound **bb-c-d** in absolute terms, **eb-f-g** if played on an **Eb** saxophone, **a-b-c#** if played on a clarinet in A. Conversely, the same absolute note **e** is **f#** on **Bb** trumpet, **c#** on **Eb** saxophone, **g** on a clarinet in A and **b#** on a horn in F. Fundamental pitch: see pp. 61-62.

used to designate types of tonal material like the heptatonic *la* (aeolian) and *doh* (ionian) modes shown in Figure 4. The point is that *la*-modes do not have to be in A (French *La*) any more than a *doh*-mode has to be in C (French *Do*), just because they are the two tonics on which those modes are constructed using only the white notes of a piano keyboard. For example, the lower half of Figure 4 shows *la* set to D (*Ré*) and *doh* to F (*Fa*). In fact, both modes can have any of the Western octave's twelve tones as tonic (pp. 53, 93, ff.).

Fig. 4. *Absolute and relative note designation*⁸

la=A/*La*
doh=C/*Do*

English note names a b c d e f g a b c
French note names *La* *Si* *Do* *Ré* *Mi* *Fa* *Sol* *La* *Si* *Do*
Tonic sol-fa *la* *ti* *doh* *ré* *mi* *fa* *sol* *la* *ti* *doh*
Scale degrees in doh → 1̂ 2̂ 3̂ 4̂ 5̂ 6̂ 7̂ 8̂ (=1̂)
in la 1̂ 2̂ 3̂ 4̂ 5̂ 6̂ 7̂ (8̂=1̂)

la=D/*Ré*
doh=F/*Fa*

Scale degrees in doh → 1̂ 2̂ 3̂ 4̂ 5̂ 6̂ 7̂ (8̂=1̂)
in la 1̂ 2̂ 3̂ 4̂ 5̂ 6̂ 7̂ (8̂=1̂)
Tonic sol-fa *la* *ti* *doh* *ré* *mi* *fa* *sol* *la* *ti* *doh*
French note names *Ré* *Mi* *Fa* *Sol* *La* *Si* *Do* *Ré* *Mi* *Fa*
English note names d e f g a bb c d e f

The problem with the Latin note-naming convention is in other words that it's not instantly clear if, for example, *la* means *La* in absolute terms (e.g. a at 440 hz), or if it means *la* relatively, as in tonic sol-fa. If *la* is relative, it might be the note a as scale degree 6 (6̂) in C major, or as scale degree 1 (1̂, the tonic) in A minor. *La* could also be f# (Δ6̂) in A major or the tonic (1̂) in F# minor. To avoid such confusion I'll stick to the English-language note-naming convention and use the tonic-solfa mainly to refer relatively to mode types like 'ré-pentatonic' (p. 156), 'doh-sol hexatonic' (p. 169), etc. The arabic numerals in Figure 4 are entirely relative once an agreed pitch is established as tonic (1̂). They simply express the seven basic scale

8. The top half of this example shows only simple heptatonic scale note names using only the white notes of a piano keyboard.

degrees of any heptatonic mode, with the tonic as scale degree 1 ($\hat{1}$). The Northern Indian relative note names (*sa ri ga ma pa dha ni*) follow a similar principle to heptatonic scale-degree indications by number. *Sa*, like ‘one’, is always the keynote or tonic ($\hat{1}$), *pa* always the fifth degree ($\hat{5}$, ‘five’), whether or not the tonal material sounds to a Westerner like a minor (*la*), major (*doh*) or thirdless mode and no matter which fundamental frequency is assigned to *doh* or *sa*.

Tone, tonal, tonality

On page 49 I raised the issue of difference between notions of pitch applied to the flute and those applied to the high pitch of a hi-hat and to the low pitch of a large gong. The difference is of course that flute notes, high or low, almost always have one clearly discernible fundamental pitch while, for example, hi-hat, snare drum and gong notes do not. It is this factor of discernible fundamental pitch that determines whether the note in question is a *tone* rather than just a *note*. TONE will therefore be used in this book to mean A NOTE OF DISCERNIBLE FUNDAMENTAL PITCH.⁹ Now, if you believe in absolute natural-science truths, you may dislike this definition because ‘discernible’ implies that, despite some grounding in acoustic physics (periodic versus. aperiodic sounds, etc.),¹⁰ awareness of fundamental pitch also relies on culturally acquired patterns of perception. That is certainly a correct observation but hardly a valid objection to the definition since music, even the concept itself, is, as intimated earlier, an intrinsically social and cultural phenomenon whose understanding *de facto* requires social and cultural consideration. A much more serious problem is caused by conflicting meanings of the adjective *tonal* and its abstract-noun derivative *tonality*.

Tonal logically means relating to or having the character of a *tone* or of tones, as defined in the previous paragraph. However, in con-

9. Fundamental pitch is explained on pages 61-62.

10. Periodic sounds are those whose sound wave rates (pitch, cycles per second, Hertz, etc.) are steady and give rise to discernible fundamental pitch. Aperiodic sounds exhibit no such regularity and produce no discernible fundamental pitch. Differences between tone and timbre are explained on p.58, ff.

ventional Eurocentric music theory *tonal* is still often used in two ways that fly in the face of lexical logic and of cultural common sense. The first of these is the binary opposition between *tonal* and *atonal*, the second that between an implicit and self-proclaimed ‘*tonality*’ and music based on tonal principles other than those of no more than just one type of tonal music.

‘*Tonal*’ and ‘*tonical*’

The most obvious terminological anomaly in conventional music theory is probably the dichotomy TONAL versus ATONAL. Schönberg certainly objected to his music being labelled ‘*atonal*’ because his compositional norms were defined by *tonal* rules, by TWELVE-TONE (*zwölf-ton*) techniques. After all, neither he, nor Berg, nor Webern were famous for their use of atonal sounds (*atonal* in the logical sense of ‘no tones’).¹¹ There just isn’t much hi-hat, snare drum or sampled traffic in their *œuvre*. It may seem bizarre, but euro-classical music theorists managed to confuse the notion of music containing no intended *tonic*, as in the work of twelve-tone composers, or in Herrmann’s music for the shower scene in *Psycho* (1960), with music containing no *tones*, as in, say, *taiko* drumming (e.g. Kodō, 1985) or in Herrmann’s cue for the scene ‘Crows attack the students’ in Hitchcock’s *The Birds* (1963).

Using appropriate linguistic derivatives, there are at least two conceivable solutions to this confusion between *tone* and *tonic*: the ‘-AL, -ALITY, -ALIST’ and the ‘-IC, -ICAL’ patterns set out in Table 4.

TONE, TONAL and TONALITY follow the linguistic logic of CENTRE - CENTRAL - CENTRALITY and FORM - FORMAL - FORMALITY but, unlike those examples of that pattern, TONE has no adjective deriving from the abstract noun TONALITY. Unlike CENTRALIST or FORMALIST, TONALIST[IC] just doesn’t exist. If it did, it could qualify *tonal music with a TONIC or TONAL CENTRE*, while ‘non-tonalist’ or ‘atonalist’ could denote tonal music with none. However, apart from sound-

11. The ‘a’ prefix to ‘tonal’, as in *atonal* is an alpha privative (e.g. *ahistorical* = without history; *amoral* = with no morals. ‘Atonal’ logically means without tones and therefore without tonality, *not* tonal but devoid of a tonic.

ing like the name of a political movement ('we tonalists will introduce free ringtone downloads after the next election'), NON-TONALIST would imply that tonal music with no intended tonic had no tonality in the sense defined earlier, no system according to which tones were configured. Since that is patently untrue of twelve-tone music, whose tonal rules are clearly codified, the only logical solution is to use the second pattern of derivation to create an adjective ending in -AL on the basis of a noun ending in -IC.

Table 4. *Solutions to terminological confusion between tone and tonic*

Pattern 1: – , –al, –ality, –alist			
<i>root noun</i>	<i>adjective 1</i>	<i>abstract noun</i>	<i>adjective 2</i>
centre	central	centrality	centralist
form	formal	formality	formalist
sense	sensual	sensuality	sensualist
TONE	TONAL	TONALITY	TONALIST?
Pattern 2: –ic, –ical			
<i>noun</i>	<i>adjective</i>	<i>noun</i>	<i>adjective</i>
comic	comical	clinic	clinical
ethic[s]	ethical	magic	magical
music	musical	rhetoric	rhetorical
polemic	polemical	tropic[s]	tropical
statistic[s]	statistical	TONIC	<u>TONICAL</u>

Pattern 2 in Table 4 suggests that, just as CLINICAL things happen in CLINICS, just as the weather is TROPICAL in the TROPICS, and just as RHETORICAL devices (like the 'just as' anaphora of this sentence) are used in RHETORIC, tonal music featuring a TONIC should be called TONICAL and tonal music that does not ATONICAL or NON-TONICAL. At least that rids us of the embarrassingly illogical use of 'atonal' and 'atonicity'.

Here I need to underline that I'm not using TONIC in the restrictive sense of euroclassical music theory, where it implies the existence of a 'dominant' etc., but as simple shorthand for TONAL CENTRE, i.e. *a central reference tone in any tonal idiom*.

The second item of terminological disorder in conventional European music theory about *tonal* and *tonality* isn't just questionable: it's also more insidious.

'Tonal' and 'modal'

Let me start with an analogy. I once overheard a French student on exchange at the Université de Montréal saying to one of her *québécois* classmates *'Mais vous avez tous un accent ici'*. I was struck by the chauvinism of her observation, not least because she was attending the oldest francophone university in the francophone world's second largest city. It's probably less surprising that, here in the UK, it was only a few decades ago that 'talking with an accent' (i.e. in any other way than that considered correct at 'public' (=private) schools or at Oxbridge) was considered acceptable for BBC announcers and newsreaders.

The analogy between the notion of speaking 'with an accent' and making 'modal music' should be clear. According to such chauvinist thinking it matters not, so to speak, if more people 'speak with an accent' than use 'received pronunciation', or if they make music using tonal idioms that differ from those of the euroclassical or jazz canons. In both cases the former, usually practised by a majority, is given a label implying deviation from norms established by a hegemonic minority.¹² Indeed, 'modal music' in conventional music theory came to mean music in any other mode than the two used in the euroclassical repertoire of the eighteenth and nineteenth centuries. Those two modes, discussed in Chapter 3, are of course the heptatonic *major scale* (ionian) and the heptatonic *minor scale* which has three variants, two of which are *ionianised* (not 'ionised!').¹³

In conventional music theory, tonal vocabularies using the euroclassical major and ionianised minor modes are often qualified as 'tonal', as if all other modes were not also tonal, as if their distinc-

12. Modes were often named after the peripheral regions of which they were, from a centralist perspective (e.g. Athens, Baghdad, Central Europe), considered typical (e.g. Lydia, Phrygia, Hijaz, Kurd, 'Gypsy'; see pp. 112-145).

13. As argued in Chapter 3 (pp. 90-92), euroclassical tonality uses less than two modes. The major scale ascends $\hat{1} \hat{2} \hat{3} \hat{4} \hat{5} \hat{6} \hat{7}$ (ionian); the 'melodic minor' ascends $\hat{1} \hat{2} \flat\hat{3} \hat{4} \hat{5} \hat{6} \hat{7}$ (ionianised with $\Delta 6$ and $\Delta 7$), the 'harmonic minor' $\hat{1} \hat{2} \flat\hat{3} \hat{4} \hat{5} \flat\hat{6} \hat{7}$ (ionianised with $\Delta 7$), while the 'non-ionianised' aeolian ('descending melodic minor') runs $\hat{8} \flat\hat{7} \flat\hat{6} \hat{5} \hat{4} \flat\hat{3} \hat{2} (\hat{1})$.

tive tonal traits were not also defined by the way their constituent tones are configured. Conversely, the ionian mode ('major scale'), the most common tonal vocabulary in the euroclassical repertoire, is rarely considered a mode in conventional music-theory circles 'because', I've heard people say, 'it's tonal, not modal!' This tautological travesty not only ethnocentrically relegates 'modality' to a state of alterity divergent from a unilaterally hijacked 'tonal' norm; also, by excluding the ionian from the realm of modality, it prevents us from investigating which characteristics of that mode may have led to its importance and popularity in Europe in the seventeenth through nineteenth centuries.¹⁴

The terminological appropriation of 'tonal' to refer to just one set of tonal practices during a brief period in the history of the world's smallest continent is, to say the least, problematic. The false dichotomy 'tonal v. modal' is just one example of the confusion, the terms 'pre-tonal' and 'post-tonal' another, since they both patently imply that music from medieval and early Renaissance Europe ('pre-') is as devoid of tones as twelve-*tone* music ('post-tonal', 'atonal', etc.). But that's not all because, for example, anhemitonic pentatonicism has been in widespread use all over this planet before, during and after the so-called 'tonal' period. And what about the common use of tertial ionian harmony in today's supposedly 'post-tonal' era?

14. It's worth remembering that only two of the seven European heptatonic 'church' modes (ionian and lydian) contain raised subtonics ('leading notes', $\hat{4}\hat{7}$) and, in terms of harmony, that only the ionian mode features tertial major triads on the prime, the perfect fourth and the perfect fifth. Did the semitonal pull towards the tonic triad of notes inside the other two tertial major triads, one descending ($\hat{4}\hat{\vee}\hat{3}$ in IV-I) and the other ascending ($\hat{7}\hat{\wedge}\hat{8}$ in V-I), make for a stronger type of tonal directionality than those found in other European heptatonic modes? Did the popularity of the ionian mode, with its $\hat{4}\hat{7}$, lead to alteration of the subtonic in two of the euroclassical tradition's three minor-mode variants? Did the ionian mode's two leading notes, one rising and the other falling, make it more conducive to modulation than other available modes? Could any of those other modes have ever led to the development of extensional harmonic narrative, as in the sonata form of the first movement in a Beethoven symphony? I cannot answer any of these questions but I also fail to see how any light can be shed on such matters if the ionian is not considered as one mode among several.

This unilateral and restrictive confiscation of ‘tonal’ has obvious repercussions on the notion of TONALITY.

Tonality, Tonart, Tonalité, Tonicity, Tonicality

‘TONALITY’ is still used by some scholars of music to denote the practices they consider ‘tonal’ in the restrictive sense just criticised. Used in that way, ‘tonality’ refers to one system, and one only, according to which tones are configured. Just imagine if GRAMMATICALITY referred to the grammatical rules of only one language or group of languages, for example to English or to Neo-Latin and Germanic languages, in which correct use of definite and indefinite articles is a central element of grammaticality. Such restrictive use of the term would mean that Chinese, Farsi, Hindi, Indonesian, Japanese, Russian and hundreds of other widely spoken languages which feature neither definite nor indefinite articles would be considered ungrammatical. While such an implication would cause uproar among serious linguists, most music theorists seem blithely content to accept the equally ethnocentric use of *tonal* and *tonality*. That’s plain wrong and it’s why in this book TONALITY will mean *the system or set of norms according to which tones are configured in any musical culture*. However, even if that much less ethnocentric definition solves one important problem, it raises another.

The broader definition just presented works well in English and in Germanic languages where TONALITY/TONALITÄT is distinguished from the concept of KEY/TONART. In Neo-Latin languages, however, TONALITÉ, TONALITÀ, TONALITATE, TONALIDAD and TONALIDADE tend to mean KEY/TONART rather than TONALITY/TONALITÄT which, consequently, requires another expression to clarify the distinction. As a native anglophone I am not in a position to advise speakers of Catalan, French, Italian, Spanish, Portuguese or Romanian how TONALITY/TONALITÄT should be translated, but I used to suggest that students at the francophone Université de Montréal might consider, at least as a stop-gap solution, an expression like *IDIOME TONAL* or *SYSTÈME TONAL* to cover the concept TONALITY/TONALITÄT and stick to the more common use of TONALITÉ as equivalent to the Anglo-Germanic concept of KEY/TONART.¹⁵

There's also a minor problem with the word TONICITY, an abstract noun based on the noun TONIC meaning a musical keynote or reference tone. While TONIC-TONICITY (noun - abstract noun) seems to be linguistically analogous to PLASTIC-PLASTICITY, *plasticity* is in fact the abstract noun deriving not from the noun but from the *adjective* PLASTIC (= malleable), in the same way as *eccentricity*, *elasticity*, *electricity*, *historicity*, *periodicity*, etc. all essentially derive from adjectives —*eccentric*, *elastic*, *electric*, *historic*, *periodic*—, not from nouns. The point is that TONIC is a noun, not an adjective qualifying music that has a tonic. Since it would be confusing to use the same word —*tonic*— both as a noun to denote 'a musical keynote or reference tone' and as an adjective to qualify music with a tonic, the adjective TONICAL, will, following the argumentation presented earlier (p. 53, ff.), be used instead to qualify music that has a tonic and TONICALITY will be used as its derivative abstract noun to denote the quality of having a tonic.

To minimise the lexical anomalies (or absurdities) discussed above, here are the definitions used in this book.

- TONE (*n.*): a note with discernible fundamental pitch;
- TONAL (*adj.*): having the properties of a tone;
- TONALITY (*n.*): system according to which tones are configured;
- TONIC (*n.*): musical keynote or reference tone;
- TONICAL (*adj.*, neol.): having a tonic.
- TONICALITY (*n.*, neol.): the quality of having a tonic.

The most important conclusion here is that instead of using TONALITY to mean a highly restricted set of tonal practices, it will be used to cover any or all sets of tonal practices. Similarly, MODAL will not be used as an ethnocentric rag-bag label connoting tonal 'otherness' ('modal harmony', 'modal jazz', etc.) but as an adjective qualifying the abstraction and distillation of pitches in real music to an ordered array of single occurrences of those pitches (see pp. 85-94).

15. In a phone call (2011-12-04), Romanian music scholar Luana Stan (Iași/Montréal) told me that the *sistem tonal* denotes solely euroclassical ionian tonality in contradistinction to other tonalities such as *sistem atonal*, and *sistem modal* (all those 'non-tonal' modes!). If similarly muddle-headed notions exist in other Neo-Latin languages this problem will not be easily solved.

Other meanings of 'tone'

Tone means lots of other different things in relation to sound. It can, for example, refer to aspects of speech that express feelings or attitudes, as in 'I don't like your tone'. You can even like or dislike the tone of a letter someone has written to you without a sound being uttered. *Tone* can also refer to particular pitch sequences allowing speakers of languages like Chinese, Ewe, Navajo and Norwegian to distinguish between the meanings of phonetically otherwise identical words or syllables.¹⁶ *Tone* can sometimes even mean the same thing as *timbre*, as with the 'tone' knob on a Fender Stratocaster, where *tone* is short for *tone colour* meaning *timbre* (see below). More frequently, *tone* is also commonly used to mean not so much 'a note of discernible fundamental pitch' as the intervallic distance between two such tones, as in the expression 'whole tone', i.e. a major second, where frequency differences between the two notes are in the ratio 9:8. This interval (pitch difference) can also be understood as the step between degrees 1 and 2 or 4 and 5 in the standard Western major and minor scales. *Semitone*, a pitch step half the size just described, as between degrees 3 and 4 or 7 and 8 in the ionian mode (the standard Western 'major scale'), obviously derives from this intervallic sense of the word *tone*.

Timbre and tone

TIMBRE [ˈtæmbɹə] and its adjective TIMBRAL [ˈtɪmbɹəl] are words denoting acoustic features that allow us to distinguish between two notes, tonal or otherwise, sounded at the same pitch and volume.¹⁷ *Timbre*, sometimes also called 'tone quality' or 'tone colour' (*Klangfarbe*), is a complex acoustic phenomenon whose four basic phases were simplified by analogue synthesiser manufacturers in an 'ADSR' scheme: A for attack, D for decay, S for sustain and R for release. The properties of each of these elements, and

16. In Vietnamese *mā* (medium pitch), *mà* (low falling pitch) and *má* (high rising) mean 'ghost', 'but' and 'mother' respectively. In Swedish, *anden* can mean either 'the duck' or 'the spirit', *buren* can mean 'carried' or 'the cage', *slagen* 'the battles' or 'beaten', *viner* 'wines' or 'whistles' (*v*) and so on.

17. For many important articles about timbre, see ≡ *TIMBRE* (2005).

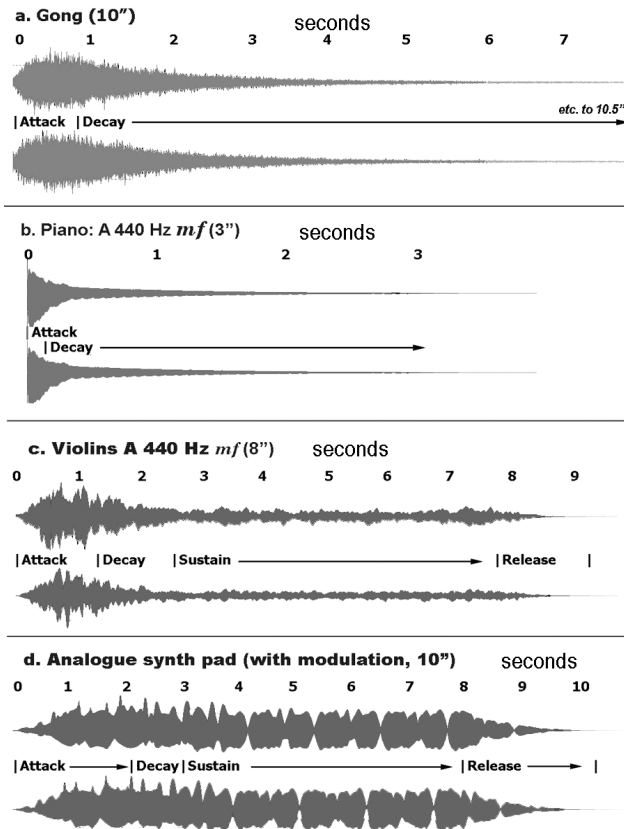
how those properties vary as the sound of a note is produced, continues and ends, determine the specific qualities of what we hear as timbre. That whole process from start to finish is called the ENVELOPE (Fig. 5, p. 60).¹⁸

The envelope of notes played on drums, piano and other percussion instruments, as well as notes on plucked acoustic instruments, consist of only attack and decay. Those played by bowed strings, woodwind, brass and electrically amplified instruments contain all four phases. The first type of note relies on a one-off action to produce a sound that can last from as little as just a few milliseconds (e.g. xylophone) to several seconds (e.g. large gong, loud held note on the piano, as in Fig. 5a and b). The second type is generated by ongoing action (bowing, blowing, electric current, etc., as with the violins and synthesiser in Fig. 5c and d.). These and other distinctions are essential to the understanding of how timbre is produced. However, for the purposes of this book the following three phases, explained next, will probably suffice: ATTACK, CONTINUANT and RELEASE.

ATTACK refers to the initial fraction of a note corresponding to the way the note is struck, hit, plucked, scraped, blown, etc. on an acoustic instrument, or 'attacked' by the voice. For example, it's easy to distinguish the same note of the same duration played at the same volume in the same position on the same string on the same guitar in the same room, if the instrument is plucked with the flesh of the thumb rather than with a plectrum.

RELEASE refers to the way a note ends. For example, xylophone and unsustained piano notes end more abruptly than piano notes played with the sustain pedal pushed down, or than undamped or unclipped notes on, say, guitar, French horn or cello. Release is often audible when violinists take their bow off the string at the end of a long note (Fig. 5c).

18. This ADSR model (Fabbri, 1984:54) describes how the overall *volume* of a given sound evolves, but excludes other important parameters like variations in frequency content in the course of the entire envelope.

Fig. 5. *Attack, decay, sustain release: four envelopes*

CONTINUANT is a term I've borrowed from phonetics where it means an extendable or sustainable consonant, like /r:/ as in 'RRREALLY!' or /ʃ:/ as in 'SHSHSH!' meaning 'be quiet!'.¹⁹ I've adapted *continuant* here to denote in a more reader-friendly way the ongoing 'body' of a note, i.e. the part that is most likely to be heard as tonal,

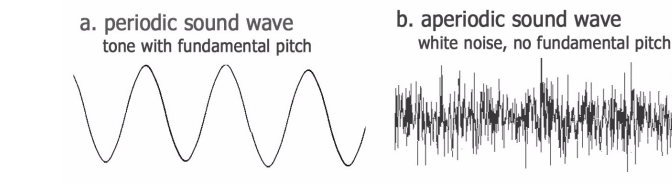
19. An extended /m/ is characteristic of humming, /s/ of hissing and /z/ of buzzing; other phonetic continuants in English are /ʒ/ (zh: 'GGGenre'), /n/ ('NNNever!'), /f/ ('FFF**k off!') and /v/ ('VVVicious!'). Continuants in other languages can make a lexical rather than prosodic difference: e.g. *ala* ['ala] (=wing) and *alla* ['alla] (=à la) in Italian; *caro* ['karo] (=dear) and ['karrɔ] (=wagon) in Spanish.

regardless of whether it's the decay of struck or plucked notes or the sustain part of notes generated in other ways. Timbral envelopes are perhaps easiest to conceptualise using onomatopoeias like *ding* and *pling* (two small bells?) or *twang* and *blang* (two electric guitar sounds?). The initial consonants represent the sound's attack, *ng* its release and the vowels its continuant (sustain and/or decay). Unless you're hearing, say, a xylophone or short, unsustained notes on piano or guitar, a note's continuant is usually, compared to the attack, a longer sound whose timbre is acoustically determined by its *frequency spectrum*, i.e. by how much of which frequencies it contains. And that, finally, is where FUNDAMENTAL PITCH comes in.²⁰

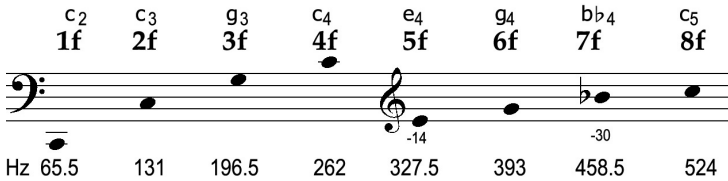
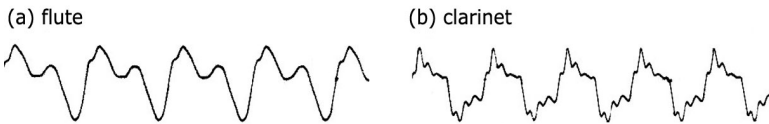
As we saw just saw, some sounds, like those of the hi-hat and a kick drum, although heard as high- and low-pitched respectively, are aperiodic (Fig. 6b): they have no audible fundamental pitch.

The frequency spectrum of tonal instruments and singing voices, on the other hand, is periodic (Fig. 6a) in relation to a *fundamental* (Fig. 7). Now, a tone sung or played at a particular pitch doesn't only consist of waves oscillating at the rate corresponding to that single pitch, its FUNDAMENTAL: it also contains the sound waves of *overtones or harmonics* (a.k.a. *partials*) oscillating at integral multiples of the fundamental's own frequency (Fig. 7, p. 62).²¹ How strongly which harmonics are present in which parts of an envelope is an essential aspect of timbre.

Fig. 6. *Periodic and aperiodic sound waves.*



20. Fig. 5 shows only each envelope's amplitude (loudness). Variations in the sound's frequency spectrum, e.g. the synth's stereo WAAH-OO-WAAH, the gong's BOI-OI-OI-NG effects and the violin sections use of vibrato aren't included.
21. Sine wave tones contain only the fundamental but all other tones, synthesised or natural, contain a fundamental *and* a specific configuration of overtones.

Fig. 7. Harmonic series based on fundamental pitch c_2 (65.5 Hz)Fig. 8. Sound waves for flute and clarinet at same fundamental pitch.²²

For example, flutes, whose spectrum contains a strong element at twice the fundamental frequency (2f, one octave higher), have a simpler spectrum than clarinets which lack that first harmonic (2f) and whose sound is characterised by the strong presence of a pitch three times the frequency of the fundamental (3f), one twelfth (one octave plus a fifth) higher. This basic difference in frequency spectrum is one reason why the same note at the same fundamental pitch and volume played on a flute and a clarinet produces two quite different sound waves enabling us to distinguish between the two instruments (Figure 8). The sound of a seriously overdriven guitar, as used in various (rock) metal styles, derives from the very strong presence of higher pitches in the frequency spectrum to the extent that individual overtones can occasionally emerge as if they were fundamental pitches.²³ Of course other timbral traits for other instruments, voices and sounds are determined by other combinations of frequencies specific to each of them.

22. Figure adapted from Wood (1962: pp.68-9).

23. This phenomenon is easiest to hear in feedback but also occurs in the normal course of events, e.g. as fifths (3f) at 1:28 in *Gimme All Your Lovin'* (ZZ Top, 1983) and as clear major thirds (5f) in the same tune's fade-out at 3:42. For more on 5f and $\Delta\hat{3}$, see sections 'Permanent Picardy third' and 'Power chord excursion' in Chapter 9 (pp. 276-284).

Summary in 15 points

1. A NOTE is a minimal, discrete sound of finite duration in music.
2. PITCH is that aspect of a sound which is determined by the rate of vibrations producing it —its acoustic FREQUENCY. Frequency is measured in Hertz (abbr. Hz).
3. TONE means a *note with discernible fundamental pitch* and TONAL is its adjective.
4. TONAL means *having the properties of a tone*. Notes can be tonal or non-tonal.
5. TONALITY is an abstract noun denoting the state or quality of being TONAL (§4, above). More specifically, TONALITY means *a system according to which tones are configured*.
6. TONALITY includes such phenomena as KEY (*Tonart*), MODE (Chapters 3-4), MELODY (Chapter 5), TONAL POLYPHONY (Chapter 6), CHORDS and HARMONY (Chapters 7-15). It also includes certain aspects of TIMBRE (§§11-14, below).
7. TONIC is a noun meaning *keynote or reference tone* for a piece or passage of music. Its adjective is TONICAL.
8. TONICAL qualifies music that has a tonic.
9. TONICALITY is the abstract noun derived from TONICAL. It means the state or quality of having a tonic.
10. *Music without a tonic* is NON-TONICAL (or atonal). Music without tones is non-tonal (or atonal). Twelve-tone music is non-tonal (or atonal). It is certainly not atonal.
11. TIMBRE (a.k.a. 'tone quality' or 'tone colour') is a complex acoustic phenomenon allowing us to *distinguish between two notes, tonal or otherwise, sounded at the same pitch and volume*. Its adjective is TIMBRAL.
12. TIMBRE consists of an ENVELOPE containing four elements: ATTACK, DECAY, SUSTAIN and RELEASE.
13. DECAY and SUSTAIN are the most readily extendable elements of timbre and can be referred to collectively as the CONTINUANT. A tone's CONTINUANT consists of a FUNDAMENTAL PITCH and of PARTIALS or HARMONICS pitched at integral multiples of the fundamental's own frequency.

14. How strongly which HARMONICS are present in which parts of an envelope is an essential factor defining a particular timbre.
15. MODES are by definition TONAL. The widely disseminated binary TONALITY ↔ MODALITY is a conceptual aberration.

Bridge

Having defined *note*, *pitch*, *tone*, *tonal*, *tonality* and *timbre* we can now launch into the discussion of tonality itself. I'll try and deal first with issues of pitch, tuning and octaves (Chapter 2) before tackling the topic of modes (Chapters 3-4).

2. Tuning, octave, interval

Tune and *tuning* relate etymologically to *tone*. In fact, tuning systems are culturally specific conventions regulating how tones are fixed and organised in relation to each other. By *tuning* is also meant the manner or process by which instruments adjust or relate to those tonal conventions. This second type of tuning is instrument-specific and will be considered after an explanation of the two general types of tuning schemes which, for reasons that will become evident, I call *extra-octave* and *intra-octave*.¹

General tuning systems

Extra-octave tuning

Extra-octave tuning is best exemplified by international concert pitch which was by 1939 established as a fixed frequency rate for one designated note: 440 hz for the *a* above middle *c* (*a*₄, see Fig. 9, p. 69). The pitch of other notes can be determined from this single absolute reference point. Previously, especially before the mid nineteenth century when *a*₄ converged on the $\frac{3}{4}$ -tone range between 410 and 450 hz,² travelling keyboard players had to transpose, wind instrumentalists include extra lengths of tubing in their baggage, and string players retune, all in accordance with the local norm.³ Thanks to standardised concert pitch, musicians can go from one venue to another without having to perform the same music at a different pitch. Two other areas benefitted from the establishment of internationally recognised concert pitch: the mass production of instruments, not least those with some sort of keyboard, and the worldwide dissemination of recorded music.

Extra-octave tuning conventions like concert pitch are used to ensure, for example: [i] that, before a performance or recording ses-

1. *Octave*: see p.68,ff.
2. The interval between 410 and 450 hz is 161 cents or 1.61 semitones.
3. For example, an English pitchpipe from 1720 puts *A*₄ at 380 hz (today's *f*_♯/*g*) while *a*₄ on Bach's organ at Leipzig was at 480 hz (*a*/*b*_♭).

sion, musicians playing portable pitched instruments in the same ensemble will produce the same pitch (in unison or at octave intervals from that pitch) for the same designated note, or for its sounding equivalent on transposing instruments; [ii] that the overall pitch of non-portable instruments (e.g. piano, organ, accordion) matches that of an agreed overall standard, so as to facilitate tuning when such instruments are part of an ensemble; [iii] that unaccompanied vocalists start at a pitch allowing them to reach, with a minimum of difficulty, the highest and lowest notes of whatever they are about to sing.

Concert pitch has helped globalise musical activity but it is of less relevance to musical traditions whose note names are relative rather than fixed (p.49, ff.), or in which no note names are used, or where participants have no need to interact with musicians who do depend on concert pitch. While concert pitch is useful in music featuring instruments whose overall tuning cannot be radically adjusted from one performance to another (e.g. piano, organ, harmonica, accordion), it is by no means a necessity for other tonal instruments such as banjo, bass, bouzouki, fiddle, guitar, mandolin, *saz*, *ud*, or even a synthesiser equipped with the requisite retune, detune or transpose options.⁴

One remarkable side effect of extra-octave tuning is *absolute pitch*, by which is meant an individual's ability, based on experience and long-term memory, to identify and/or reproduce a particular pitch independent of musical context. This ability, often called *perfect pitch*, is useful in standardised tonal situations because it can speed

4. It may be worth noting two recent types of divergence from standard pitch. [1] *Motor speed variations in analogue recording and playback equipment*. Music recorded on one tape machine and played back on another, or heard on vinyl spinning too fast or too slow meant that bands emulating an original recording would sometimes need to retune their instruments, or use a capo, or transpose wholesale in order to produce their cover in the key heard through their playback equipment. Digital recording and playback saw the end of such problems. [2] *Concert pitch escalation*. Despite the establishment of concert pitch, some symphony orchestras perform at up to $a_4=446$ in their quest for brighter sound (Corey 1996).

up transcription work, but it can be inconvenient in non-standard pitch contexts, for example if a guitar or fiddle playing patterns characteristic for a particular key (e.g. G, D, A or E) is heard a semitone higher or lower than concert pitch. For example, some of my students with ‘perfect pitch’ insisted in 2007 that *Not Ready To Make Nice* (Dixie Chicks, 2006) was in E_b minor, an unusual pop key, when we were hearing standard chord shapes in a guitar-friendly key, regardless of whether the absolute pitch of the song’s keynote in octave four was 311.13 (e_{b4}) or 329.64 hz ($e_{\sharp 4}$).

Intra-octave tuning

Intra-octave tuning, as the name suggests, regulates pitches internally *within the octave* which it organises into a number of constituent pitches and intervals. The main functions of intra-octave tuning are: [1] to enable any particular pitch included in a performance or recording session to be sounded in unison by all ensemble members designated to play that pitch; [2] to regulate intervals between the octave’s constituent pitches so that they are sounded in a reasonably consistent fashion. This brief description of intra-octave tuning begs questions about the term *INTERVAL*.

Intervals

In everyday speech an *interval* usually means the ‘horizontal’ distance in *time* between one event from another. In music theory, however, an interval is the ‘vertical’ distance in *pitch* between one tone and another. If temporal intervals are quantified in units like milliseconds or millennia, intervals of pitch are quantified in terms of octaves, tones, semitones and cents (hundredths of a semitone, sometimes abbreviated ‘¢’). Intervals are produced and understood in two ways: [1] *melodically*, as the pitch gap between two notes sounded one immediately or very soon after the other; [2] *harmonically*, as the pitch gap between two simultaneously sounding notes. As already implied, one such pitch distance, the *OCTAVE*, is central to the understanding of all other intervals in music.

Octave

Two tones at the same pitch —in *unison*— are in a pitch frequency ratio of 1:1. Two tones an octave apart are separated by a frequency factor of 2. For example, the first note in each of the pairs a_3 (220 hz) and a_4 (440 hz), or c_4 (261.63 hz) and c_5 (523.25), or e_b_3 (155.56) and e_b_4 (311.13), is each one octave below the second (Figure 9 →). With its simple frequency ratio of 2:1, the octave is also the interval between a note's fundamental pitch and that of its first harmonic, which, in its turn, is an intrinsic part of the timbre of every singing voice and of most acoustic tonal instruments. This interval is called 'octave' because it's the eighth note you reach in the heptatonic (seven-note) scale if you ascend or descend one step at a time, for example $c d e f g a b [c]$ ($\hat{1} \hat{2} \hat{3} \hat{4} \hat{5} \hat{6} \hat{7} [\hat{8}]$, rising) or $c b a g f e d [c]$ ($\hat{8} \hat{7} \hat{6} \hat{5} \hat{4} \hat{3} \hat{2} [\hat{1}]$, descending).

All known music traditions tend to treat two pitches an octave apart as the same note in another register. Men are understood to be singing the same tune as women and children if both parties follow the same pitch contour at the same time in parallel octaves. The octave's property of unison in another register is also illustrated by the fact that: [1] a common chord consisting of the tonic, third, fifth and octave (i.e. $\hat{1} \hat{3} \hat{5} \hat{8}$ as, say, $c_4 e_4 g_4 c_5$) is treated as a triad, not a tetrad, because it contains only three, not four, *differently named* notes (e.g. just $c_4 e_4 g_4$ as tonic, third, fifth, i.e. $\hat{1} \hat{3} \hat{5}$ and no $\hat{8}$); [2] any single note sounded on instruments like the twelve-string guitar, or using common types of organ registration, produces two pitches an octave apart; [3] parallel octaves are often used to enhance melodic timbre in jazz piano and guitar playing, not as a harmonic device (e.g. Erroll Garner, Wes Montgomery); [4] lower octave doubling of bass notes is used in many styles (e.g. euroclassical, jazz, rock) to boost the bass line, not as a harmonic device; [5] the octave is associated with the concept of REGISTER.

Music's range of audible fundamental pitches is often divided into octaves so that REGISTER can be referred to without having to mention cycles per second (Hz). A standard piano keyboard spans just over eight octaves from a_0 (27.5 hz) to c_8 (4186 hz; see Figure 9). The average human singing voice usually spans about two octaves.

According to this system of labelling octaves, the first note of the Rolling Stones' *Satisfaction* riff (1965a) is b_2 , concert pitch is a_4 and the first sung note of Abba's *Dancing Queen* (1975c) is $c\#_5$.

Fig. 9. The piano keyboard's 88 notes: a_0 (27.5 Hz) to c_8 (4186 Hz)

Octave nos.	Keys	white notes with hz values	black notes with hz values
0		A0 27.5	A#0 29.135
		B0 30.868	
1		C1 32.703	C#1 34.648
		D1 36.708	D#1 38.891
		E1 41.203	
		F1 43.654	F#1 46.249
2		G1 48.999	G#1 51.913
		A1 55.0	A#1 58.270
		B1 61.735	
		C2 65.406	C#2 69.296
3		D2 73.416	D#2 77.782
		E2 82.407	
		F2 87.307	F#2 92.499
		G2 97.999	G#2 103.83
4		A2 110.00	A#2 116.54
		B2 123.47	
		C3 130.81	C#3 138.59
		D3 146.83	D#3 155.56
5		E3 164.81	
		F3 174.61	F#3 185.00
		G3 196.00	G#3 207.65
		A3 220.00	A#3 233.08
6		B3 246.94	
		C4 261.63	C#4 277.18
		D4 293.66	D#4 311.13
		E4 329.63	
7		F4 349.23	F#4 369.99
		G4 392.00	G#4 415.30
		A4 440.00	A#4 466.16
		B4 493.88	
8		C5 523.25	C#5 554.37
		D5 587.33	D#5 622.25
		E5 659.25	
		F5 698.46	F#5 739.99
9		G5 783.99	G#5 830.61
		A5 880.00	A#5 932.33
		B5 987.77	
		C6 1046.5	C#6 1108.7
10		D6 1174.7	D#6 1244.5
		E6 1318.5	
		F6 1396.9	F#6 1480.0
		G6 1568.0	G#6 1661.2
11		A6 1760.0	A#6 1864.7
		B6 1979.5	
		C7 2098.0	C#7 2217.5
		D7 2349.3	D#7 2489.0
12		E7 2637.0	
		F7 2793.8	F#7 2960.0
		G7 3136.0	G#7 3322.4
		A7 3520.0	A#7 3729.3
13		B7 3591.1	
		C8 4186.0	

continued →

Figure 9 shows a piano keyboard divided into seven octaves plus three extra notes at the bottom and one at the top. Octave numbers appear to the left of the keyboard and the identity of the 88 individual notes, each with its fundamental frequency in cycles per second (Hz), to its right. Figure 10 (p. 70) also shows the familiar pattern of seven white and five black notes (twelve in all) that recurs in each octave. The eleven intervals *inside* the Western equal-tempered octave are set out in Table 5 (p. 70).

Intervals and intra-octave tuning

Table 5. Western intra-octave intervals (ascending from c_n to c_{n+1})

1. Note name ($doh = c$)	2. Semitones above doh	3. Scale degree shorthand	4. Frequency ratio to tonic	5. $\times >$ frequency of tonic (just temperament)	6. $\times >$ frequency of tonic (equal temperament)	7. Interval name in relation to lower tonic (C)	8. Scale degree names (euroclassical: POPULAR)
c	0	1	1:1	1	1	prime (unison)	tonic: ONE
c#	1	#1	25:24	1.042	1.060	[raised prime]	-
db	1	b2	25:24	1.042	1.060	minor 2nd or semitone	flat supertonic FLAT TWO
d	2	2 (^2)	9:8	1.125	1.123	major 2nd or whole tone	supertonic: TWO
d#	3	#2	6:5	1.2	1.189	augmented 2nd	SHARP TWO
eb	3	b3	6:5	1.2	1.189	minor 3rd	FLAT THREE
e	4	4	5:4	1.25	1.260	major 3rd	mediant: THREE or MAJOR THREE
f	5	4	4:3	1.333	1.335	perfect 4th	subdominant: FOUR
f#	6	#4	45:32	1.406	1.414	augmented 4th or tritone or diminished 5th	[raised subdominant] SHARP FOUR
gb	6	b5	45:32	1.406	1.414		FLAT FIVE
g	7	5	3:2	1.5	1.498	perfect 5th	dominant: FIVE
g#	8	#5	8:5	1.6	1.587	augmented 5th	SHARP FIVE
ab	8	b6	8:5	1.6	1.587	minor 6th	flat submediant: FLAT SIX
a	9	6	5:3	1.667	1.682	major 6th	submediant: SIX or MAJOR SIX
[a#]	10	#6	9:5	1.8	1.782	augmented 6th	-
bb	10	b7	9:5	1.8	1.782	minor 7th	subtonic: FLAT SEVEN
b	11	7	15:8	1.875	1.888	major 7th	leading note: SHARP or MAJOR SEVEN
c	12	8	2:1	2	2	(perfect) octave	tonic: EIGHT

Fig. 10. One octave

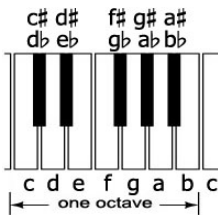


Table 5 presents all twelve tones in the Western chromatic scale. Column 1 gives the note names of those twelve pitches in an ascending scale with c as its tonic (see also Fig. 10 ←). Column 2 in Table 5 presents the number of semitones separating each note from the lower tonic (c), and column 3 the heptatonic scale-degree shorthand for each of the twelve notes

($b\hat{2}$ = ‘flat two’, $\#\hat{4}$ = ‘sharp four’, etc.). Column 4 shows the pitch frequency ratio in just temperament (p. 74, ff.) between each note and the lower tonic, while columns 5 and 6 show the same pitch differences as multiples of the tonic’s fundamental frequency, using just and equal temperament respectively.⁵ Column 7 presents the most widely used interval names in Western music theory. Finally, column 8 lists two types of scale degree designation: [1] in italics, those used in theories of euroclassical harmony; and [2], in small capitals, the popular practice used by anglophone musicians when pronouncing the scale-degree symbols in column 2.⁶ The difference between the labels in columns 7 and those in italics in column 8 can be explained as follows.

Although the interval names in column 7 of Table 5 are all given in relation to the lower tonic ($c\hat{1}$), they can in fact be applied in relation to *any note*. For example, $f\hat{4}$ is located, as shown in Table 5, a perfect fourth (5 semitones or guitar frets) above c , but it is also a perfect fourth *below* $b\flat$ and a perfect fifth (7 semitones) *below* c , as well as a semitone or minor second (or a single guitar fret) *above* e ; f is also a major third (4 semitones) above $d\flat$, a major sixth (9 semitones) below d , and a major second or whole tone below g , as well as a minor seventh (10 semitones) *above* g .

The terms in italics in column 8 of Table 5, on the other hand, are used almost exclusively about music in the euroclassical tradition and can only be applied in relation to the *relevant keynote or tonic* of music in that tradition.⁷ For example, although six different rising perfect fifths exist within the tonal vocabulary of a C major scale ($f\prime c$, $c\prime g$, $g\prime d$, $d\prime a$, $a\prime e$, $e\prime b$),⁸ only g , the note situated a perfect fifth above (or a perfect fourth below) the tonic ($\hat{1}$), and tertial

5. i.e. how much higher than the tonic (e.g. c), in terms of how many times faster each pitch frequency is in relation to that lower tonic.
6. This popular practice varies considerably. $b\hat{5}$, for example, can be called ‘flat five’, ‘flat fifth’, ‘flatted fifth’; $\hat{6}$ (e.g. $a\hat{6}$ in C) can be ‘six’ or ‘major six’, etc.
7. See also ‘Classical harmony’, pp. 251-270, esp. p. 255, ff. and p. 262, ff.
8. Of course, those ascending perfect fifths can be inverted at the octave into descending perfect fourths ($f\backslash c$, $c\backslash g$, $g\backslash d$, $d\backslash a$, $a\backslash e$, $e\backslash b$ in C).

chords based on that same scale degree (G, G⁷, etc. in the key of C), can be called *dominant*. By the same token, the note f and tertial chords based on f (F, F⁷, Fm, etc.) can be called *dominant* only in the key of B \flat , *mediant* only in the key of D \flat , *submediant* only in A \flat , *supertonic* only in E \flat , *leading note* only in G \flat , and *subdominant* only in C. Although useful in the analysis of musics following the tonal habits of euroclassical music and most types of jazz, terms like *dominant* and *subdominant* are of little relevance to music based on other tonal principles.⁹ For example, the common three-chord mixolydian loop heard throughout *Sweet Home Alabama* (↪D-C-G↪ in D) and repeated at the end of *Hey Jude* (↪G-F-C↪ in G) is referred to as I- \flat VII-IV ('one, flat seven, four'), *not* 'tonic, subtonic, subdominant'.¹⁰ And that's not because the first designation of the same sequence is more concise: it's because the chord on IV (the G in D, the C in G) just doesn't work like a euroclassical subdominant and because the sequence includes no dominant (V) to which a chord on the fourth degree (IV) can reasonably be 'sub'.¹¹ Another ethnocentric problem with column 8 in Table 6 (p. 74) concerns the scale's seventh degree: the 'leading note'. It's a problem best explained by example.

Ex. 1. Subtonic or leading note? (a) Handel: hymn tune Antioch ('Joy To The World'); (b) The Foggy Dew (Irish trad.).

Example 1 includes seven sevenths of which only one is strictly speaking a leading note. Example 1a contains two sevenths, both major or 'sharp sevenths' ($\Delta\hat{7}$), the first one descending from the tonic, the other [$n^{\circ} 2$] rising back up to the tonic. The five sevenths

9. See Chapter 9, p. 273, ff.

10. Lynyrd Skynyrd (1974), Beatles (1968b). For more examples of that mixolydian chord loop, see Table.36, p. 431.

11. For non-ianian harmony, see p.273,ff. For roman-numeral chords, see p. 220.

in example 1b are all minor or ‘flat sevenths’ ($b\hat{7}$), two of them [4, 5] descending from the tonic, two [3, 6] ascending to the tonic and one [7] going in both directions. So which of the seven sevenths is definitely a leading note? Well, the seventh degree in the euroclassical major, ascending minor and harmonic minor scales (see p. 91, ff.) is called *leading note* because in those modes it’s the *major seventh* ($\Delta\hat{7}$) which is supposed to *lead to the tonic* ($\hat{8}=\hat{1}$) a *semitone above*, (e.g. $b\hat{7}\rightarrow c$ in C, $f\sharp\rightarrow g$ in G). That means the only unequivocal leading note in example 1 is number 2.

LEADING NOTE can also designate *any tone that leads by a single semitone step, ascending or descending, to a subsequent note heard as consonant*, as with an $f\sharp$, either in a G^7 chord descending one semitone to $e\sharp$ in a C major tonic triad ($\hat{4}\searrow\hat{3}$, see p. 252, ff.), or like the second scale degree in E phrygian descending to its tonic ($b\hat{2}\searrow\hat{1}$, see pp. 122 and 439).¹² Now, in conventional music theory *leading note* tends to mean the note situated one semitone below the tonic and which is assumed to lead up to that keynote ($\Delta\hat{7}\nearrow\hat{8}=\hat{1}$), even if it can also descend from it. One obvious problem with this terminology is that, as example 1b suggests, widely disseminated types of popular music often use the *minor seventh* ($b\hat{7}$, the subtonic, ‘flat seven’), which is located not a semitone but a whole tone below the tonic and just as likely to descend to the sixth or fifth as ascend to the tonic, or arrive from or depart to other scale degrees. Moreover, example 2’s $d\sharp$ s (in E_b) repeatedly state $\Delta\hat{7}$ at the start of a *descent*, *not* as a leading note up to $\hat{8}=\hat{1}$. Besides, the first seventh in example 1a shows that not even a euroclassical $\Delta\hat{7}$ has to lead up to $\hat{8}=\hat{1}$.

Ex. 2. *Bombay Railway* (2014): recurrent descending $\Delta\hat{7}$ motif ($d\sharp$ in E_b)

In short, the term *leading note* is *misleading* if it designates the sort of minor sevenths shown in example 1b, as well as the major sevenths in example 2. That’s why it’s advisable, when referring in rel-

12. See also *The Other Leading Note* (Moore, 2013).

ative terms to the seventh scale degree, to use the term *subtonic* for all types of $\hat{7}$ except those that *lead by a semitone up to its tonic*.

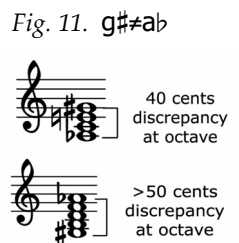
Equal-tone tuning

The most widely accepted intra-octave tuning system for music in the urban West is *equal temperament* or *equal-tone tuning*. It divides the octave into twelve equal intervals (semitones) and has been in use since the late eighteenth century. It was developed to solve problems caused by discrepancies between certain intervals as constituent parts of the octave and the same intervals in their ‘pure’ form.¹³

Table 6. *Intra-octave intervals in just and equal tuning, with scale degrees 1-8 and note names in C*

Interval Tuning type ¹	1 [♮] Prime/Tonic	2 [♭] Minor 2nd	2 [♮] Major 2nd	3 [♭] Minor 3rd	4 [♮] Major 3rd	4 [♮] Perfect 4th	4 [♯] Augm. 4th/ 5 [♭] Dimin. 5th	5 [♮] Perfect 5th	6 [♭] Minor 6th	6 [♮] Major 6th	7 [♭] Minor 7th	7 [♮] Major 7th	8 [♮] Octave/Tonic
<i>Just</i>	1:1 1.042	25:24 1.042	9:8 1.125	6:5 1.2	5:4 1.25	4:3 1.333	45:32 1.406	3:2 1.5	8:5 1.6	5:3 1.667	9:5 1.8	15:8 1.875	2:1 2
<i>Equal</i>	1	1.060	1.123	1.189	1.260	1.335	1.414	1.498	1.587	1.682	1.782	1.888	2
<i>Degree</i>	1̂	♭2̂	2̂	♭3̂	3̂	4̂	♯4̂/♭5̂	5̂	♭6̂	6̂	♭7̂	7̂	8̂
<i>in C</i>	c	c♯/d♭	d	d♯/e♭	e	f	f♯/g♭	g	g♯/a♭	a	b♭	b♯	c

As shown in Figure 11 (→), the top note of three stacked pure major thirds, each at the frequency ratio 5:4 above the previous one, is out of tune at the octave with the bottom note. That means the g♯ at the top of the pile of the three major thirds ab-c, c-e, e-g♯ is, in just intonation, one fifth of a tone (40¢) lower than the octave above the initial a♭. Similarly, the top a♭ in the four stacked natural minor thirds¹⁴ g♯-b-d-f-a♭ is more than a quarter-tone (>50¢) lower than the octave above the initial g♯. These natural



13. ‘Pure’ means in this context the acoustically unadjusted simple frequency ratios of intervals used in just intonation (see Table 6).
 14. ‘Pure’ minor thirds are intervals separated by a frequency ratio of 6:5 (= ×1.2).

acoustic discrepancies posed particular problems for keyboard players needing to produce, say, both $g\sharp$ (as in an E major triad) and $a\flat$ (as in an F minor triad) in the same piece: one or the other would be seriously out of tune.¹⁵ Equal temperament tackled the problem by slightly detuning eleven of the octave's constituent semitones so that the interval between each of them became identical. As Table 6 shows, the equal-temperament perfect fourths (e.g. c-f) and fifths (c-g) have almost the same values as their just-tone equivalents. Thirds, sixths and sevenths, on the other hand, have clearly been the object of more significant doctoring.

Equal-tone tuning is essential in many types of Western music, including euroclassical, twelve-tone, parlour song, marches, waltzes, polkas, mazurkas, evergreens, most types of jazz, bossa nova, *choro*, symphonic film scores, etc., etc. It is, however, unnecessary in music requiring no enharmonic alignment (between $d\sharp$ and $e\flat$, $g\sharp$ and $a\flat$ etc.) for purposes of modulation or harmonic colour. Moreover, equal temperament is either unnecessary or inappropriate in, for example, most types of blues, bluegrass, blues-based rock, folk rock, not to mention the traditional musics of Africa, the Arab world, the Balkans, the British Isles, the Indian subcontinent, Scandinavia etc., i.e. in any music whose tonality is non-euroclassical and/or drone-based.¹⁶ One reason for the relative incompatibility of such music with equal-tone tuning may be the use of drone notes to produce an overall sound that is rich in natural overtones and thereby inconsistent with equal-temperament intervals. Another reason might be the centrality of each interval's expressive character in relation to a permanent tonic, as in the *rāga* traditions of India whose aesthetics also often require microtonal pitch distinctions. Artificially adjusting intervals by as much as a quarter-tone, as in equal-tone tuning, is incompatible with the principles of such music.

15. If you're in C major and need to make first a perfect cadence in the relative minor (E7-Am) and later an altered plagal cadence in C (Fm-C), you won't want your $g\sharp$ and $a\flat$ to be out of tune by a quarter tone. The C-G-B-C-Cm loop in *Creep* (Radiohead, 1992) would also suffer if played in just tuning ($d\sharp$ and $e\flat$).

16. See p. 207, ff. and 'Open tuning and drones' (p. 340, ff.).

Another important consideration is, as shown in Table 7, the pitch location of scale degrees incompatible with the Western assumption that semitones are the smallest possible intervals.

Table 7. *Intra-octave interval pitches for five heptatonic modes*

1	2	3	4	5	6	7	8	9
	$\frac{1}{2}$ -tones in A \downarrow 100 \notin \downarrow	Ionian	Rast	Æolian	Bayati	Pelog	c fr. a	
$\hat{1}$	a 100				150	<i>Nem</i> 167	0 50	$\hat{1}$
$b\hat{2}$ $\flat\hat{2}$	$b\flat$ 100	200	200	200			100 150	$b\hat{2}$ $\flat\hat{2}$
$\hat{2}$	$b\sharp$ 100			100	150	<i>Pitu</i> (167 \notin) 245	200 250	$\hat{2}$
$b\hat{3}$ $\flat\hat{3}$	c 100	200	200	200	200		300 350	$b\hat{3}$ $\flat\hat{3}$
$\hat{3}$	$c\sharp$ 100	100	100			<i>Siji</i> (412 \notin) 125	400 450	$\Delta\hat{3}$
$\hat{4}$	d 100	200	200	200	200	<i>Loro</i> (537 \notin) 146	500 550	$\hat{4}$
$b\hat{5}$	$e\flat$ 100					<i>Teilu</i> (663 \notin) 252	600 650	$b\hat{5}$
$\hat{5}$	$e\sharp$ 100	200	200	100	150		700 750	$\hat{5}$
$b\hat{6}$ $\flat\hat{6}$	f 100			200			800 850	$b\hat{6}$ $\flat\hat{6}$
$\hat{6}$	$f\sharp$ 100	200	150		150	<i>Papat</i> (914 \notin) 165	900 950	$\Delta\hat{6}$
$b\hat{7}$ $\flat\hat{7}$	$g\flat$ 100			200	200		1000 1050	$b\hat{7}$ $\flat\hat{7}$
$\Delta\hat{7}$	$g\sharp$ 100	100	150			<i>Lima</i> (1079 \notin) 121	1100 1150	$\Delta\hat{7}$
$\hat{8}$	a	[$\hat{8}$]	[$\hat{8}$]	[$\hat{8}$]	[$\hat{8}$]	<i>Nem</i> (1200 \notin)	1200	$\hat{8}$

Columns 1 and 9 in Table 7 show, in ascending order, the scale degrees (including accidentals, where appropriate) of a heptatonic octave.¹⁷ Column 2 lists the twelve semitones in an octave ascending in equal-tone tuning from a_n to a_{n+1} , specifying a pitch differ-

ence of 100 cents between each semitone step. Column 8 provides an incremental listing in cents of each semitone step from the initial a_n ('0'=no interval) to a_{n+1} , located 1200¢, twelve semitones or one octave higher. Please note that columns 1 and 2 are in complete horizontal alignment with columns 8 and 9.

Columns 3-7 show, in cents, the pitch difference between each of the seven scale degrees in five different modes. The pitch location of scale degrees in the ionian and aeolian modes (columns 3 and 5) align entirely with the Western equal-tone semitone pitches given in columns 2 (100¢) and 8 (multiples of 100¢), as do those of *Rast* (column 4), except for the latter's two 150¢ ($\frac{3}{4}$ -tone) steps $\hat{6}-\flat\hat{7}$ and $\flat\hat{7}-\hat{8}$. In a similar way, *Bayati* (col. 6) resembles the aeolian mode (col. 5), except for the four $\frac{3}{4}$ -tone steps (150¢) $\hat{1}-\flat\hat{2}$, $\flat\hat{2}-\flat\hat{3}$, $\hat{5}-\flat\hat{6}$ and $\flat\hat{6}-\flat\hat{7}$.¹⁸ The Javanese *Pelog* scale (col. 7) diverges even more radically from Western equal-tone tuning: neither its $\hat{4}$ nor $\hat{5}$ align with those of the other modes in the table.¹⁹ The point is that in many types of tonality scale degree pitches do not fit into the simple twelve-semitone grid of Western intra-octave tuning systems. Moreover, as highlighted by the thicker horizontal lines above the start and end of each scale degree in Table 7 and by the varying number of cents given for the interval between scale degrees, pitch placement of an octave's constituent tones can vary radically from one mode to another.

Within the general framework of just intonation discussed earlier, a wide variety of intra-octave tunings are used in different music traditions. Despite a few exceptions, such as the *Pelog* and *Slendro* systems of Java, many intra-octave tunings include, as suggested by the thick horizontal line above $\hat{4}$ and $\hat{5}$ in Table 7, the natural fourth (4:3), and most include the natural fifth (3:2).²⁰ At the same time, Arab and Indian music theories divide the octave into 16 and

17. See pp. 32-34, ff. for explanation of scale-degree shorthand (\flat = $\frac{1}{4}$ -tone flat).

18. *Bayati* $\flat\hat{6}$ and $\flat\hat{7}$ are sometimes given as $b\hat{6}$ and $b\hat{7}$ (cf. Fig. 19, p. 115).

19. For ionian and aeolian, see pp. 87-92, 95, 99-112; for *Rast* and *Bayati*, see pp. 115-117; for *Pelog* and *Slendro*, see Malm (1977:45-47).

20. See also Table 5, p. 70.

22 unequal steps respectively, reflecting intra-octave tuning conventions that differ markedly from those of the urban West.²¹

The Western adjustment of natural intervals into the twelve equal intervals shown in Tables 5, 6 and 7 (pp. 70, 74, 76) has only been in operation for a couple of centuries in urban Europe and America, but it has during that short period managed to replace many earlier vernacular tuning patterns in the Western world, patterns that can be heard today in archival recordings from what were relatively isolated areas like the Outer Hebrides or the Appalachian backwoods.²² It's impossible to predict if the global spread of Anglo-North-American music during the latter half of the twentieth century, together with the equal-tone tuning of piano, organ, accordion and synthesiser keyboards – plus the inclusion of general MIDI in personal computers, plus the overwhelming use of equal-tone tuning in globally disseminated film and games music –, will eventually bring about the demise of other tuning systems. Even if that were to happen, tonal diversity does not, thankfully, depend solely on a variety of intra-octave tuning systems to survive and flourish. The vast variety of modes used on a daily basis in different parts of the world is one healthy symptom of tonal diversity;²³ another is *tuning* in the second sense of the word presented at the start of this chapter.

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21. *Neutral* is often used in the West to qualify pitches between 'major' and 'minor' thirds, sixths and sevenths. It is a eurocentric term implying that those pitches are heard according to that same intervallic grid at all times in all cultures. The historical phenomenon of *musica ficta* suggests that not even Europeans have always perceived thirds, sixths and sevenths in the same way. Another ethnocentric notion is that other peoples sing or play 'in the cracks between the notes' (of a modern Western piano keyboard, of course). For much more on modes and scales, see Chapters 3 and 4. For *maqamat Rast* and *Bayati*, see pp. 115-117.
 22. See, for example, 'Waulking Song' on *Musique Celtique des Îles Hébrides* (1970) and 'The Lost Soul' on *The Doc Watson Family* (Watson 1963/1990)
 23. See, for example, the nineteen modes with which Greek popular musicians should ideally be familiar (*Λαϊκοί Δρόμοι*, p. 115).

Instrument-specific tuning

Fig. 12. Neanderthal bone flute from Divje Babe (Slovenia)



The holes in this celebrated Neanderthal bone flute would have allowed its user, some 60,000 years ago, to produce the pitches of an anhemitonic pentatonic scale.²⁴ Since then, a vast number of other wind instruments have been made using various materials, with holes, mouthpieces, reeds, keys, valves, tube lengths, bell shapes and bore sizes constructed and arranged in an infinite variety of ways. All these factors affect the sound of each instrument and determine its tonal vocabulary, i.e. its range and placement of possible pitches as well as their intervallic relation to each other. For example, a shakuhachi flute doesn't sound distinctly 'shakuhachi' (perhaps 'traditional Japanese' to Western ears) just because of its timbre, however important that may be. The fact that its five holes also correspond to the five notes of a standard anhemitonic pentatonic scale and that tonal complexity can be increased by exploiting the considerable amount of pitch bend available for each note are factors determining its *tonal identity*. Using my MIDI software to assign a rapid run of staccato chromaticism to the best shakuhachi sample bank in the world will not make that lick sound like a shakuhachi any more than 128 quantised kick drum semiquavers in a row can ever sound like a real live rock drummer. In short, the physical construction of a wind instrument affects the tonal as well as timbral identity of the instrument and of the musical culture to which it is assumed to belong.

Most wind instruments are monophonic and players need, like vocalists, to ensure the notes they produce respect the basic pitch rules of the musical culture in which they are used. A monophonic wind instrument player must also, when part of an ensemble, adjust to a common reference pitch like $a=440$. Polyphonic instru-

24. Pentatonic modes are dealt with in Chapter 3 (p. 153, ff.).

ments (actual or potential) require further internal tuning. Piano and pipe organ tuning is usually carried out by specialists but portable string instruments are tuned by their players. The pitches to which open strings are tuned vary considerably from one instrument to another. Table 8 shows a few tuning variants for some common string instruments. String note names are provided for clarification and do not necessarily indicate concert pitch.²⁵

Table 8. *Some common string-instrument tunings*^{26*}

<i>instrument</i>	<i>Low string</i>			<i>high string</i>			<i>instrument</i>
*Banjo	G		D/C	G	B	D	Banjo
*Banjo – Tenor	C	G	D	A	C	Tenor Banjo	
Bass	E	A	D	G	Bass		
Bouzouki	G		D	A	D	Bouzouki	
Charango	G		C	E	A	E	Charango
Fiddle	G		D	A	E	Fiddle	
*Guitar (Table 9)	E	A	D	G	B	E	Guitar (Table 9)
Mandolin/Violin	G		D	A	E	Mandolin	
Saz	C/D		G	C	Saz		
*Sitar (e.g.)	sa-1 C-1	pa-1 G-1	sa C	ma E	pa G	sa+1 C+1	sa+2 *Sitar C+2 (e.g.)
Ud	D	G	A	D	G	C	Ud
Ukulele	A		D	F#	B	Ukulele	

Several instruments listed in Table 8 have common alternate tunings. For example, a *saz* can be tuned c-f-c, while a *bouzouki* can be tuned c-f-a-d or d-a-f-c (2×4-string), or d-a-d (2×3-string, common in *rebetiki*). *Ud* tunings vary considerably from region to region (Turkey, Armenia, etc.) and *fiddle* tunings are often adjusted to the character of the music to be played, typically to create tonic-and-fifth drone effects (g-d-g-d, g#-d#-g#-d#, a-d-a-d, a-e-a-e, etc.). Some common alternative guitar tunings (a.k.a. *scordatura*) used in anglophone music traditions are set out in Table 9. All these tunings can be transposed using a capo.²⁷

25. In Scandinavian fiddling, for example, standard violin tuning is often raised by a whole tone.
26. * Standard tunings vary widely for instruments marked with an asterisk. Only one common tuning is given in Table 8. For banjo tunings, see p. 334, ff.

It should also be noted that several string instruments used in the Middle East, the Arab world and the Indian subcontinent (e.g. *saz*, *tambur*) are provided with ligatures which function as moveable frets allowing the musician to accommodate tunings based on a division of the octave into more than twelve intervals (Table 7, p. 76).

Table 9. *Some alternate guitar tunings*²⁷

Name	Low string						high string	Usage
	E	A	D	G	B	E		
STANDARD	E	A	D	G	B	E	general	
Open E	E	B	E	G#	B	E	Delta blues, folk	
Open D or Vestapol	D	A	D	F#	A	D		
Drop D	D	A	D	G	B	E	'folk' and related styles	
Drop double D	D	A	D	G	B	D		
D 'modal'	D	A	D	D	A	D		
DADGAD	D	A	D	G	A	D		
Open G or Taropatch	D	G	D	G	B	D	slide, Delta blues	
Dobro	G	B	D	G	B	D	Delta blues, Country	
Open A or Hawaiian	E	A	E	A	C#	E	Hawaiian, slide	
C sixth	C	G	C	G	A	E	'New Age'	

As mentioned in the section about *note* (p. 47), some instruments have *double* sets of strings, for example the twelve-string guitar (2×6), the bouzouki (3×2) and various types of balalaika, each pair of strings being tuned in unison or at the octave. Moreover, each of the piano's upper keys is assigned its own *triple* set of strings. The point of such unison or octave duplication is to create a brighter or richer sound for each note. The 'bright' effect is due to doubling at the octave or higher, as in the case of 4-foot, 2-foot and mixture registration on the organ. The 'rich' effect, however, more likely relates to unison doubling: that's because two simultaneously sounding strings, pipes or reeds tuned to the same pitch rarely produce that pitch in perfect unison, with the result that a greater number of partials is created for each note than issues from just

27. Some tunings used by Joni Mitchell and Richard Thompson are mentioned on pages 331-332 and 342-344.

one of the two. Western music exploits this *timbral* aspect of tuning in many ways, of which three can be summarised as follows.

[1] The characteristic ‘rich’ sound of the French accordion derives from each note being assigned two reeds slightly out of tune with each other.

[2] Recorded tracks are often doubled, sometimes several times, either digitally or ‘live’, to create an effect of multiplicity. Not only can the copied or repeated tracks be offset from the original by a few milliseconds, they can also be slightly detuned, either naturally or by digital manipulation. The effect of slightly detuning a copied track without simultaneous offsetting resembles the ‘wider’ sound produced by applying chorus or modest amounts of phasing to the same signal source (Lacasse 2000:126-131).

[3] Digitally detuning a copied piano track and playing it back with the original produces a ‘ragtime’ effect similar to that created by an out-of-tune piano or by one that has been intentionally ‘soured’.

Although, in cases like these, tuning has an obvious timbral rather than tonal function, it should be clear that tones and timbres are interrelated. Indeed, what we hear as two or more separate notes may in another cultural context be perceived as one single sonority, or vice versa. There is in other words a sort of no-man’s-land between tone and timbre where one of the two will attract more of our attention than the other.

So far I’ve tried to explain most basic concepts of tonality – note, pitch, tone, tuning, interval and octave. The next two chapters deal with ways of conceptualising *tonal vocabulary*, i.e. with ways of describing the various tonal constellations that help us aurally distinguish between musical moods, functions and cultures.

Summary in 14 points

1. EXTRA-OCTAVE TUNING exists basically to ensure that all participants in a musical event *perform any given note at the same pitch*. CONCERT PITCH ($a_4=440$ Hz) was established as international standard to facilitate such tuning. ABSOLUTE (OR PERFECT) PITCH is a side effect of this standardisation.
2. INTRA-OCTAVE TUNING regulates intervals (see §9) between the octave's (see §3) constituent pitches so that they are sounded in a consistent fashion.
3. In most Western music the OCTAVE is treated heptatonically, in the sense that it very often consists of *seven basic steps* (*doh ré mi fa sol la ti*).¹ The OCTAVE is so called because it is the eighth note you arrive at if you ascend one heptatonic step at a time (*doh ré mi fa sol la ti | doh |*).
4. If *doh* is TONIC and numbered $\hat{1}$, the other six SCALE DEGREES are numbered $\hat{2} \hat{3} \hat{4} \hat{5} \hat{6} \hat{7}$.
5. *Five* of the standard Western heptatonic OCTAVE'S STEPS are WHOLE TONES; the other *two* are both SEMITONES.
6. The standard Western OCTAVE *is also divided into* TWELVE SEMITONES to cater for varying placement of tone- and semitone steps in different modes. SEMITONAL VARIANTS precede their relevant SCALE DEGREES, e.g. $b\hat{3}$ as the minor third and $\hat{43}$ as the major third scale degree.
7. NOTE NAMES are *identical for pitches separated by an octave*. The pitch frequency difference factor between two such notes is 2, e.g. $a_3=220$ Hz, $a_4=440$ Hz, $a_5=880$ Hz.
8. The OCTAVE is a useful unit when referring to REGISTER. A standard piano keyboard covers a range of pitches from 29.135 (a_0) to 8,416 Hz (c_8), equivalent to $7\frac{1}{4}$ octaves. The average *human singing voice* spans about *two octaves*.
9. An INTERVAL is the *difference in pitch between two tones*. Even if intervals can be measured in Hz, they are most often designated in terms of scale degree difference. In this way the interval between $\hat{1}$ and $\hat{4}$ (e.g. $a\hat{1}$ and d in A) as well as between $\hat{4}$ and $\hat{7}$ (d and g) is a fourth (roman counting: $(x+1)-y=z$).

10. Conventional SCALE DEGREE NAMES like *dominant* and *subdominant* are useful in theories of *euroclassical tonality* but are *irrelevant or misleading* when dealing with most *other types of tonality*. The equation of LEADING NOTE with scale degree 7 ($\hat{7} = \flat\hat{7}$ or $\sharp\hat{7}$?) is particularly problematic.
11. 'NATURAL INTERVALS' are characterised by *simple frequency ratios* expressing pitch difference, e.g. 3:2 for the perfect fifth. Tuning based on such intervals is often called JUST-TONE TUNING and is often heard as *clearer and brighter* than EQUAL-TONE TUNING. However, while $g\sharp$ and $a\flat$ are pitched identically in equal-tone tuning, they can be seriously out of tune with one another when treated as natural intervals.
12. To avoid the problem of ' $g\sharp \neq a\flat$ ', EQUAL-TONE TUNING *adjusts each of the octave's twelve constituent semitones so that each semitone step is intervallically identical*. An equal-tone semitone interval is measured as 100 cents.
13. Many music cultures configure the octave's constituent pitches in ways that do not conform to the twelve semitone pitches of Western tunings. (Table 7, p. 76).
14. The individual strings of instruments like the guitar can be tuned in a wide variety of ways to suit particular tonal configurations, styles, modes and moods.

3. Heptatonic modes

Intro

This chapter is in three parts: [1] an introduction that defines basic terms and sorts out some underlying issues of conceptual confusion (pp. 85-92); [2] a section on the diatonic heptatonic ‘church’ modes (pp. 94-112); [3] coverage of several common heptatonic modes that are rarely on the curriculum in Western seats of musical learning (pp. 112-149). Non-heptatonic modes are dealt with in Chapter 4 (p. 151, ff.).

MODE, from Latin *modus* (=measure, pattern, manner), basically means a way of doing things. Fashion addicts dress a certain way to be *à la mode* and computers behave differently in secure mode, print mode and sleep mode. Modes are also used in many languages to represent different aspects of the verb. In English we distinguish between *If I were a carpenter*¹ –the subjunctive *modus irrealis*– and *When I was a carpenter* –the indicative *modus realis*. These verbal modes are also called MOODS. Musical modes can also relate to moods.

In music theory MODE has a very particular meaning. Medieval theorists in Europe considered different ways of using rhythm and metre as modes, but the word has for a long time been used solely to denote specific ways of conceptualising *tonal* vocabulary and its configuration. By TONAL VOCABULARY is meant a store of particular tones used in a particular body of music, be it just a short passage or a complete work. As we saw in Chapter 2 (e.g. Table 7, p. 76), some musical traditions use tonal vocabularies unfamiliar to Western ears in that they contain pitches incompatible with the twelve semitones of standard Western tuning, while other traditions use those twelve semitones in ways that diverge from conventional and familiar Western notions of ‘major’ and ‘minor’.

1. *If I Were A Carpenter* was recorded by The Four Tops (1968).

The notion of *mode* in music theory derives from two main sources: [1] attempts by medieval European scholars to systematise the tonal vocabulary of liturgical music according to Ancient Greek and Arab concepts —the heptatonic-diatonic ‘church modes’ (p. 93, ff.); [2] ethnomusicological classification of tonal vocabulary used in traditional musics. Please note that the Greek mode names in use today—ionian, aeolian, etc.— do not designate the same tonal configurations as in Ancient Greece and that, like a *roman font* (not like ‘Roman history’ or ‘the Romans’), those mode names start with a lower-case letter.²

One important step in getting to grips with how and why different musics sound different is to distil their tonal vocabulary down to single occurrences of each constituent note inside one octave and to check which of those notes are used most frequently or as points of repose, reference or closure.³ Such distillation of tonal vocabulary can then be presented as a **MODE**, with its constituent pitches arranged concisely, in scalar order, inside one octave.⁴ A **MODE** is simply the manageable conceptual unit resulting from such distillation. Please note that **MODE** can refer to tonal vocabularies in terms of both melody and harmony but that this chapter and the next one deal mainly with *melodic* (monophonic) aspects of mode. Another limitation on what follows is that the countless melodic modes used in different music traditions across the world just cannot be dealt with in a book of this size and that I have had to focus on modes relevant to ‘everyday tonality’ of the urban West.⁵ To put some meat on this rather theoretical bone, let’s start with something familiar.

-
2. Reasons for this convention are given in the Preface (p. 40).
 3. This process is not applicable to *all* musical traditions whose tonal configurations may vary from one octave register to another, but it does apply to the bulk of what we hear on an everyday basis in the urban West.
 4. For example, the ascending sequence of notes **a b c d e f g [a]** corresponds to scale degrees 1 2 3 4 5 6 7 [8] of the aeolian mode (see Fig. 16, p. 97).
 5. There are 120 (5!) permutations of the five given pitches in one simple pentatonic mode, 720 (6!) possible configurations of a hexatonic, 5040 (7!) in a heptatonic and nearly 500 million (12! = 479,001,600) in a dodecaphonic mode. A notional definition of ‘everyday tonality’ is provided in the Preface, pp. 17-19.

Scales, modes, tonal vocabulary

Ex. 3. *UK national anthem (God Save The Queen)*

The image shows the first two staves of the UK national anthem in G major. The first staff contains measures 1 through 7, and the second staff contains measures 8 through 14. Below the notes, scale degree numbers and note names are provided: 1 (g), 2 (a), Δ7 (f#), 3 (b), 4 (c), Δ3 (d), 5 (e), 6 (f#), 7 (g), 8 (a), 4 Δ3 (c), 4 (a), 4 Δ3 (d), 2 (b), Δ3 (c), 4 3 (b), 2 (a), Δ3 (c), 4 5 (e), Δ6 (f#), 4 Δ3 (c), 2 (b), 1 (g).

Example 3 contains seven different tones: **g a b c d e f#**, some of which are more important than others. The note **g** is most important because: [1] the tune both starts and ends on **g**; [2] the tune’s first half finishes on **g** (bar 6); [3] 28.6% of the melody consists of the note **g**.⁶ That’s why **g** is heard as the tune’s main reference tone, its tonal centre, its keynote, its *tonic*. We can say that the tune is ‘in G’. As shown in Table 2 (p. 43), a mode’s tonic is numbered as scale degree 1 (1̂). The other six notes in example 3 are numbered 2 through 7 because the tune is *heptatonic* (ἑπτά=7): it contains no more and no less than *seven* differently named notes. Their order of appearance in example 3 is: 1̂ (the note **g** in bar 1), 2̂ (**a**, also in bar 1), 7̂ (**f#** in bar 2: Δ7, ‘major seven’), 3̂ (**b**, bar 3: Δ3, ‘major three’), 4̂ (**c**, bar 3), 5̂ (**d**, bar 7) and 6̂ (**e**, bar 13, Δ6, ‘major six’).

Figure 13 (below) shows exactly the same tonal vocabulary distilled to single occurrences of notes rearranged in ascending scalar form inside one octave delimited by its keynote or tonic, **g**. Such reduction of a real tune to an intra-octave abstraction of notes demands that tones registally outside that octave be included inside it. That’s why *God Save The Queen’s* lowest note, the **f#** in bars 1 and 5 of example 3, is shown an octave higher in Figure 13.

Fig. 13. *Ionian mode in G with scale degree numbers and note names*

The image shows the Ionian mode in G on a single staff. The notes are arranged in ascending order: g, a, b, c, d, e, f#, and g (one octave higher). Below the notes, scale degree numbers and note names are provided: 1̂ (g), 2̂ (a), Δ3̂ (b), 4̂ (c), 5̂ (d), Δ6̂ (e), Δ7̂ (f#), and (8̂=1̂) (g).

Although Figure 13 *looks* like a G major scale, it’s not the sort of scale you hear in real music situations. Indeed, the tonal reality from which the scalar representation of a mode is distilled into a

6. **g** occupies 12 of 42 beats. None of the other six notes come close to that count.

tions about the relative prominence of certain tones, or combinations of tones, within that vocabulary. This aspect of mode comes much closer to how musicians actually use a tonal vocabulary. It also comes a little closer to concepts like the Arab *maqam* or Indian *rāga*, both of which include basic formulae for the performance of melodic contour, mood and direction as part of their theory.⁸

Despite the problems and limitations just explained, I will in this book be using *mode*, as defined above, as the first port of conceptual call for two reasons: [1] it's more likely than other theoretical models to be familiar to readers; [2] it can be a useful and manageable tool for theorising tonal vocabulary, provided that the sort of limitations just mentioned are taken into consideration;⁹ [3] it's a more adaptable concept than the *scale* of conventional music theory. But there are other problems with the concept of *mode*.

Another set of difficulties derives from the fact that euroclassical music theory has in general only had to contend with 'major' and 'minor' modes whereas an almost endless array of modes are in daily circulation outside that tradition. Now, with such tonal diversity it's clearly useful if you can identify different types of tonality without having to describe them all in detail. That involves recognising the sound of various modes, being familiar with the pitches they contain, with how they're configured and with the music traditions to which they belong, etc. All those issues are at the heart of Chapters 3 and 4. The point is that although modes may not 'tell the whole story', they can be a useful starting point in the understanding of different tonal traditions. That said, before considering the panoply of modes out there in 'everyday tonality', it's necessary to grasp how conventional Western music theory's major and minor modes fit into the bigger picture, and that involves understanding the concept of IONIANISATION.

8. See p. 114, ff. I'm indebted to Simon McKerrell (Newcastle) for valuable input about the problems and limitations of mode in designating types of tonality in various musical traditions (see McKerrell, 2009 and 2011).
9. See, for example, the specific traits of two types of aeolian melody (pp. 105-112).

Ionianisation ($\Delta\hat{7}$)

God Save The Queen is in the *ionian* mode. It's *heptatonic* because it contains *seven* different tones and it's *diatonic*.¹⁰ The *ionian* is one of seven heptatonic diatonic modes, each of which can be used, as we shall see (p. 94, ff.), to create quite different sorts of sound. Those differences depend on such structural niceties as the unique location of the two semitone intervals in each diatonic mode.¹¹ The aim of *this* subsection is to explain what makes Western music theory's notions of major and minor both special and problematic.

Using the keys of C and E by way of illustration, Figure 14 (p. 91) shows the one major and three minor modes that euroclassical performers practise as scales based on each of equal-tone tuning's twelve possible keynotes. The scale degree numbers above each note show that $\hat{3}$, $\hat{6}$, and $\hat{7}$ vary from one mode to another while $\hat{1}$, $\hat{2}$, $\hat{4}$ and $\hat{5}$ remain constant. Due to its dominance in the euroclassical tradition, conventional music theory treats the *IONIAN MODE* as *the norm from which all other modes are seen/heard to diverge*. Scale degrees 3, 6 and 7 are consequently taken as major by default while minor thirds, sixths and sevenths are preceded by 'b' ($b\hat{3}$, $b\hat{6}$, $b\hat{7}$).¹² However, in this book about 'everyday tonality' in which the *ionian* is just one among several modes in common use, major thirds, sixths and sevenths are also indicated. To avoid the ambiguity of unqualified scale-degree numbers, ' Δ ' will indicate major intervals ($\Delta\hat{3}$, $\Delta\hat{6}$, $\Delta\hat{7}$) just as 'b' indicates their minor variants ($b\hat{3}$, $b\hat{6}$, $b\hat{7}$).

10. *DIATONIC* (see p. 94 and Glossary, p. 484) is usually opposed to *chromatic*, meaning, in Western music theory, that the music so qualified contains pitches diverging from the diatonic, TWO-SEMITONE, FIVE WHOLE-TONE norm of euroclassical music's 'major-minor' tonality. The other six heptatonic-diatonic modes are the *dorian*, *phrygian*, *lydian*, *mixolydian*, *aeolian* and *locrian*.

11. *Heptatonic* and *diatonic* are just taxonomic shorthand distinguishing one general category of tonal vocabulary from others like *pentatonic*, *hexatonic*, *hemitonic*, *anhemitonic*, *chromatic*, etc. The melodic minor is the only euroclassical scale to differ in ascent and descent. About rising and falling *phrygian/Hijaz* phrases, see pp. 130-132.

12. Similarly, 'This piece is in C' is more likely to mean that it's in C major than minor. Moreover, while the single-letter chord abbreviation 'C' means C major, a C minor chord needs to be specified as 'Cm' (see p. 236). See pp. 32-34 for more on scale degree abbreviation conventions.

Fig. 14. Euroclassical music's four modes in scalar form

<p>Major in C — ionian</p>	<p>Major in E — ionian</p>
<p>[1] Ascending melodic minor in C</p>	<p>[1] Ascending melodic minor in E</p>
<p>[2] Descending melodic minor in C — aeolian</p>	<p>[2] Descending melodic minor in E — aeolian</p>
<p>[3] Harmonic minor in C</p>	<p>[3] Harmonic minor in E</p>

The three minor-mode variants in Figure 14 are so called because, *unlike* the ionian, they all feature a *minor third* ($b\hat{3}$ or ‘flat three’). Scale degrees 6 and 7 ($\hat{6}$, $\hat{7}$) are configured in different ways for each of the three minor-mode variants. [1] The ASCENDING MELODIC MINOR scale contains, *like* the ionian mode, a *major sixth* ($\Delta\hat{6}$) and *major seventh* ($\Delta\hat{7}$). [2] The DESCENDING MELODIC MINOR variant is in the *aeolian* mode (or ‘natural’ minor) and contains both a *minor sixth* ($b\hat{6}$ or ‘flat six’) and a *minor seventh* ($b\hat{7}$ or ‘flat seven’). [3] The HARMONIC MINOR scale contains the same notes in both ascent and descent, and includes, like the *aeolian* mode, a *minor sixth* ($b\hat{6}$, ‘flat six’) but also, like the *ionian* mode, a *major seventh* ($\Delta\hat{7}$, ‘sharp seven’). Minor scales [1] and [3] can be understood as *ionianised variants* of the aeolian or ‘natural’ minor mode [2].¹³

As we shall in Chapter 8, the major seventh or ‘leading note’ ($\Delta\hat{7}$, ‘sharp seven’ or ‘major seven’) is so central to the mechanics of tonal direction in euroclassical harmony that a minor seventh ($b\hat{7}$), such as produced on the white notes of a piano keyboard with $a\sharp$ as keynote (the aeolian mode), only exists in descending melodic contexts. Moreover, as the label *harmonic minor* suggests, the ‘natural’ minor seventh of a minor-mode triad based on the fifth degree of the scale (‘v’, e.g. an E minor triad containing $g\sharp$ in the key of A

13. Variant [2] in ex. 14 and mode 6 in Table 16 (p. 97) are aeolian (‘natural’).

minor) is, in euroclassical harmony, normally altered to a *major seventh* ($\Delta\hat{7}$ or ‘sharp seven’, $g\sharp$) to produce a major chord functioning as ‘dominant’ (‘V’) in the home key (e.g. E or E⁷ in A minor) and producing the ‘perfect cadence’ E⁷→Am (V→i) rather than Em→Am (v-i). In the ionianised worlds of jazz and euroclassical tonality the latter is heard as less directional, less final, because it contains $b\hat{7}$, no ascending leading note, no $\Delta\hat{7}$ leading up to $\hat{8}$ (=1̂).¹⁴

I’ve jumped the gun here, rushing into the mechanics of euroclassical harmony before explaining how melody, let alone harmony, uses modes as sets of tonal vocabulary that contribute to the creation of variation and identity in music.

Modes and ‘modality’

Modes are tonal phenomena and *mode* means the tonal vocabulary used in a particular extract, piece or style of music. However, ‘*modality*’ is often used in conventional Western music theory not so much to identify a specific tonal vocabulary as to designate *en masse* innumerable types of tonical tonality that diverge from one single type and from one only.¹⁵ Labels like ‘modal jazz’ and ‘modal harmony’ tend to mean jazz and harmony using tonical configurations other than the basically ionian-tertial tonality of the euroclassical and standard jazz repertoires. The differing tonal norms of such repertoires as blues-based rock, of some types of post-bebop jazz, of much pre-Baroque European music — in fact of musics from almost any part of the world at any time — are in other words often lumped together under the rag-bag heading ‘modal’. On the other hand, the ionianised major-minor modality of the euroclassical repertoire and of popular music using that same sort of tonal system (national anthems, hymns, marches, waltzes, parlour songs, jazz standards, etc.) is rarely, if ever, referred to as modal. It’s most often called ‘tonal’ without any qualifier, as if no other kind of tonality existed. This use of *tonality* and *modality* implies that modes, by definition tonal phenomena, aren’t tonal, and that one type of tonality — the euroclassical — isn’t modal, even though

14. For more about $b\hat{7}$ v. $\Delta\hat{7}$ issue, see p. 389, ff.

15. For more on tonal v. modal, see p. 54, ff.

it couldn't exist without the ionian mode and the ionianised minor modes that define its specific tonal identity. So, to avoid terminological confusion and embarrassment, all modes, including the ionian, will, as abstractions of tonal vocabulary, be treated here as tonal phenomena central to the understanding of *any* type of tonal tonality. The binary TONAL V. MODAL of conventional music theory is in other words nonsensical and will not be used in this book.

Heptatonic: why seven?

Heptatonic modes aren't necessarily more widely used than others but they do turn up more often in music *theory*, not only in the West but also in China, Java, Japan, India and the Arab world. In these traditions the octave is understood to consist of seven underlying tonal positions or steps (Table 10). These basic steps, numbered $\hat{1}$ - $\hat{7}$, are called SCALE DEGREES and can be specified more precisely, either microtonally (e.g. $\flat\hat{2}$, $\flat\hat{3}$, $\hat{1}\hat{7}$) or, as in Western music theory, semitonally (e.g. $\flat\hat{3}$, $\Delta\hat{3}$). For example, ' $\flat\hat{6}$ ' ('flat six') means a minor sixth located eight semitones above the tonic, ' $\Delta\hat{6}$ ' a major sixth or nine semitones above $\hat{1}$.

Table 10. *Heptatonic note names in Arab, Chinese and Hindustani music theory*¹⁶

Scale degree	$\hat{1}$	$\hat{2}$	$\Delta\hat{3}$	$\hat{4}$	$\hat{5}$	$\Delta\hat{6}$	$\Delta\hat{7}$	$\hat{8}=\hat{1}$
Movable sol-fa	doh	ré	mi	fa	sol	la	ti	doh
Arab movable sol-fa	<i>Rast</i> dāl	<i>Douka</i> rā'	<i>Jaharka</i> mīm	<i>Nawa</i> fā'	<i>Hussayni</i> ṣād	<i>Awj</i> lām	<i>Kirdan</i> tā'	... dāl
China (transcr.)	上 shàng	尺 chěi	工 gōng	凡 fán	六 liù	五 wū	乙 yí	上 shàng
India	<i>Sa</i>	<i>Re</i>	<i>Ga</i>	<i>Ma</i>	<i>Pa</i>	<i>Dha</i>	<i>Ni</i>	<i>Sa</i>

Thanks to its use in Arab, Indian and European music theory, the heptatonic scale degree is widely accepted as the basic unit for des-

16. In North Indian music theory, *Sa Re Ga Ma Pa Dha* and *Ni* are short for *Shadjā, Rishabh, Gandhar, Madhyam, Pancham, Dhaivat* and *Nishad*. N.B. Arabic note names vary according to tradition. Those in Table 10 are Palestinian and apply only to the central octave in a two-octave (*Dirvan*) fundamental scale. With *doh/Rast* set to C, the table's seven Arab note names are equivalent to $\hat{1}$ $\hat{2}$ $\flat\hat{3}$ $\hat{4}$ $\hat{5}$ $\Delta\hat{6}$ $\flat\hat{7}$. The 'Arab sol-fa' syllables (*dāl, rā', mīm*, etc.) are almost certainly the source of European solmisation (*doh, ré, mi*, etc.).

ignating the constituent tones of almost any mode based on any tonic, no matter how many steps the mode contains. For example, ‘ $\hat{1} \hat{2} \Delta\hat{3} \hat{5} \Delta\hat{6}$ ’ gives the five heptatonic scale degrees of the *doh*-pentatonic mode, while ‘(8) $\hat{7} \flat\hat{7} \hat{6} \flat\hat{6} \hat{5} \flat\hat{5} \hat{4} \hat{3} \flat\hat{3} \hat{2} \flat\hat{2} \hat{1}$ ’ designates a twelve-note chromatic descent through any single octave.

The modes most familiar to euroclassical performers – the ionian and its ionianised minor-mode variants – have already been presented (Fig. 14, p. 91). Those modes aren’t just heptatonic: they’re also *diatonic*. A DIATONIC mode has two defining features. [1] It includes each of the mode’s seven differently named scale degrees, for example a b c d e f g as $\hat{1} \hat{2} \flat\hat{3} \hat{4} \hat{5} \flat\hat{6} \flat\hat{7}$ – the aeolian mode in A – or c d e f g a \flat b \flat for the same scale degrees and mode in C (Fig. 16, p. 97). [2] A diatonic mode contains two steps of one semitone (‘ $\frac{1}{2}$ ’) and five of a whole tone (‘1’), for example 1- $\frac{1}{2}$ -1-1- $\frac{1}{2}$ -1-1 for the aeolian but 1-1- $\frac{1}{2}$ -1-1-1- $\frac{1}{2}$ for the ionian (Fig. 16, p. 97).¹⁷

The heptatonic-diatonic ‘church’ modes

Theory

The ‘church’ modes (a.k.a. ‘ecclesiastical’) aren’t just a topic of arcane interest to music historians (Fig. 15a). They’re also relevant to musicians trying to master various jazz and rock idioms (Fig. 15b).¹⁸ Structurally, church modes presuppose: [1] the division of the octave into seven constituent pitches (heptatonic), five separated by a whole-tone interval, and two by a semitone (diatonic); [2] a tonal centre, keynote or *tonic* on scale degree 1 ($\hat{1}$), which can often (not always) be identified as a (real or potential) drone or as the final, or most frequently recurring note in the mode.

17. The harmonic minor features individual occurrences of all seven different notes inside the octave ($\hat{1} \hat{2} \flat\hat{3} \hat{4} \hat{5} \flat\hat{6} \Delta\hat{7}$) but doesn’t follow the 2-SEMITONE/5-whole-tone norm of diatonicism because it runs 1- $\frac{1}{2}$ -1-1- $\frac{1}{2}$ -1- $\frac{1}{2}$. Of course, tonic solfa syllables can also be used to designate tones in relative terms (see p. 49, ff.).

18. See, for example, the iPhone app ‘Understand Modes’ (Cipher Arts Ltd. and Mark Wingfield, 2012) or almost any number of *Guitar Player* magazine.

Fig. 15. *Modal theory, ancient and modern*¹⁹

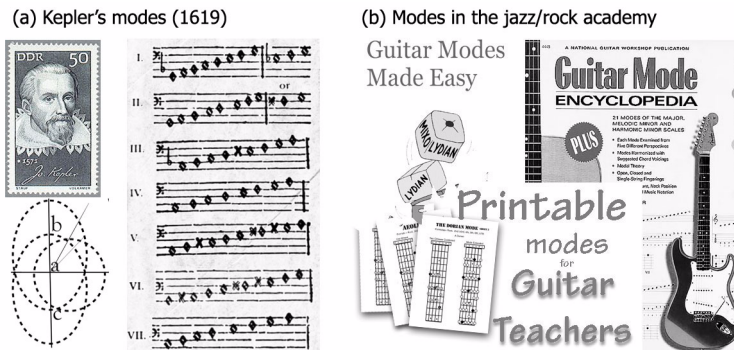


Figure 16 (p. 97) sets out the seven heptatonic ‘church’ modes in three columns. COLUMN 1 gives the names of each mode and presents its constituent tones using the white notes only of a piano keyboard. Each diatonic mode’s two semitone steps —between *mi* and *fa*, *ti* and *doh* (e↔f, b↔c on the white keys)— are marked with a slur. The other five steps —*do-ré*, *ré-mi*, *fa-sol*, *sol-la* and *la-ti* (c-d, d-e, f-g, g-a and a-b on the white keys) are all whole tones in all seven modes. The alternative mode names in brackets derive from the tonic note ($\hat{1}$) when the mode is sounded on the white notes of a piano keyboard, e.g. ‘*ré* mode’ or ‘*D* mode’ for the dorian (d to d on the white notes), ‘*mi* mode’ or ‘*E* mode’ for the phrygian (e to e).

COLUMN 2 presents each mode with c as tonic. It also shows each mode’s scale degrees with the apposite symbol (Δ/b) added to distinguish major from minor thirds, sixths and sevenths,²⁰ for example the occurrence of $b\hat{3}$ and $b\hat{7}$ in the dorian as opposed to $\Delta\hat{3}$ and $\Delta\hat{7}$ in the ionian. A horizontal line marks the position of each mode’s internal tritone between *fa* and *ti*. That tritone is between f and b for all the white-note modes (column 1), but its position varies in columns 2 and 3. For example, while the *fa-ti* tritone is f-b in

19. Fig. 15a is from Kepler’s *Harmonices mundi* (1619). Images in Fig. 15b are from the internet. A web search for “guitar modes scales” generated a million hits [2014-01-31]. Modes are a marketable commodity.
 20. Table 11 reveals that $\hat{3}$, $\hat{6}$ and $\hat{7}$ are the scale degrees most susceptible to alteration. $b\hat{2}$ (phrygian), $\#\hat{4}$ (lydian) and $b\hat{5}$ (locrian) are less common alterations.

C ionian and $a\flat-d\sharp$ in E ionian (both $\hat{4}-\hat{\Delta 7}$), it's always between $b\hat{3}$ and $\Delta\hat{6}$ in the dorian mode ($e\flat-a\flat$ in C dorian and $g\flat-c\sharp$ in E dorian),²¹ between $b\hat{2}$ and $\hat{5}$ for the phrygian, $\hat{1}$ and $\sharp\hat{4}$ for the lydian, and so on. These internal tritone positions, unique to each mode, are marked more clearly by the thick vertical lines in Table 11 (p. 98). Since all the modes in Figure 16 contain a tritone, they can also be called *tritoneal*, as well as diatonic and heptatonic.²²

COLUMN 3 in Figure 16 serves two purposes. One is to further clarify the position of semitone (' $\frac{1}{2}'$) and whole-tone ('1') scalar steps in each mode, the other to present each mode with a different tonic.²³ The unique patterning of tone and semitone steps, and the unique positioning of the *fa-ti* tritone are essential factors distinguishing one mode from another.

It's this unique combination of scale degrees, of how the mode's individual notes sound in relation to each other and to the tonic, that gives each mode its unique flavour. For example, the ionian (C or *doh* mode), lydian (F/*fa* mode) and mixolydian (G/*sol* mode) all contain $\hat{3}$ ($\Delta\hat{3}$, 'major third'). This common trait gives rise to their qualification as 'major modes', while the label 'minor' is applied to the dorian (D/*ré*), phrygian (E/*mi*) and aeolian (A/*la*), modes, which all feature $b\hat{3}$ ('flat three' or 'minor third'; see Table 11, p. 98).

These patterns of tritone placement and scalar intervals produce a unique SCALE DEGREE PROFILE for each mode, for example $\hat{1} \hat{2} \Delta\hat{3} \hat{4} \hat{5} \Delta\hat{6} \Delta\hat{7}$ for the ionian, $\hat{1} \hat{2} b\hat{3} \hat{4} \hat{5} \Delta\hat{6} b\hat{7}$ for the dorian. As Table 11 (p. 98) shows, those strings of figures indicate that while the dorian shares $\hat{2}$, $\hat{4}$ and $\hat{5}$ in common with most of the other modes, the combination of minor third ($b\hat{3}$, 'flat 3'), major sixth ($\Delta\hat{6}$, 'major 6') and minor seventh ($b\hat{7}$, 'flat 7') is exclusive to the dorian, just as the mixolydian is alone with its $\Delta\hat{3}$ and $b\hat{7}$.

[Text continues after Figure 16.]

21. In D (*ré*) dorian, *sol-fa doh* is set to C, in C dorian to $b\flat$, in $B\flat$ dorian to $a\flat$, etc.

22. TRITONAL means containing a tritone; TRITONIC means consisting of three tones.

23. All seven modes can be transposed using any of Western equal tuning's twelve tones as tonic. I am aware that the ionian (C or *doh*) mode needed no transposition into C and the phrygian (E or *mi* mode) no transposition into E!

Fig. 16. *The seven European heptatonic diatonic ‘church’ modes*²⁴


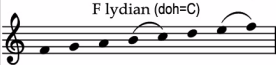
1. on white notes of piano keyboard	2. in C with scale degrees and internal tritone	3. in E with scale step pattern
<p>IONIAN (<i>doh</i> or C mode)</p> <p>C ionian (doh=C)</p>  <p>doh ré mi fa sol la ti doh</p>	<p>C ionian (doh=C)</p> <p>doh ré mi fa sol la ti doh</p> <p>1 2 3 4 5 6 7 1</p> <p>1̇ 2̇ Δ3̇ 4̇ 5̇ Δ6̇ Δ7̇ [8=1̇]</p>	<p>E ionian (doh=E)</p> <p>1 2 3 4 5 6 7 1</p> <p>1 1 ½ 1 1 1 ½</p>
<p>DORIAN (<i>ré</i> or D mode)</p> <p>D dorian (doh=C)</p>  <p>ré mi fa sol la ti doh ré</p>	<p>C dorian (doh=Bb)</p> <p>ré mi fa sol la ti doh ré</p> <p>1 2 b3 4 5 6 b7 (1)</p> <p>1̇ 2̇ b3̇ 4̇ 5̇ Δ6̇ b7̇ [8=1̇]</p>	<p>E dorian (doh=D)</p> <p>1 2 b3 4 5 6 b7 (1)</p> <p>1 ½ 1 1 1 ½ 1</p>
<p>PHRYGIAN (<i>mi</i> or E mode)</p> <p>E phrygian (doh=C)</p>  <p>mi fa sol la ti doh ré mi</p>	<p>C phrygian (doh=Ab)</p> <p>mi fa sol la ti doh ré mi</p> <p>1 b2 b3 4 5 b6 b7 (1)</p> <p>1̇ b2̇ b3̇ 4̇ 5̇ b6̇ b7̇ [8=1̇]</p>	<p>E phrygian (doh=C)</p> <p>1 b2 b3 4 5 b6 b7 (1)</p> <p>½ 1 1 1 ½ 1 1</p>
<p>LYDIAN (<i>fa</i> or F mode)</p> <p>F lydian (doh=C)</p>  <p>fa sol la ti doh ré mi fa</p>	<p>C lydian (doh=G)</p> <p>fa sol la ti doh ré mi fa</p> <p>1 2 3 #4 5 6 7 (1)</p> <p>1̇ 2̇ Δ3̇ #4̇ 5̇ Δ6̇ Δ7̇ [8=1̇]</p>	<p>E lydian (doh=B)</p> <p>1 2 3 #4 5 6 7 (1)</p> <p>1 1 1 ½ 1 1 ½</p>
<p>MIXOLYDIAN (<i>sol</i> or G mode)</p> <p>G mixolydian (doh=C)</p>  <p>sol la ti doh ré mi fa sol</p>	<p>C mixolydian (doh=F)</p> <p>sol la ti doh ré mi fa sol</p> <p>1 2 3 4 5 6 b7 (1)</p> <p>1̇ 2̇ Δ3̇ 4̇ 5̇ Δ6̇ b7̇ [8=1̇]</p>	<p>E mixolydian (doh=A)</p> <p>1 2 3 4 5 6 b7 (1)</p> <p>1 1 ½ 1 1 ½ 1</p>
<p>ÆOLIAN (<i>la</i> or A mode)</p> <p>A æolian (doh=C)</p>  <p>la ti doh ré mi fa sol la</p>	<p>C æolian (doh=Eb)</p> <p>la ti doh ré mi fa sol la</p> <p>1 2 b3 4 5 b6 b7 (1)</p> <p>1̇ 2̇ b3̇ 4̇ 5̇ b6̇ b7̇ [8=1̇]</p>	<p>E æolian (doh=G)</p> <p>1 2 b3 4 5 b6 b7 (1)</p> <p>1 ½ 1 1 ½ 1 1</p>
<p>LOCRIAN (<i>ti</i> or B mode)</p> <p>B locrian (doh=C)</p>  <p>ti doh ré mi fa sol la ti</p>	<p>C locrian (doh=Db)</p> <p>ti doh ré mi fa sol la ti</p> <p>1 b2 b3 4 b5 b6 b7 (1)</p> <p>1̇ b2̇ b3̇ 4̇ b5̇ b6̇ b7̇ [8=1̇]</p>	<p>E locrian (doh=F)</p> <p>1 b2 b3 4 b5 b6 b7 (1)</p> <p>½ 1 1 ½ 1 1 1</p>

Table 11 (p. 98) also shows that the lydian is the only one of the seven diatonic heptatonic modes to include a raised fourth (#4) and that the locrian is alone without a perfect fifth, the most likely

24. Mode name mnemonic by Reffett (2013): **I** (ionian) **D**on't (dorian) **P**unch (phrygian) **L**ike (lydian) **M**ohammed (mixolydian) **A**- (æolian) **L**i (locrian).

reason for its rare usage, apart from melodically in heavy metal, and the reason for its infrequent appearance in this book.²⁵ Apart from the locrian, then, the phrygian is the only mode to feature $\flat 2$ ('flat two'), but its inclusion of $\hat{5}$ ('perfect fifth') means that it can be used effectively in music relying on drones, natural overtones, etc.

Table 11. *Unique scale-degree profiles of the heptatonic 'church' modes.*

ionian (C/doh)	1	2	$\Delta 3$	4	5	$\Delta 6$	$\Delta 7$	8=1
dorian (D/ré)	1	2	$\flat 3$	4	5	$\Delta 6$	$\flat 7$	8=1
phrygian (E/mi)	1	$\flat 2$	$\flat 3$	4	5	$\flat 6$	$\flat 7$	8=1
lydian (F/fa)	1	2	$\Delta 3$	$\sharp 4$	5	$\Delta 6$	$\Delta 7$	8=1
mixolydian (G/sol)	1	2	$\Delta 3$	4	5	$\Delta 6$	$\flat 7$	8=1
aeolian (A/la)	1	2	$\flat 3$	4	5	$\flat 6$	$\flat 7$	8=1
locrian (B/ti)	1	$\flat 2$	$\flat 3$	4	$\flat 5$	$\flat 6$	$\flat 7$	8=1

All this theoretical detail about mode may seem nerdy and arcane but it's essential to the understanding of how modes work, at least if the theory is also rooted in practical familiarity with real sounds. Such familiarity is easy to acquire even if you aren't a musician, or if you have no access to a piano keyboard, because many user-friendly MIDI keyboard apps can be downloaded free to your computer, tablet or smartphone. To 'check out the feel' of a mode using only the white notes of the keyboard, all you need to do is:

1. Hold down or repeat the tonic note (c for ionian, d for dorian, e for phrygian, etc.) like a drone in the bass register.
2. With the keynote (tonic) sounding more or less constantly, play short melodic patterns, circling first round the keynote, then venturing further afield, using rising and falling patterns.
3. Listen out for how the mode sounds when you include the semitone intervals e-f or b-c in short phrases that finish on the keynote ($\hat{1}$, the tonic) or on the fifth ($\hat{5}$).²⁶

25. Most music cultures (not all, see the *pelog* tuning in Table 7, p. 76) treat the perfect fifth as a consonance. The locrian mode's diminished fifth ($\flat 5$) means that no normal consonance (no heavy metal power chord, no Highland bagpipe drone, no 'common triad') can be constructed on its tonic. The locrian mode is seldom used, except by thrash or death metal soloists with their penchant for the tritone, a.k.a. the *diabolus in musica*, which, quite appropriately, is also the title of a 1998 album by thrash metal band Slayer.

4. Apply these white-notes-only tricks to any of the seven modes shown in Table 11.

Each of the heptatonic modes in Figure 16 (p. 97) can be transposed so that any of the Western octave's twelve constituent semitone steps can act as tonic, just as long as the mode's unique sequence of tones and semitones is retained. For example, the ionian mode, with its unique ascending pattern of steps —1-1-½-1-1-½— and of scale degrees — $\hat{1} \hat{2} \hat{3} \hat{4} \hat{5} \hat{6} \hat{7}$ — produces, with c as its tonic, the notes c d e f g a b. Transposing that same mode with those same step patterns up one semitone from C to D \flat produces the ionian mode on d \flat : d \flat e \flat f g \flat a \flat b \flat c. Then, if you transpose the same pattern down a minor third from C to A you end up with the ionian mode in A (a b c \sharp d e f \sharp g \sharp). If you carry out those two transpositions of the ionian mode, you will have played the same ionian-mode scale in three different KEYS: C, D \flat and A.

Examples

Another effective way of identifying modes is to associate each of them with a particular tune. This section provides examples of tunes in the seven diatonic modes just presented.

Ionian: $\hat{1} \hat{2} \Delta\hat{3} \hat{4} \hat{5} \Delta\hat{6} \Delta\hat{7}$

The IONIAN (heptatonic C or *doh*-mode) is so familiar in the West that it's hardly worth mentioning. You'll get the idea if you just think of what sounds similar in *God Save The Queen* (p. 87), the *Internationale*, the *Star-Spangled Banner*, *Happy Birthday* and *Jingle Bells*. They're all either basically or totally ionian ('in the major key').

Dorian: $\hat{1} \hat{2} \flat\hat{3} \hat{4} \hat{5} \Delta\hat{6} \flat\hat{7}$

The distinctive flavour of the DORIAN mode comes from its unique combination of $\flat\hat{3}$, $\Delta\hat{6}$ and $\flat\hat{7}$, as heard in ex. 5 (g c \sharp d \natural in dorian E).

26. $\hat{5}$ is e in A aeolian, g in C ionian, a in D dorian, b in E phrygian and d in G mixolydian (see Table 11).

tonal centre while $\flat\hat{3}$ and $\Delta\hat{6}$ are what make the dorian sound really distinctive. The three dorian scale degrees 2, 4 and $\flat 7$ are less specific since they are also present in both the mixolydian and aeolian modes (see Table 11, p. 98).

Phrygian: $\hat{1} \flat\hat{2} \flat\hat{3} \hat{4} \hat{5} \flat\hat{6} \flat\hat{7}$

The PHRYGIAN is distinctive as a heptatonic diatonic mode because it's the only one to include $\flat\hat{2}$ ('flat two', 'flat supertonic', 'minor second', etc.) and a perfect fifth ($\hat{5}$). Unlike phrygian *harmony* (p. 289, ff.), phrygian *melody* is rather unusual in the urban West. It is, however, widespread, as maqam *Kurd*, in the Balkans, Turkey, the Arab world and on the Indian subcontinent.²⁸ Example 9, an extract from one of the most popular Greek songs of recent years, contains a strong $\flat\hat{2}$ presence ($\flat\hat{1}-\hat{e}$) in bars 22-23.

Ex. 9. *Sokrates Málamas* (2005): 'Princess'; E phrygian (*dromos Ousák*)

19 $\text{♩} = 92$ 1 4 5 $\flat 6$ $\flat 3$
 lute
 22 $\flat 2$ 4 5 $\flat 3$ $\flat 2$ 1 $\flat 2$ 4 5 4 $\flat 3$ $\flat 2$ 1 $\flat 7$
 lead vocal 'ΕΞΩ ΦΥΣΣΕΙ_ΑΕΡΑΣ...

Another descent with $\flat\hat{2}-\hat{1}$ closure is audible in the D-phrygian pastiche of Spanishness cited in example 10 ($\hat{e}\flat\backslash\hat{d}$).

Ex. 10. *Cordigliera* (Italian library music, n.d., CAM 004); D phrygian

$\text{♩} = 126$ D Gm F Eb D
 trpt., castanets, etc.

Phrygian melody also turns up in at least two popular pieces of early twentieth-century music for string orchestra — Vaughan-Williams' *Fantasia on a Theme by Thomas Tallis* (1910) and Barber's *Adagio for Strings* (1936) in phrygian F (ex. 11, $\flat\hat{b}-\hat{f}$).²⁹

28. Flat-two modes other than phrygian are dealt with in the section 'Maqamat, flat twos and foreignness', p. 114, ff.

Ex. 11. Samuel Barber: *Adagio for Strings* (1936); bars 4-8; F phrygian

Lydian: $\hat{1} \hat{2} \Delta\hat{3} \# \hat{4} \hat{5} \Delta\hat{6} \Delta\hat{7}$

The LYDIAN is, like the phrygian, a very distinctive heptatonic diatonic mode because it contains a scale degree found in none other. It's the raised fourth ($\# \hat{4}$) that sets the lydian mode apart. Heard in the same breath as $\hat{1}$, $\Delta\hat{3}$, $\hat{5}$ and $\Delta\hat{6}$, it's $\# \hat{4}$ that gives the initial motif from *The Simpsons* theme (ex. 12a) its lydian flavour, even though the extract is strictly speaking hemitonic pentatonic (c e $\#$ g a) because neither $\hat{2}$ (d in C lydian) nor $\hat{7}$ (b) are anywhere to be heard. Similar observations can be made about the initial motif in the radio signature for BBC's *Pick of the Pops* (ex. 12b) and about the Romanian dance motif in example 13. They are all lydian because the mode's unique $\# \hat{4}$ is heard in the same breath as its $\hat{1}$, $\hat{3}$ and $\hat{5}$.³⁰

Ex. 12. (a) Danny Elfman (1989): *The Simpsons theme, lead motif*; C lydian
(b) Brian Fahey (1960): *BBC Pick of the Pops motif*; C lydian

Ex. 13. *Romanian Polka from Romanian Dances* (arr. Bartók, 1915); D lydian

29. The Tallis *Fantasia* includes many b2-1 passages, e.g. as bā-g (phrygian G) at bars 5 and 8 after 'B'. The piece, voted into third place by Classic FM's listeners, was used in the films *Remando al viento* (Suárez, 1987), *Master and Commander* (Weir, 2003) and *The Passion of Christ* (Gibson, 2004). The Barber *Adagio* was broadcast upon the deaths of Presidents Roosevelt and Kennedy, Princesses Grace and Diana, and of Albert Einstein. It was used in such films as *Amélie* (Jeunet, 2001), *Lorenzo's Oil* (Miller, 1992), *Platoon* (Stone, 1986), *Sicko* (Moore, 2007) and *The Elephant Man* (Lynch, 1980). It has also been covered by remix artists like William Orbit (1999). For more phrygian, see p. 114, ff.

30. See also section on the LYDIAN FLAT SEVEN mode, p. 139, ff.

Mixolydian: $\hat{1} \hat{2} \hat{\Delta} \hat{3} \hat{4} \hat{5} \hat{\Delta} \hat{6} \flat \hat{7}$

Ex. 14. *She Moved Through The Fair* (Brit./Ir. Trad. cit. mem.) D mixolydian.

After the ionian, the MIXOLYDIAN is the most common heptatonic mode in traditional music from the British Isles. The tune cited as example 14 contains all scale degrees ($\hat{1} \hat{2} \hat{\Delta} \hat{3} \hat{4} \hat{5} \hat{\Delta} \hat{6} \flat \hat{7}$) in D mixolydian (d e f# g a b c#) and is known in numerous variants, including the UK hit *Belfast Child* (Simple Minds, 1989). Its tonal vocabulary, characterised by an internal tritone between major third ($\hat{\Delta} \hat{3}$) and minor seventh ($\flat \hat{7}$), corresponds roughly to the notes playable on a Highland bagpipe chanter.³¹ Figure 17a shows how those notes are written for pipers while Figure 17b presents the pitches as they are often transcribed, in A mixolydian. Figure 17c represents the same nine notes, but as they actually *sound*, i.e. as B \flat mixolydian with an extra $\flat \hat{7}$ ($\flat b$) just under the lower $\hat{1}$.³¹

Fig. 17. Highland bagpipe chanter pitches: ([a], [b] conceptually; [c]: as heard)

Whether bagpipe chanters were adapted to cater for a mixolydian tonality that already existed in song, or whether Scottish tunes were influenced by the tonality of Highland pipe chanters (or both), it should come as no surprise to find a great number of Scottish tunes in the mixolydian mode (see ex. 15).

31. The $\hat{3}$ on the Highland pipe chanter is typically 10c and $\flat \hat{7}$ 20c below the nearest equivalent pitch in equal-tone tuning (McKerrell, 2011: 174-179). Does that mean the chanter's notes are really mixolydian or in another mode?

Ex. 15. *Tàladh Chriosda* (Scot. Gael. trad. via A. Cormack, 2011); mixolydian Eb

Al - le - lu - ia. Al - le - lu - ia, Al - le - lu - ia, Al - le - lu - ia

Mixolydian tunes are also common in traditional music from England (ex. 16), Ireland (ex. 17) and the Appalachians (ex. 18).³²

Ex. 16. *The Lark In The Morning* (Eng. trad. via Steeleye Span, 1971).

B mixolydian; $b\hat{7} = a\sharp$

Oh the lark in the mor-ning, she rise - es from her nest And she
And like the pret-ty plough-boy she'll whist-le and sing And at
mounts in the air with the dew up-on her breast.
night she will re - turn to her own nest a - gain.

Ex. 17. *The Lamentation of Hugh Reynolds* (from *Irish Street Ballads*, 1939). D mixolydian; $b\hat{7} = c\sharp$.

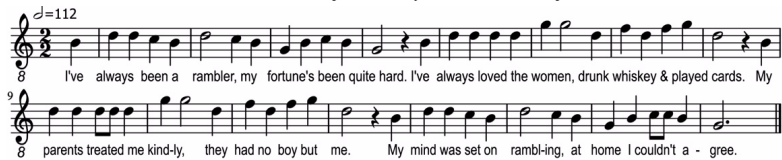
My name it is Hugh Reynolds. I come from honest par- ents. Near Cavan I was
lov - ing of a maid, one Cath - er - ine Mc - Cabe, my life has been bet -
born as you may plain - ly see. By dear maid to me.

Many *baião* and *fórró* tunes from Northeastern Brazil are also mixolydian. The most famous of these is cited in example 19.

32. Eight more Scottish mixolydian tunes: *Campbell's Farewell*, *Soor Plooms In Galashiels*, *The Wee Man From Skye*, *The Kilt Is My Delight*, *The Athole Highlanders*, *The Flowres Of The Forrest* (Campin 2009); *A A Cameron's Strathspey*, *An nochd gur faoin...* (Kuntz, 2009). Eight mixolydian tunes in *The Penguin Book of English Folk Songs* (1959): *The Banks of Newfoundland* (p. 16), *The False Bride* (p.37), *The Greenland Whale Fishery* (p.50), *The Outlandish Knight* (p.80), *The Red Herring* (p.86), *Rounding The Horn* (p.90), *The Whale-Catchers* (p.100) and *The Young Girl Cut Down In Her Prime* (p.108). Four more Irish mixolydian tunes: *Mug Of Brown Ale*, *Paddy Kelly's Jig*, *The Red-Haired Boy* (a.k.a. *The Jolly Beggarmen*) and *Redican's*. Three more Appalachian mixolydian tunes: *Black Is The Color Of My True Love's Hair*, *Old Joe Clark* and *Jenny In The Cotton Patch*.

Ex. 18. *I've Always Been A Gambler* (US Trad. via *New Ruby Tonic Entertainers*, 1974, © Betsy Rutherford). G mixolydian; $b\hat{7} = f\sharp$.

$\text{♩} = 112$



I've always been a rambler, my fortune's been quite hard. I've always loved the women, drunk whiskey & played cards. My parents treated me kind-ly, they had no boy but me. My mind was set on rambl-ing, at home I couldn't a - gree.

Ex. 19. *Luiz Gonzaga (Senior): Asa branca* (1955). G mixolydian; $b\hat{7} = f\sharp$.³³

$\text{♩} = 120$



Quando olh - ei a ter - ra ard - end - o, Á fogu - eir - a de São João, Eu per-gunt - ei - a Deus do céu, ai, Por que tam - anh - a jud - i - a - ção.

Please note that the mixolydian mode is not an exclusively pre-industrial affair. Gonzaga's main fan base was among immigrants from the Northeast living in Brazil's vast southern metropolises (São Paulo, Rio, etc.). Besides, the $\Delta\hat{3}$ s and $b\hat{7}$ s in examples 20 ($e\sharp$ and $b\flat$) and 21 ($g\sharp$ and $d\sharp$) should dispel any notion of rural antiquity.

Ex. 20. *Righteous Brothers: You've Lost That Lovin' Feelin'*, start of v. 1 (1964); C mixolydian; $b7 = b\flat$



You never close your eyes any more when I kiss your lips. And there's no tend - er - ness like be - fore in your fing - er - lips.

Ex. 21. *Beatles: Norwegian Wood, sitar intro* (1965b). E mixolydian; $b7 = d\sharp$.

$\text{♩} = 60$



Aeolian: $\hat{1} \hat{2} b\hat{3} \hat{4} \hat{5} b\hat{6} b\hat{7}$

After the ionian, the aeolian is probably the most familiar heptatonic diatonic mode in the ears of the urban West. It turns up in a wide range of musical traditions, including the euroclassical

33. All $f\sharp$ s in ex. 19 are in the accordion part (upper notes) which is played in constant parallel thirds with vocal line (lower notes).

where it provides tonal material for some of the repertoire's best known tunes (examples 22-24).³⁴

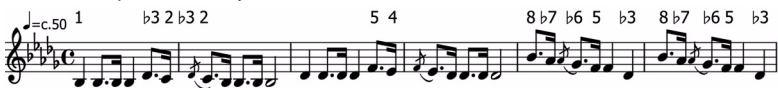
Ex. 22. Mozart: *Symphony no. 40 in G minor (I)* (1788), bars 1-4; G æolian.



Ex. 23. Beethoven: *Symphony no. 5 in C minor (I)* (1808), bars 6-13; C æolian



Ex. 24. Chopin: *Marche funèbre* (1839); B♭ æolian



The aeolian mode has the same pitches as the ionian, dorian and mixolydian on scale degrees 2, 4 and 5. Its characteristic sound resides elsewhere, more specifically in the unique positioning of its two semitone steps — $\hat{2}-\hat{b}\hat{3}$, $\hat{5}-\hat{b}\hat{6}$ — and of its internal tritone between major second ($\hat{2}$) and minor sixth ($\hat{b}\hat{6}$). The three euroclassical tunes just quoted put these distinctive aeolian traits to good use. Mozart (ex. 22), in G aeolian, lets us hear the $\hat{b}\hat{6}-\hat{5}$ (e**b**-d) semitone three times in under two seconds and includes the $\hat{b}\hat{6}-\hat{2}$ tritone (e**b**-a**♯**) in the harmony behind bars 4-5. Beethoven, in C aeolian (ex. 23), uses the $\hat{b}\hat{6}-\hat{5}$ semitone twice (a**b**-g in bars 2-3, 6-7) and states the $\hat{2}-\hat{b}\hat{6}$ tritone (d-a**b**) boldly in bar 6. Chopin, in B♭ aeolian (ex. 24), uses grace notes to emphasise the mode's $\hat{2}-\hat{b}\hat{3}$ semitone (c-d**b**) in bars 1-2 and its $\hat{b}\hat{6}-\hat{5}$ semitone (g**b**-f) in bars 5 and 6. Like Mozart (ex. 22, bars 3-4), Chopin also introduces the $\hat{8}-\hat{b}\hat{7}-\hat{b}\hat{6}-\hat{5}$ descent that is both aeolian and phrygian (b**b** a**b** g**b** f in ex. 24) but exclusively aeolian if, as is the case in the extracts cited, the major second ($\hat{2}$, not $\hat{b}\hat{2}$) is already heard as part of the mode.³⁵

34. The aeolian is after all the only heptatonic diatonic mode, apart from the ionian, to be included in conventional European music theory (as the 'descending melodic minor', see Figure 14 (p. 91)) and to be practised by budding euroclassical performers as a scale.

35. $\hat{2}$ is a**♯** in bar 2 of the Mozart (in G) and c**♯** in bar 1 of the Chopin extract (in B♭).

widely covered ‘suicide hit’, with its one $b\hat{6}-\hat{5}$ (e \flat -d in bar 6) and eight $b\hat{3}-\hat{2}$ semitone gestures (b \flat -a in bars 3-4, 11-14), in addition to its typically aeolian $\hat{8}-\hat{b}\hat{7}-\hat{b}\hat{6}-\hat{5}$ descent (g-f-e \flat -d in bar 6).³⁹

Ex. 26. *Billie Holiday: Gloomy Sunday (1941): vocal line, verse 2; G aeolian*

Gloom-y Sunday, with shad-ows I spend it all. My heart and I have de- cid- ed to end it all.
 Soon there'll be candles and prayers that are said, I know. Let them not weep, let them know that I'm glad to go.
 Death is no dream, for in death I'm caressing you. With the last breath of my soul I'll be blessing you. Gloom-y Sunday.

The fate of *Romeo and Juliet*, also involving suicide, is another aeolian tune of tragedy (ex. 27), with its initial $b\hat{3}-\hat{2}$ (c-b), its $b\hat{6}-\hat{5}$ (f-e, bar 3) and an extended $\hat{8}-\hat{b}\hat{7}-\hat{b}\hat{6}-\hat{5}$ descent (a-g-f-e, bars 2-3).

Ex. 27. *Nino Rota: Theme from Romeo & Juliet (1968); A aeolian $b\hat{3}-\hat{2}$*

Repeated $b\hat{3}-\hat{2}$ motifs of anguish are not uncommon in rock music either, as amply demonstrated on the /eɪ/ of ‘run away’ and ‘pain’ in bars 2 and 12-13 of example 28.

Ex. 28. *Aerosmith: Janie’s Got A Gun (1989: 4:04-4:34); F aeolian $b\hat{3}-\hat{2}$*

Run away, run a-way from the pai - - y - a[y] - a[y] - a[y] - ain. Run a-way,
 Run a - way from the pai - [y]ai - [y]ai - [y]ai - [y]ain. Run a - way, Run a - way,
 Run, run a - way - [y]ay - [y]ay - [y]ay - [y]ay - [y]ay - [y]ay - [y]ay. Janie's got a

39. For more on *Gloomy Sunday*, see the homonymous Wikipedia article [140201].

Example 28's young 'Janie', subjected to sexual abuse by her 'daddy', gets the gun of the song's title so she can 'put a bullet right through his brain' and 'run away-ay-ay from the pay-ay-ain'. In example 29, Nirvana's remarkable lead vocalist, Kurt Cobain, uses $\flat\hat{3}-\hat{2}$ (ab-g), in a much lower register than Aerosmith's Steve Tyler (ex. 28), produces not a bitterly wailing accusation but something more like the repeated litanies of someone trapped in the vicious circle of a debilitating depression. It's certainly closer to a suicidal *Gloomy Sunday* (ex. 26) than to Cobain's passionate, primal yelling in the chorus of *Smells Like Teen Spirit* (ex. 195, p. 283) or of *Lithium* (ex. 30).⁴⁰

Ex. 29. *Nirvana: Smells Like Teen Spirit* (1991, verse); F æolian $\flat\hat{3}-\hat{2}$ (ab-g).

Ex. 30. *Nirvana: Lithium* (1991, chorus); D æolian $\flat\hat{3}-\hat{2}$ (f-e)

Lithium compounds (e.g. lithium citrate) are active ingredients in prescription drugs used to take the edge off bipolar extremes, to make mania less manic and depressive states less suicidal, so to speak. Shunning speculation about Cobain's bipolarity as autobiographical 'reason' for the acutely expressed depression of the verses and impassioned anger of the choruses in *Teen Spirit* and *Lithium*, it is nevertheless clear that $\flat\hat{3}-\hat{2}$ gestures in aeolian melody are not exactly a happy affair in rock music, however life-affirming the expression of that anger may strike us as listeners.⁴¹

40. It's a depression that 'goes on and on and on and on' or 'round and round and round and round' —HELLO, HELLO, HELLO, HOW LOW? *Lithium's* lyrics include the line 'Sunday morning is everyday for all I care'. Does life's absurdity become more tangible to a depressed individual on a Sunday, due to its special status as day of the week after the revels of Friday and Saturday (as in *Gloomy Sunday*)? That's not the point here. In fact, pointlessness may be the key point and FOR ALL I CARE the key phrase; or, as heard in the terms of Generation X, near the end of the *Teen Spirit* lyrics: WHATEVER! NEVER MIND!

Does all this mean that the aeolian mode is intrinsically tragic, sad, suicidal or angst-ridden?

Ex. 31. *God Rest You Merry, Gentlemen* (Eng. trad., cit. mem.) D aeolian

$\text{♩} = c.90$ 1 5 4 $b3$ 2 1 $b7$ 5 $b6$ 4 5 $b6$

God rest you merry, gen-tle-men let noth-ing you dis- may. Re-mem-ber Christ our Savi-our was born up-on this day to save us all from Sa-tan's power when we were gone a-stray. Oh, ti - dings of com - fort and joy, comfort and joy! Oh, tid - dings of com - fort and joy!

Ex. 32. *Arturov: Amur Partisan Song* (mel. cit. mem.); D aeolian

$\text{♩} = c.96$ 1 2 $b3$ 5 4 $b7$ $b7$ $b6$ 5 5

По долинам и по взгорьям Шла ди-виз-ия впе - ред, Чтобы с бою взять Приморье Бел- ой армии оп - лот.

Examples 31 and 32 are entirely aeolian but neither is connected with gloom, doom, depression or anguish. *God Rest You Merry, Gentlemen* proclaims happiness for the Christmas season ('let nothing you dismay') and brings 'tidings of comfort and joy', while the Russian partisans are celebrating victory, the bravery of their heroes and their successful arrival at the shores of the Pacific.⁴²

Ex. 33. *Kaoma: Lambada* (1989). D aeolian (d e f g a $b7$ c = $\hat{1}$ $\hat{2}$ $\hat{b3}$ $\hat{4}$ $\hat{5}$ $\hat{b6}$ $\hat{b7}$)

$\text{♩} = 120$

8 Chor-and - o se foi quem um di - a só me fez chor - ar. Chorando_ est-a-rá, ao lemb- rar de_ um amor Que um di - a não sou - be cuid - ar. di - a não sou - be cuid - ar.

Moreover, although the lyrics of example 33 include crying over lost love ('*chorar ao lembrar de um amor*'), the song's main message, borne out by the official video's sexy dancing and cheery faces, is getting over that sadness by falling in love again and dancing in the sunshine on the beach ('*dança, sol e mar*'). We are in other words a long way from Chopin's *Marche funèbre*, from *Gloomy Sunday*, and from the rock angst of examples 28-30.

41. See *Anger is an Energy* (Nehring, 1997), as well as *Anti-depressants and Musical Anguish Management* (Tagg, 2004).

42. Complete text of the partisan song, in Russian with translation, is at

marxists.org/subject/art/music/lyrics/ru/po-dolnam.htm [140201].

How can the same mode be associated with such different moods? Three factors explain this ostensible connotative paradox, the first of which is to do with speed and movement.

Although the Mozart, Beethoven, Aerosmith and Nirvana extracts (ex. 22, 23, 28-30) move at a moderate or brisk pace, the Chopin ($\text{♩}=50$), Billie Holiday ($\text{♩}=60$) and Rota extracts ($\text{♩}=84$) are all quite slow. The ‘Merry Gentlemen’ move much faster in *alla breve* metre ($\text{♩}=90$) and the *Lambada* dancers at a brisk 120 bpm, but the Russian partisans ($\text{♩}=96$) are only slightly faster than *Romeo and Juliet* ($\text{♩}=84$). The difference between them is one of surface rate. Whereas the aeolian tune for Shakespeare’s tragic lovers repeatedly pauses on single notes (the recurring ‘ $\text{♩} \text{♩}$ ’ in example 27), the Russian partisans in example 32 keep on moving ($\text{♩} \text{♩} \text{♩} \text{♩} \text{♩} \text{♩} \text{♩} \text{♩} \text{♩}$). But that doesn’t explain why the Aerosmith and Nirvana examples are anguished but our ‘happy aeolian tunes’ (ex. 31-33) aren’t.

The second factor is the way in which the distinctive aeolian traits, discussed in conjunction with examples 22-30, are treated. While the $\text{b}\hat{3}-\hat{2}$ and $\text{b}\hat{6}-\hat{5}$ semitones, the $\hat{2}-\text{b}\hat{6}$ tritone, and the $\hat{8}-\text{b}\hat{7}-\text{b}\hat{6}-\hat{5}$ descent are highlighted in those extracts, the ‘happy’ aeolian examples do not dwell on those traits. In fact the traits either do not appear at all — there’s no $\hat{8}-\text{b}\hat{7}-\text{b}\hat{6}-\hat{5}$ descent and no $\hat{2}-\text{b}\hat{6}$ tritone in those examples — or, as in the case of $\hat{2}-\text{b}\hat{3}$ and $\hat{5}-\text{b}\hat{6}$, they are simply passed over as part of the melodic phrase’s overall profile.⁴³

A third factor is the difference in timbre and delivery between the rock (ex. 28-30) and the ‘happy’ examples. Neither listlessly repeated litanies (ex. 29), nor guitar distortion, nor full drumkit, nor the urgent yelling of a solo male vocalist (ex. 28, 30) is anywhere to be heard in examples 31-33.

The final factor is one of tonal familiarity and cultural convention. If you’re mostly used to the tonality of the euroclassical repertoire and its widespread use in various forms of popular music, you’re more likely to assume that there’s some sort of automatic correspondence between the tradition’s simple major-minor binary and the equally crude bipolarity of ‘happy v. sad’.⁴⁴ If you have experi-

43. The $[\text{a}-\text{g}\backslash\text{b}\flat]([\hat{5}-\hat{4}\backslash\text{b}\hat{6})$ gesture in *Lambada*’s bars 4-5 is a possible exception.

ence of other tonal traditions you'll be less liable to make such assumptions.⁴⁵ To put the affective aspect of the major-minor binary into perspective, it's worth noting that a 2013 poll among readers of *Rolling Stone* magazine asked to name their 'saddest song' revealed that seven of the top ten tearjerkers (70%) were in the *major* key, that two (20%) were in mixed modes, and that only one (10%) was in an unequivocally minor mode. The sadness perceived in those songs was therefore more likely to be a matter of lyrics, tempo, vocal timbre, register, melodic profile, articulation and instrumental restraint and much less of an issue of major v. minor.⁴⁶ Moreover, the fact that most tunes in the cheery, glitzy 2014 Eurovision song contest were in a minor mode suggests that the MAJOR-MINOR = HAPPY-SAD binary is in sore need of revision.⁴⁷

'Hypo' modes?⁴⁸


Non-diatonic heptatonic modes

So far I've presented the seven heptatonic 'church' modes, of which six — the ionian, dorian, phrygian, lydian, mixolydian and aeolian — are on the radar screen of Western music theory. But there are countless other heptatonic modes in everyday use around the world that are not. Now, this account can do no more


44. Parlour song, hymns, national anthems, polkas, waltzes, tangos, music hall songs, and most pre-*Kind-of-Blue* jazz (Davis, 1959) are all types of popular music whose tonality is basically 'classical' (see Chapter 8). For a more detailed discussion of problems with the minor-major dualism of 'happy v. sad', see 'Minor-mode moods', especially the sections 'Sadness?', 'Ethnicity and archaism' and 'The Virginian's British minor-mode connection', in *Ten Little Title Tunes* (Tagg & Clarida, 2003: 307-330); see also Tagg (2013: 264-65, 334).

45. For more about 'minor=sad/major=happy', see Tagg & Clarida (2003: 307-324), Parncutt (2012: *passim*) and Tagg (2013: 264-5).

46. The *Rolling Stone* saddest song poll is at www.rollingstone.com/music/pictures/readers-poll-the-10-saddest-songs-of-all-time-20131002 [140201]. Major-key songs were *I'm So Lonesome I Could Cry* (H. Williams, 1949), *Sam Stone* (Prine, 1971), *Black* (Pearl Jam, 1992), *He Stopped Loving Her Today* (G. Jones, 1980), *Cat's In The Cradle* (Chapin, 1974), *Everybody Hurts* (REM, 1993), *Tears In Heaven* (Clapton, 1992). The mixed-mode sad songs were *Nutshell* (Alice in Chains, 1994), *Something In The Way* (Nirvana, 1991). The only minor-mode sad song on the list was *Hurt* (Nine Inch Nails, 1994); an extract from the Johnny Cash version of *Hurt* is ex. 79 (p. 156).

47. Eurovision Song Contest (Copenhagen),  BBC1, 2014-05-10, 20:00 hrs.

than address a very small sample of all those other modes. Given this vast tonal variety, I have chosen to focus on modes that Western listeners may well recognise but also hear as ‘different’ or ‘exotic’, more specifically on modes containing b^2 (‘flat two’) and/or \sharp^4 (‘sharp four’) and/or an augmented second (scale step of $1\frac{1}{2}$ tones). These modal features are common in music from the Arab world, the Eastern Mediterranean, the Balkans, Greece, Turkey and southern Spain. Tonality in that populous part of the world shares many common traits, even if terms and labels can vary radically from one area to another.⁴⁹ For the sake of brevity, and for the six reasons given in footnote 50,⁵⁰ I will use the Arabic word *maqam* (مقام; plural *maqamat*, مقامات) to qualify that general geomusical part of the world and its commonality of tonal traditions. To further simplify the account, I will largely avoid discussion of modes containing microtonal scale steps because their constituent notes are difficult or impossible to produce on a Western fretted instrument like the guitar or on a piano keyboard.

48. The hypomode section, based on the *Groves* entry on Glarean (Powers, 1995: 406-412), has been withdrawn due to unspecified errors reported in an email to the author by a scholar of Renaissance music. I speculated about explanations of bimodality in the work of Heinrich Glarean who, in his *Dodecachordon* (1547), organised ‘church’ modes into the system familiar to users of the iPhone app *Understand Modes* and readers of *Guitar Player* magazine (fnt. 18, p. 94 and  guitarplayer.com [090718]). My point was that since tonal configurations in popular music can shift between, say, ionian and mixolydian, between aeolian and phrygian, etc., it might be useful to examine music theory predating the euro-classical era with a view to finding models of tonality that don’t put the ionian mode and V-I cadences at the centre of the tonal universe. Since this subsection was largely peripheral to issues covered in this chapter, its removal does not affect the main narrative. However, I apologise for any errors it may have contained and for any confusion that it may have caused.

49. For mode name problems, see Pennanen (2008) and Ordoulidis (2011).

50. The six reasons are: [1] It’s short. [2] It’s Arabic, a language spoken or understood by many in the maqam world. [3] It’s a concept close to the sense of *mode* used in this chapter. [4] Musical scholarship has a long tradition in the Arab world and *maqam* is a central concept in music making throughout the region. [5] Non-Arabic languages spoken in the region use the Arabic *maqam* names for several specific modes (e.g. *Hijaz*/حجاز as *hicaz* (Turkish), *hitaz*/Χιτζάζ (Greek), *Хиджас* (Bulgarian)). [6] *Maqam* is called *makam* in Turkey and Bulgaria (макам) even if it’s called *dromos* (δρόμος) in Greece.

The account that follows, ‘*Maqamat, flat twos and foreignness*’, is divided into three parts. The first of these (pp. 114-145) is a rudimentary theoretical introduction to the modal practices of the regions enumerated in the previous paragraph. The second part zooms in on the modes of flamenco (pp. 128-133) and of some traditional music from the Balkans (pp. 134-145).

Maqamat, flat twos and foreignness

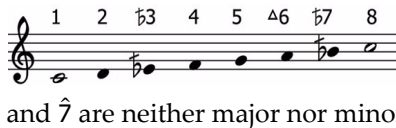
Basic concepts and theory

‘MODE’, as defined earlier, is probably the Western notion closest to the Arabic concept *maqam* (pl. *maqamat*). The same word – *makam* – is used in Turkey (pl. *makamlar*) and Bulgaria (*макам*), while the Greeks call it *dromos* (*δρόμος* = ‘road/way’, pl. *δρόμοι*). Whatever its name, a *maqam*, like a mode, designates a specific tonal vocabulary, typically presented as an array of seven different notes, usually arranged in scalar order inside one octave.⁵¹ Unlike a mode, however, a *maqam* octave is understood to consist of two parts, usually tetrachords (p.118, ff.). It also specifies pivotal tones in the vocabulary, and is often connected to a certain register or to a particular starting note or tonic on the *ud*.⁵² Moreover, a *maqam* contains rules defining its melodic development: ‘[t]hese rules describe which notes should be emphasised, how often, and in what order’.⁵³ Finally, a *maqam* can also relate to paramusical phenomena that are more nuanced than the spurious HAPPY-V.-SAD distinction between major and minor modes in the West.

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51. Some modes, including many Turkish *makamlar*, are, for reasons too complex to explain here, presented including notes above the upper tonic.
52. [1] For example, *maqam Bayati* (ex. 2 in Fig. 20) ‘usually starts on D, but it can also start on G and A. When transposing Arabic *maqamat*, musicians mention the tonic name after the *maqam* name for clarity, e.g. “Bayati on G” (maqamworld.com [140205]). Another example: *maqam Hijaz Shad Araban* has the same relative scale-degree profile as *Hijaz Kar* (1̇ b2 4̇3 4̇ 5̇ b6 4̇7, ex. 5b in Figure 20) but has g rather than d (or c) as tonic. [2] *Ud*: lute used in both vernacular and learned traditions of Arabic music. Fretless instruments are well suited to *maqam* music because microtones can be produced without having to ‘bend’.
53. See maqamworld.com [140204]. There are many more *maqamat* in relatively local use in Turkey, North Africa, Iraq, Iran, etc. See pp. 87-89 for the need to consider tonal configuration, not just tonal vocabulary when discussing mode.

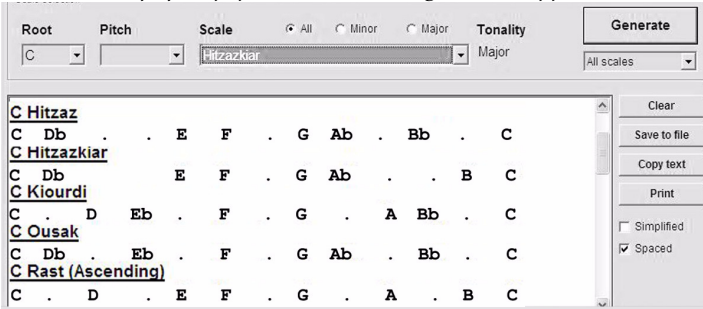
There are between thirty and forty maqamat in common use today.⁵³ Figure 20 (p. 116) lists just six of the basic maqamat families and presents the tones of at least one of the maqamat belonging to each of those six.⁵⁴ Two modes in the Hijaz family are included (nos. 5a and 5b) to give an idea of how different maqamat can belong to the same family.⁵⁵ Figure 20 (p. 116) exists in other words solely to help explain and exemplify a few basic principles of modal theory and practice in the maqam world.⁵⁶

Fig. 18. *Maqam Rast*



Starting with traits familiar to individuals outside the maqam world, *Rast* (←) looks like the ionian mode, except that its $\hat{3}$ and $\hat{7}$ are neither major nor minor but between the two ($\flat\hat{3}$, $\flat\hat{7}$).

Fig. 19. *Λαϊκοί δρόμοι*: popular Greek mode generator applet (screen shot)



When popular musicians in Greece use *Rast* without microtones, it sounds exactly like the ionian or the ‘major scale’ (*κλίμακα ματζόρε*): it’s the mode of bouzouki hits like *Zorba’s Dance* (Theodorakis, 1964). The fact that Greek musicians treat the ionian as just one mode among many is borne out by the contents of numerous online bouzouki tutors. Particularly instructive is the applet *Laïkoi Dromoi* (= Popular Modes, Fig. 19). It lets you select one of the nineteen (yes, 19) popular ‘scales’ on offer, including modes 5a (*Hijaz/*

54. Absent in Figure 20: *Ajam*, *Athar Kurd*, *Jiharkah*, *Mustaar*, *Saba* and *Sikah*.

55. Missing *Hijaz* maqamat are *Shahnaz*, *Suzidil*, *Shad Araban* and *Zanjaran*.

56. See, for example maqamworld.com, the Wikipedia article ‘Maqam’ and the *Δρόμοι και Τρόποι* page at kithara.gr. [140214]

Hitzaz) and 5b (*Hijaz Kar/Hitzazkiar*), listed in Figure 20 (I). You choose your tonic ('Root'), click 'Generate' and the app reveals which of the twelve notes in equal-tone tuning you'll need to play on your fretted bouzouki or guitar to produce the 'right notes'.

Fig. 20. A small sample of maqamat with tetrachord designation, scale degrees, scalar steps and alternative names.

<p>1. <i>Rast</i> 1-2-(\flat)3-4 راست</p>	<p>(a) maqam Rast ascent 1 2 \flat3 4 5 Δ6 \flat7 8 Rast</p> <p>(b) Δρόμος Ραστ ≈ ionian 1 2 Δ3 4 5 Δ6 Δ7 8</p> <p>(c) Rast descent 8 7 Δ6 5 4 (\flat)3 2 1</p>
<p>2. <i>Bayati</i> 1-\flat2-\flat3-4 بياتي</p>	<p>Bayati Nahawand 1 \flat2 \flat3 4 5 \flat6 \flat7 8 ≈ aeolian</p>
<p>3. <i>Nahawand</i> 1-2-\flat3-4 نهائوند</p>	<p>Nahawand Hijaz 1 2 \flat3 4 5 \flat6 Δ7 8 'harmonic minor'</p>
<p>4. <i>Nawa Athar</i> 1-2-\flat3-\sharp4 نوی اثر</p>	<p>(a) maqam Nawa Athar Δρόμος Νιαβέρν Nawa Athar Hijaz 1 2 \flat3 \sharp4 5 \flat6 Δ7 8</p> <p>(b) Nawa Athar Kurd 'Gypsy minor' 'Ukranian Dorian' 'Ukranian minor' Nikriz, Mishberak, Klezmer bulgarish 1 2 \flat3 \sharp4 5 \flat6 \flat7 8</p>
<p>5. <i>Hijaz</i> 1-\flat2-\sharp3-4 حجاز</p>	<p>(a) maqam Hijaz, Δρόμος Χιτζάζ, Hicaz makami, frigio mayorizado Hijaz Kurd 1 \flat2 Δ3 4 5 \flat6 \flat7 8</p> <p>(b) Hijaz Hijaz Hijaz Kar (حجاز كار), Hijaz Shad Araban, Δρόμος Χιτζάζκιάρ, хиджазкар, Freygish, 'Gypsy major', etc. 1 \flat2 Δ3 4 5 \flat6 Δ7 8</p>
<p>6. <i>Kurd</i> 1-\flat2-\flat3-4 کرد</p>	<p>Kurd Nahawand ≈ phrygian, Kürdi makami, Δρόμος Ουσάκ 1 \flat2 \flat3 4 5 \flat6 \flat7 8</p>

Example 2 in Figure 20 (p. 116), *Maqam Bayati*, also looks familiar. It's apparently aeolian, except that its $\hat{2}$ is $\flat\hat{2}$, a quarter-tone below a Western $\hat{2}$.⁵⁷ A more obvious similarity is that between *maqam Kurd* (n° 6 in Fig. 20) and the phrygian mode. The only trouble here is that Greeks call *maqam Kurd* *dromos Ousák*, that *Ousák* is not the same as Turkish *Uşşak makamı*, and that *dromos Kiourdi* is dorian. There's no need to memorise these *maqam* labelling inconsistencies but awareness of them can help avoid misunderstanding.⁵⁸

Four conclusions can be drawn from the simple observations made so far. The first three may seem obvious but they are important.

[1] The ionian and aeolian are just two of many heptatonic modes.

[2] The ionian cannot be regarded as default setting for musics outside standard euroclassical or jazz tonality.

[3] A tonal vocabulary (e.g. *Rast*, *Bayati*), need not conform to the pitches of Western tuning to be part of everyday tonality or to qualify as a mode.

[4] The fourth point concerns assumptions about modal connotations. Three *maqamat* in Figure 20 are traditionally linked to the following three different moods: 'distant desert'; 'vitality, joy and femininity'; and 'pride, power, soundness of mind and masculinity'. Before reading up on the topic I had no idea which mood I was supposed to feel on hearing music in the three relevant modes.⁵⁹ If, like me, you felt it was counterintuitive to link a *minor* mode like *Bayati* (n° 2 in Fig. 20) with *joy* and *vitality*,⁵⁹ then you will, like me, have to admit to a degree of tonal monoculturalism. The point is that intuition for one population — e.g. that of individuals conditioned to react with an ionianised brain — does not equate with the intuitive skills of all other human populations.⁶⁰ Besides, as we saw earlier (pp. 107-112), the assumption that major is happy and minor sad is highly questionable, even within our own culture.

57. *Bayati* $\hat{6}$ and $\hat{7}$ are sometimes given as $\flat\hat{6}$ and $\flat\hat{7}$ (cf. Table 7, p. 76).

58. See Ordoulidis (2011) for further information on this problem.

59. 'Answers': the 'distant desert' is *Hijaz* (no. 5), 'feminine joy/vitality' is *Bayati* (no. 2) and 'masculinity' is *Rast* (no. 1). Descriptions from Touma (1996: 43-44).

60. Latin's *intūċor -tūitus* = to consider, to notice. Different populations aren't programmed to respond to the same music in the same way. (Tagg, 2013: 69-70).

Returning to traits of maqam familiar to Western listeners, it's clear that mode 3 in Figure 20 (p. 116), *Nahawand*, has the same scale-degree profile as the 'harmonic minor' of euroclassical music (p. 91). In that tradition it's the least likely mode to be used melodically, but it's common in tunes from the Balkans and the Eastern Mediterranean. The melody shown as example 34 follows the scale-degree pattern given for *Nahawand* (the 'harmonic minor')— $\hat{1} \hat{2} \hat{b}\hat{3} \hat{4} \hat{5} \hat{b}\hat{6} \hat{\Delta}\hat{7}$ —, which in A translates as the notes $a b c d e f\sharp g\sharp$.

Ex. 34. *Egyptian traditional song; Nahawand in A (1973)*⁶¹



Nevertheless, unlike the *harmonic minor* but like the European *melodic minor* (Fig. 14, p. 91), the scale degrees in many *maqamat*, *makamlar* and *dromoi* differ between ascent and descent in the upper half of the octave, so that the descent ($\hat{8}$) $\hat{b}\hat{7} \hat{b}\hat{6} \hat{5}$, identical to the top four notes in the aeolian or phrygian modes, can often replace the ($\hat{8}$) $\hat{\Delta}\hat{7} \hat{b}\hat{6} \hat{5}$ ($a g\sharp f\sharp e$) heard briefly in bar 3 of example 34. To illustrate this point, a common descending pattern for *Rast* is shown as example 1c in Figure 20. (Note how $\hat{\Delta}\hat{7}$ or $\hat{b}\hat{7}$ in the mode's ascending tetrachord (lines 1a, 1b) becomes $\hat{b}\hat{7}$ in descent (1c)).

Tetrachords and jins

One significant difference between modes and maqamat lies in how the octave is conceptualised. With modes the octave is generally regarded as a single unit but maqamat are additionally, and perhaps more importantly, understood to consist of a lower and an upper half. The dividing line between the two is somewhere in the middle of the octave, most commonly (not always) between $\hat{4}$ and $\hat{5}$, in which case there are four notes below — $\hat{1} \hat{2} \hat{3} \hat{4}$ — and four above the dividing point — $\hat{5} \hat{6} \hat{7} \hat{8}$. Each such group of four notes

61. I transcribed this tune listening to Abdul, Egyptian ud player and resident of Södertälje (Sweden), during a workshop at SÄMUS, Göteborg, in 1973.

is called a TETRACHORD or *jins*.⁶² Given that *jins* means type, gender, nature or spirit, Arab music theory categorises maqamat according to their essence (type, gender, nature, spirit), i.e. their initial *jins*. That's why the examples in Figure 20 (p. 116) are listed by their first tetrachord. For example, *Hijaz* and *Hijaz Kar* (n^os 5a and 5b in Figure 20)⁶³ are both in the Hijaz family of maqamat because their lower *jins* is always $\hat{1} \flat\hat{2} \Delta\hat{3} \hat{4}$, not $\hat{1} \hat{2} \flat\hat{3} \hat{4}$ (*Rast*), nor $\hat{1} \flat\hat{2} \flat\hat{3} \hat{4}$ (*Kurd*), nor $\hat{1} \hat{2} \Delta\hat{3} \hat{4}$ (ionian), nor any other configuration of scale degrees 1-4. So, how can the *jins* of Arab music theory help us understand everyday tonality?

Well, the human hand has one thumb and four fingers. If your thumb is under the neck of a lute, guitar, saz, bouzouki, violin or similar stringed instrument, that one hand can play a maximum of four different notes (five, a pentachord, if an open string is included) without having to change grip, pattern, position or string. The tetrachord encapsulates in other words one shape of the hand and fingers. In music-making it represents a single, tangible moment or gesture that can function as a meaningful unit of musical structure with a particular character, nature or *jins*.

Two of the maqamat in Figure 20 (p. 116) have the same lower and upper tetrachord (*jins*). The upper *jins* of *Rast* (1a in Fig. 20) is identical to its lower one in that $\hat{5} \hat{6} \flat\hat{7} \hat{8}$ involves exactly the same hand shape as $\hat{1} \hat{2} \flat\hat{3} \hat{4}$, i.e. $1 + \frac{3}{4} + \frac{3}{4}$ heptatonic steps between the four notes. That's why the maqam's two tetrachords are both marked 'Rast': the upper *jins* is simply a fifth higher. The same goes for maqam *Hijaz Kar* (n^o 5b in Fig. 20). Since $\hat{5} \flat\hat{6} \Delta\hat{7} \hat{8}$ involves exactly the same hand and finger shape, one fifth higher, as $\hat{1} \flat\hat{2} \Delta\hat{3} \hat{4}$ ($\frac{1}{2} + 1\frac{1}{2} + \frac{1}{2}$ heptatonic steps), both tetrachords are labelled *Hijaz*, the lower *jins* in maqam *Hijaz*. All the other examples in Figure 20 feature an upper *jins* that differs from the lower one. For instance, the upper *jins* in *Hijaz* itself (5a in Fig. 20) is $\hat{5} \Delta\hat{6} \flat\hat{7} \hat{8}$ ($1 + \frac{1}{2} + 1$), which

62. The plural of *jins* (singular, جنس) is *ajnas* (أجناس). Lower and upper *ajnas* can also either meet on the same scale degree or overlap. In such cases trichords or pentachords may be involved.

63. *Shad Araban*, *Shahnaz*, *Suzidil* and *Zanjaran* are also in the Hijaz maqam family but are not included in Figure 20 (p. 116),

corresponds not to its own lower *jins* ($\hat{1} \flat\hat{2} \hat{3} \hat{4} - \frac{1}{2} + 1\frac{1}{2} + 1$) but to the $\hat{1} \hat{2} \flat\hat{3} \hat{4}$ ($1 + \frac{1}{2} + 1$) pattern of maqam *Nahawand* (Fig. 20, n^o 3) transposed up a fifth. Conversely, the upper *jins* of *Nahawand*, $\hat{5} \flat\hat{6} \hat{7} \hat{8}$, involves the same manual action ($\frac{1}{2} + 1\frac{1}{2} + \frac{1}{2}$) as the lower *jins* in *Hijaz* ($\hat{1} \flat\hat{2} \hat{3} \hat{4}$). Hence its labelling as a combination of *Nahawand* (lower) and *Hijaz* (upper) tetrachords.

Thinking in terms of tetrachords (or trichords or pentachords) instead of octaves has at least two advantages. The first is that it allows for the generation of many more heptatonic modes than are familiar in the West, especially if all the maqamat involving microtones (not least those in the *Sikah* family) were to be included in the count. The other advantage is that tetrachords (or trichords or pentachords) can, as we shall see later (p. 163, ff.), help us make sense of tonality in Western musics outside the euroclassical system.

Hijaz and phrygian

Ex. 35. Maurice Jarre: *Lawrence of Arabia* (1963); quasi-*Hijaz/Kurd* in D

If you ask a Western musician unschooled in maqam tonality to come up with something ‘Arab-sounding’, chances are that he/she will suggest something along the lines of example 35. In fact, to sound ‘Arab’ —or for that matter ‘Gypsy’, ‘Jewish’, ‘Balkan’ or even ‘Spanish’ (!)— Western musicians will typically zoom in on differences between euroclassical tonality and that of the maqam world. Clearly, the most striking traits of tonal difference lie in all those maqam scale steps smaller than a semitone ($\flat\hat{3}$, etc.). But that difference causes two problems: [1] we Westerners are usually unable to correctly intone microtonal pitches; [2] even if we could, the music would sound ‘off key’ to a Western audience. We consequently have to focus on differences we *can* produce and which sound sufficiently foreign without coming across as ‘out of tune’. That’s almost certainly why *Lawrence of Arabia* and other popular Western pastiches of the Middle East focus on two elements: [1] the minor second or ‘flat two’ ($\flat\hat{2}$) of the phrygian mode; [2] the augmented second ($1\frac{1}{2}$ -tone step between $\flat\hat{6}$ and $\Delta\hat{7}$) of the harmonic

minor scale ($\hat{1} \hat{2} \hat{b}3 \hat{4} \hat{5} \hat{b}6 \hat{\Delta}7$) which can easily be transposed down a fifth to include the interval $\hat{b}2-\hat{\Delta}3$ in the Hijaz *jins* $\hat{1} \hat{b}2 \hat{\Delta}3 \hat{4}$. That's what happens in silent film pieces like Otto Langey's *Among the Arabs* and Maurice Baron's *Vers l'Oasis* in the 'Oriental' section of Rapée's *Motion Picture Moods for Pianists and Organists* (1924: 496-518). The same two traits are also thrashed out in Alfred Ketèlbe's ethnocentric classic *In A Persian Market* (ex. 36) and in *Night Boat To Cairo* (ex. 37) which reached n^o 6 in the UK charts in 1980.⁶⁴

Ex. 36. *Ketèlbe*: *In A Persian Market* (1920), bars 27-33; quasi-Hijaz in E;
 $e f g\# a b c d = \hat{1} \hat{b}2 \hat{\Delta}3 \hat{4} \hat{5} \hat{b}6 \hat{b}7$.

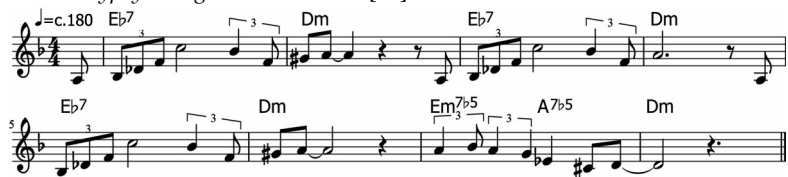


Ex. 37. *Madness*: *Night Boat To Cairo* (1980); quasi-Hijaz hexatonic in F;
 $f g b a\flat b\flat c e b = \hat{1} \hat{b}2 \hat{3} \hat{4} \hat{5} \hat{b}7$.



Even Dizzy Gillespie uses a similar trope in *A Night In Tunisia*, (ex. 38) where the Eb⁷ chord's db (bars 1, 3, 5) aligns enharmonically with the c# ($\hat{\Delta}7$) in bar 7. But Gillespie also breaks the trope by emphasising c# ($\hat{b}7$) in bars 1-2, 3-4 and 5-6. That c# becomes part of a tetrachord leading down to the fifth, a# ([8]- $\hat{b}7$ - $\hat{b}6$ - $\hat{5}$ = (d)-c#-bb-a).

Ex. 38. *Dizzy Gillespie*: *A Night In Tunisia* (1957); quasi-Nawa Athar and 'Gypsy Hungarian' in D. $\rightarrow \hat{1} [\hat{b}2] \hat{b}3 \#4 \hat{5} \hat{b}7 \rightarrow \hat{b}7 \hat{b}6 \hat{5} \hat{4} \hat{b}2 \hat{1}$.



Or maybe the Gillespie tune is in a variant of the 'Neapolitan scale'?⁶⁵ Or, perhaps like *Lawrence of Arabia*, it's an aggregate of features that we hear as typical for, but that may well be foreign to,

64. Similar 'flat-two-sharp-three thrashing' in the shape of a relentless I \leftrightarrow bII shuttle occurs throughout the A section of Nacio Herb Brown's 1933 jazz standard *Temptation*, whose lyrics conjure up images of a dangerous femme fatale. For more about musical orientalism, see Scott (1997).

tonal practices actually *in* the maqam world.⁶⁶ Whatever the case, there's a difference between palatable tonal tropes of foreignness for Westerners and the 'foreign sounds' as they're used and heard by the home crowd on their home turf. Consider, for example, how the phrygian mode (*maqam Kurd*) is used by contemporary popular artists in Greece and Turkey. In *Prigkipesa* (ex. 39), Malamas performs in *dromos Ousák* (*maqam Kurd*) but there's nothing foreign about it. The $b\hat{2}$ (f#) in phrygian E is neither 'milked' nor otherwise dwelt on, even if its normal function as descending leading note ($b\hat{2}\setminus\hat{1}$) is clear in the melodic cadence at the end of the song.

Ex. 39. *Sokrates Malamas* (2005): 'Princess'; E phrygian (δρόμος Ουσάκ);
e f# g a b c d in E = $\hat{1}$ $b\hat{2}$ $b\hat{3}$ $\hat{4}$ $\hat{5}$ $b\hat{6}$ $b\hat{7}$.

The $b\hat{2}\setminus\hat{1}$ gesture is also present, though less prominently, as $c\sharp-b$ in example 40, at the words *yillari ağla, kiskanur rengini* and *baharda yeşiller*. The $b\hat{2}\setminus\hat{1}$ is in the phrygian melodic cadence $\hat{4}\setminus b\hat{3}\setminus b\hat{2}\setminus\hat{1}$, the lower tetrachord in *Kürdi makamı* (e-d-c-b in B, bars 4, 8-9). However, in this sad song, Turkish singing star Sezen Aksu⁶⁷ *does* make conspicuous use of $b\hat{2}$ in the bold leap of a fifth (c-g= $b\hat{2}\setminus b\hat{6}$) for the words *düşler* ('dreams') and *ıçmış* ('drink up'). By echoing the tune's initial $b\setminus f\sharp$ ($\hat{1}\setminus\hat{5}$) the $b\hat{2}\setminus b\hat{6}$ establishes $b\hat{2}$ as the song's tonal counterpoise (see p. 161, ff.). With such a bold gesture repeated at the start of the recording's vocal line, the $b\hat{2}$ in the C#G gesture def-

65. The 'Neapolitan scale' runs $\hat{1}\setminus b\hat{2}\setminus b\hat{3}\setminus \hat{4}\setminus \hat{5}\setminus b\hat{6}\setminus \hat{7}$ (= d e b f g a b# c# in D), i.e. a lower *Kurd* plus an upper *Hijaz* tetrachord. Two pieces of circumstantial evidence offer insight into the 'flat two' fame of Naples, most notably its Neapolitan sixth chord: [1] Naples is less about 500 km from Tunis; [2] the city state was under Spanish rule from 1503 to 1714.

66. For instance, example 38 would raise the issue of incompatible tetrachords.

67. 'Sezen Aksu is the reigning pop diva of Turkey where she enjoys a similar stature as do... Haris Alexiou, Amália Rodrigues or Lata Mangeshkar in their respective homelands.' ('World music' site page 'Sezen Aksu | Sarki Söylemek Lazım', November 2002; 📄 6moons.com/worldmusic/sarki.html [140208]).

initely draws attention to itself but it just as definitely does so *without* connoting anything exotic, as in examples 35-38.

Ex. 40. *Sezen Aksu: Firuze (1982), 2 extracts; Kürdî makamı in B (phrygian);*
 $b\hat{c} d e f\# g a = \hat{1} b\hat{2} b\hat{3} \hat{4} \hat{5} b\hat{6} b\hat{7}68$

Greece’s *dromos Ousák*, Turkey’s *Kürdî makamı* and the Arab *maqam Kurd* are all basically the same as the phrygian mode as set out on pages 97, 101-102 and 116 (Figure 20, n^o 6). It’s simple: the phrygian mode’s unique scale-degree profile runs $\hat{1} b\hat{2} b\hat{3} \hat{4} \hat{5} b\hat{6} b\hat{7}$. Despite such clarity, Westerners tend to use ‘phrygian’ to qualify *any* mode containing $b\hat{2}$, regardless of whether the mode corresponds to the phrygian *maqam Kurd* ($\hat{1} b\hat{2} b\hat{3} \hat{4} \hat{5} b\hat{6} b\hat{7}$), *Hijaz* ($\hat{1} b\hat{2} \Delta\hat{3} \hat{4} \hat{5} [b]\hat{6} b\hat{7}$), or *Hijaz Kar* ($\hat{1} b\hat{2} \Delta\hat{3} \hat{4} \hat{5} b\hat{6} \Delta\hat{7}$). For example, the Yiddish adjective *Freygish*⁶⁹ qualifies one of the most popular modes in Klezmer music. Despite its name, it usually designates the *Hijaz* mode (examples 41, 42), i.e. *not* *maqam Kurd*, *not* the phrygian.

Ex. 41. *Idelsohn: Hava Nagila (הבה נגיל ה), mel. cit. mem.); ‘Freygish’, i.e. Hijaz;*
 $e f\# g\# a b c d$ in E = $\hat{1} b\hat{2} \Delta\hat{3} \hat{4} \hat{5} b\hat{6} b\hat{7}$.

68. Free translation of lyrics: If dreams drink up your years when you look back some day, cry, Firuze, cry. Tell them how incredibly beautiful you once were.

69. According to Horowitz (1992), *Freygish* derives from the *Phrygisch* of German church mode terminology. The qualifier is in other words based on the nearest tonal concept in official music theory of the time that, much like today’s conventional music theory, was incapable of thinking outside the eurocentric tonal box and/or was either unable or unwilling to refer to Arab or Ottoman traditions of musical learning. Anything with a $b\hat{2}$, so to speak, was ‘phrygian’.

This *Freygish* mode,⁷⁰ consisting of a lower *Hijaz* tetrachord ($\hat{1} \flat\hat{2} \Delta\hat{3} \hat{4}$) and an upper *Kurd* tetrachord ($\hat{1} \flat\hat{2} \flat\hat{3} \hat{4}$ raised to $\hat{5} \flat\hat{6} \flat\hat{7} \hat{8}$), is extremely common in the maqam world. In Greece, for example, it's called *Hitzas* (ex. 43) and in Bulgaria *Hidzhaz/Xudjaz* (ex. 44).

Ex. 42. Beregovski's *Sher* (*Klezmer*); 'Freygish', i.e. *Hijaz*; $d \text{ eb } f\sharp \text{ g a } b\flat \text{ c}$ in *D* = $\hat{1} \flat\hat{2} \hat{3} \hat{4} \hat{5} \flat\hat{6} \flat\hat{7}$; cited by *S Moore* (2013: 105).

Ex. 43. *Haris Alexiou* [*Χάρης Αλεξίου*] 'Ap' ton perasméno Márthi', bars 9-14; *Laikés Kyriakés* (1976); *Hijaz in A*: $a \text{ b}\flat \text{ c}\sharp \text{ d e f g} = \hat{1} \flat\hat{2} \hat{3} \hat{4} \hat{5} \flat\hat{6} \flat\hat{7}$.

Ex. 44. *Ερμάλακ/Ermálak* (1992): *Българи* (=Bulgarians); *Hijaz in Bb* $b\flat \text{ c}\flat \text{ d}\natural \text{ e}\flat \text{ f g a b} = \hat{1} \flat\hat{2} \Delta\hat{3} \hat{4} \hat{5} \flat\hat{6} \flat\hat{7}$.⁷¹

Now, *Ermálak* may have chosen *Hijaz* and an additive metre for this speed metal piece because those may well be musical elements

70. See Horowitz (1992) for more on *Freygish* (a.k.a. *Ahava Rabbah*) and its sub-modes.

71. The lyrics run 'We may be poor and shabby but we don't beg. We're sort of tough but we're no fools. We're hard on some, fair with others. We're full of ideas. We're smart but to how smart?' Much popular music from the Balkans is in the aeolian, phrygian or hijaz mode: see recordings by, for example, Todor Kolev (Bulgaria), Lepa Brena (Bosnia), Sinan Sakić (Serbia), or Finnish Balkan band *Slobo Horo* (1992).

that Bulgarians themselves have learnt to perceive as distinctly Bulgarian. At the same time, flat twos and augmented seconds are just as much a tonal trait of heavy metal as of 'Bulgaria', an observation just as pertinent to metal musicians Ermálak (ex. 44) as to Iron Maiden (ex. 45), Rainbow (ex. 46) or Metallica (ex. 47).

Ex. 45. *Iron Maiden: Powerslave* (1984: 0:00-0:35 bars 1-4; 0:36-0:49, bars 5-8);
A phrygian: a b b c♯; A Hijaz a b♭ c♯ d; E Hijaz: e f♯ g♯ a b c♯.⁷²

Ex. 46. *Rainbow: Gates of Babylon* (1978: 0:53-1:01) riff in E Hijaz Kar, 15^{ma}
bassa: e f♯ g♯ a b c♯ d♯ = 1̇ ḃ2̇ 3̇ 4̇ 5̇ ḃ6̇ Δ7̇.⁷²

Ex. 47. *Metallica: Wherever I May Roam* (1991), 3:49-4:03;
mostly Hijaz Kar in E; e f♯ g♯ a b c♯ d♯ = 1̇ ḃ2̇ Δ3̇ 4̇ 5̇ ḃ6̇ Δ7̇

In extreme metal and in industrial, flat-two modes are often understood as a style indicator essential to the aesthetics of the genre.⁷³

'Heavy metal without a minor second? It would be unspeakable...
I don't think it would be metal. It would be a sham.'⁷⁴

72. As cited in Lilja (2009: 174-175). 0:00-0:35: bars 1-4 × 5; 0:36-0:49 bars 5-8 × 2.

73. See Tagg (2013: 522-524) for more about style indicators. For more about heavy metal modes, see Lilja (2009) and Reffett (2013).

Starting with tracks like *Wizzard* (1970a), Black Sabbath often exploited conventional links in Western music, including film underscore, between $b\hat{2}$ and a broad semantic field variously described as *anguished finality*, *claustrophobic*, *heavy*, *sombre*, *gloomy*, *dark*, *danger*, *unsettling*, *sinister*, *strange* and *foreign*.⁷⁵ As a style trait with such connotations, flat two was also embraced by bands like Venom (1982) and Arch Enemy (2004), as well as by metal celebrities Iron Maiden (1980, 1984), Metallica (1984, 1988) and Megadeth (1992). This appropriation can be seen as a process whereby the dark, dangerous ‘Other’ became the subject, albeit deeply alienated, still dark and dangerous, but no longer just an object, or objects, outside the self. This aesthetic was characterised by two young UK metal musicians in the following sort of terms.

‘It’s stuff your parents don’t like’ ... ‘A lot of kids that like it are not the mainstream trendy kids’ ... ‘It’s also intense... with the harmonic minor and the flattened second... ‘Unnerving’... ‘There’s too many perfect cadences all resolving in pop’ ... ‘The major scale is all resolved and neat’ ... ‘Let’s keep it unresolved’ ...⁷⁶

The metal aesthetic is in other words quite explicit. So are its tonal foundations, as illustrated here in an online guitar tutor (ex. 48).

Ex. 48. Scale exercises in $F\#$ Hijaz ($\hat{1} b\hat{2} \hat{3} \hat{4} \hat{5} b\hat{6} b\hat{7}$), example 1 in lesson ‘Phrygian dominant’ (sic)⁷⁷ for metal guitarists (Campese, 2009)

74. UK metal bass player Pete Herbert interviewed in 2009 (S. Moore, 2013: 200).

75. Characterisations are taken from Cooke (1959: 78), Walser (1993: 47), Collins (2002: 375-376) and S. Moore (2013: 200, ff.). In this paragraph I’m indebted to Moore (2013) for her account of flat twos in metal styles. Collins (2002: 374-376) documents the aeolian and phrygian as the most common modes in industrial, citing occurrences of $b\hat{2}$ in tracks by *Einstürzende Neubauten* (1989) and others.

76. ‘Playing bluesy pentatonic doesn’t work over a sinister [$b\hat{2}$] riff’. All quotes distilled from comments made by UK metal musicians Luke Rayner and Pete Herbert, interviewed in 2009 and cited by Sarha Moore (2013: 200, ff.).

77. For critique of the term ‘phrygian dominant’, see pp. 129-129.

The instructor explains that the first scale (1a) is just a ‘3-note-per-string pattern for [the scale] in F#’ while 1b ‘is a cool pattern I came up with that brings out the exotic flavour of the scale’. He adds:

‘[Y]ou could picture this as the regular phrygian scale with a raised third. It sounds great played over major and dominant chords — it has a Spanish flavour. You can experiment by playing power chords off of each note for a more rock approach.’ (Campese, 2009)

Power chords on Hijaz scale degrees are certainly a feature of the Bulgarian metal recording whose melodic line is cited as example 44, but there’s nothing Spanish about a Bulgarian metal presentation of *Bulgarians* (Българи) to a Bulgarian audience. It seems that the old exoticism is back, this time in the guise of anglophone metal aesthetics and in the shape of ‘Spain’ rather than of Jews, Arabs or Gypsies. True: Spain and Gypsies are Western connotations of Hijaz that still need to be addressed, but before confronting that issue, it’s necessary to summarise at least one important point in the account so far: no matter how you interpret the meanings of flat two in metal and industrial music, the connotations of example 49 — also, like the Metallica extract (ex. 47), in Hijaz Kar — have in their home context nothing to do with darkness, danger, doom, nor with Spain.

Ex. 49. *Misirlou* a.k.a ‘*Song of the Crickets*’ (Afghanistan trad., n.d). Hijaz Kar in D; d e \flat f# g a b \flat c# = $\hat{1}$ $\hat{b}2$ $\hat{3}$ $\hat{4}$ $\hat{5}$ $\hat{b}6$ $\hat{7}8$



In other words, the connotations of flat-two modes like Hijaz, Hijaz Kar and the phrygian vary just as much as those of the aeolian; it’s down to other factors like speed, motivic gesture, phrasing, rhythmic-metric framework, instrumentation, register, dynamics and articulation. Most importantly, though, it depends on how your ear has been culturally conditioned, as we shall see next.

78. Recorded off air from Swedish Radio in the mid-to-late 1970s. The radio DJ said it was ‘*Song of the Crickets* played by the Kabul Radio Orchestra’. I transcribed the tune in 7/8 just after recording it. It is of course the same basic tune as the $\frac{4}{4}$ version called *Misirlou*, recorded by Dick Dale and the Deltones in 1963 and used in *Pulp Fiction* (1994).

‘¡Viva España!’

‘Flat-two Spain’ and ‘flat-two Gypsies’ must be among Western exoticism’s most exploited musical tropes. ‘Gypsy’ is a corruption of ‘Egyptian’ (cf. Fr. *égyptien/gitane*) and it was mainly through Muslim North Africa that the Roma came to Arab Andalusia, many of them during the fifteenth century.⁷⁹ Both before and after the Christian *Reconquista* (1492), the music of southern Spain included elements from the Mozarabic church, from Muslim and Jewish cantillation, as well as from the musics of the Morisco⁸⁰ and Roma population. It was from this musical melting pot that evolved the various types of song, dance and guitar playing that were identified much later – in the late eighteenth century – under the umbrella heading *flamenco*.⁸¹ This syncretic musical tradition came to signal Spanish otherness, at least in the heyday of non-Iberian colonialism, and has done so more or less ever since, most recently in picture-postcard versions that sun-seeking tourists from the north could hear in tapas bars on the Costa del Sol or on their stereo equipment back home (ex. 56, p. 133). The question here is: what flamenco elements exist in ‘everyday tonality’?

According to Fernández (2004), flamenco tonality uses three modes: ionian, phrygian and ‘majorised phrygian’ (*frigio mayorizado*, i.e. Hijaz). Given that the ionian became international tonal currency in eighteenth century Europe, the most distinctive traits of flamenco tonality lie in its use of two modes based on *mi* (Fig. 21, p. 129). The first of these two *mi*-modes is purely PHRYGIAN. Its distinctive tetrachord $\hat{1} \flat\hat{2} \flat\hat{3} \hat{4}$ is most often heard in melodic descent

79. Southern Spain was ruled by Umayyads, Califs etc. in Córdoba and Granada from 711 to 1492. The Romani originally came from the Indian subcontinent.

80. See authoritative Wikipedia article *Morisco*.

81. In this account I mean by ‘flamenco’ both *flamenco heterodoxo* and *ortodoxo* (Steingress, 2006). I apologise for my grossly simplified account of a very complex and contested sociomusical history. Blas Infante (1933), for example, underlined the central role of Arab traditions in flamenco and questioned the importance of Roma influences. Cruces (2003) provides a useful historical account of flamenco *music*. It’s worth noting that the notion of flamenco as representing an exotic ‘Other’ first became popular in the early 19th century among the bourgeoisie in Spain and France (Steingress, 2006). Thanks to Diego García (Oviedo/Córdoba) and Nando Barrera (Granada) for help with this complex history.

($\hat{4} \flat\hat{3} \flat\hat{2} \hat{1} = a g f e$ in E). The other *mi*-mode, HIJAZ (also sometimes called the MAJORISED PHRYGIAN because of the major third in its initial Hijaz tetrachord – $\hat{1} \flat\hat{2} \Delta\hat{3} \hat{4}$),⁸² is more often heard in melodic ascent.

Fig. 21. *The Andalusian mi-modes*



Before continuing this account, one common point of confusion about flamenco use of Hijaz needs to be disentangled. The confusion comes from jazz theorists who call Hijaz the ‘phrygian dominant’, even though there’s nothing dominant about it. It’s a *mi* mode, *not a doh* or *fa* mode, nor the ionianised harmonic minor, nor any other mode containing $\Delta\hat{7}$. It makes no sense to imply that Hijaz $\hat{3}$ ($\Delta\hat{3}$, $g\sharp$ in Figure 21), used in melodic ascent to $\hat{4}$ (a in E), can become a $\Delta\hat{7}$ without changing from a *mi*-mode like Hijaz into a *la*-mode like the aeolian. The *mi* mode’s tonic (I, $\hat{1}$, e in E) cannot morph into a dominant (V), the tertial triad on its own $\hat{5}$ is v° , not v , let alone V; nor can its fourth (*la*, IV, $\hat{4}$, $a\sharp$ in E) be transformed into a tonic (I), nor its $\flat\hat{2}$ be confused with $\flat\hat{6}$, so that its $\flat\hat{2}$ becomes $\hat{2}$, at least not without the mode ceasing to be phrygian or Hijaz. Both ‘ $\hat{1}$ ’ and ‘I’ mean one, the tonic, not $\hat{5}$ or V (five). *There is NO DOMINANT on $\hat{5}$ in these modes.*⁸³

Among other names used to denote the Hijaz (or ‘majorised phrygian’) are the ‘Gypsy major mode’, the ‘flamenco mode’ and the ‘altered phrygian’. ‘Majorised’ is preferable to ‘altered’ because the phrygian can be altered in many ways (e.g. *Hijaz* and *Kurd* in Figure 20, p. 116). The Gypsy labels are unclear, too, because there are several variants of ‘major’ and ‘minor’ carrying the ‘Gypsy’ label (Fig. 20). ‘Flamenco mode’ is also confusing because there are at least two of them (phrygian and Hijaz) and because the ‘mode’ is

82. *Hijaz* (‘Hiyaz’ in Spanish): see p. 116 and 120, ff.

83. It’s as absurd as calling the ionian mode dominant just because its $\hat{3}$ often ascends to $\hat{4}$. The melodic ascent $\hat{3}\hat{4}$ cannot logically be a dominant feature in one mode but not in another. Conceptualising Hijaz as a dominant mode is symptomatic of ionianised brains conditioned to hear tonal direction mainly in terms of anticlockwise movement round the circle of fifths (pp. 252-258).

the sound of a melodic mode can depend on the chords accompanying it, as explained next.

Ex. 53. *Flamenco cadence chords* (Soleá) (Fernández, 2004: 100)

While the chord on $\hat{4}$ is based on the notes of the phrygian mode and includes a minor triad ($iv = a-c\flat-e$, not $IV = a-c\sharp-e$), the final chord on $\hat{1}$, the phrygian tonic, contains a major third, as in the Hijaz mode: it's $I (e-g\sharp-b)$ not $i (e-g\flat-b)$. Thanks to the regular occurrence of this cadence formula in flamenco music, the melody shown in example 54 can be heard as phrygian. Even if it contains no $b\hat{2}$ it would, if accompanied, be heard above a $iv-bIII-bII-I$ cadence ($Gm-F-E\flat-D$ in phrygian D): $e\flat (b\hat{2}$ in D) would be present.⁸⁶

Ex. 54. *Estríbillo de Vito* (*baile popular cordobés*; cit. Fernández, 2004: 46).

Besides, the descending flamenco cadence pattern is often a highly audible strand on the low strings of the guitar, as with the $a-g-f-e$ bass notes ($\hat{4}-b\hat{3}-b\hat{2}-\hat{1}$) in the final bars of example 55.

Ex. 55. *Juan Serrano* (2002): *Sevillana III*; $\hat{4}-b\hat{3}-b\hat{2}-\hat{1}$ descent, bars 5-7.

So, what do the ‘much exploited flat-two tropes’ of ‘Spanish Gypsies’ get wrong? They tend to shoot wide of the mark on many counts of rhythm, intonation and articulation, but they also miss an essential feature of flamenco tonality. One case in point is the

86. Phrygian harmony is discussed on pages 433-441. The chords in ex. 53 are not just simple triads. Note: [1] the ongoing tonic drone (e) sounding even above $bIII$ (G as G^6) and bII (F as F^{Δ}); [2] $b\hat{4}$ (5) added to the initial iv triad (Am^{add9}) to highlight the $b\hat{6}$ ($c\sharp$) in *soleá* performance; [3] an optional $b\hat{2}/b\hat{9}$ ($f\sharp$) added to the final tonic chord (E as E^{add-9}) to produce a general synthesis of the tonality.

1970s charter-tour hit transcribed as example 56 (p. 133).⁸⁷ The fact that its backing patterns are those of a *paso doble*, whose steps are associated more with bull-fighting than flamenco, may be relevant to its tourist character but not to its tonal structuration. The *tonal* tourism is to be found in the chord sequence Am-G-F-E. In the key of phrygian E, that progression would constitute an Andalusian cadence iv-♭III-♭II-I, as in example 53 or 55.

The trouble is that *Y Viva España* is not in phrygian E but in the key of A (first minor then major). There are three reasons for this observation. [1] The tune both starts and ends in A, not in E. [2] The chord E has an unmistakably dominant (V) function when it occurs at the half-way, half-cadence point on the first ‘*España*’ of the eight-bar refrain, creating the I-V-V-I matrix of periodic harmony typical for so many non-flamenco popular songs from northern Europe using standard tertial harmony in order to sound *like* flamenco.⁸⁸ [3] The [G]-F-E sequence of bars 3-4 and 7-8 is replaced in bars 11-12 by the change B⁷-E in which the B⁷ does not act as V to produce a perfect cadence on E as tonic (I) but initiates a typical two-step II⁷-V⁷-I circle-of-fifths progression, B⁷-E⁷-A, in which E is unequivocally dominant (V) to the A (I) that comes on the subsequent first beat of the refrain. F-E in the Am-G-F-E sequence is in other words ♭VI-V in A, not ♭II-I in E.⁸⁹

87. The Swedish lyrics translate roughly as follows: [v1] I’ve been on holiday in Marbella. I can only think and dream in *español*. My home’s now mostly in red and yellow. I’m still nicely tanned. I was turned on by Spanish fieriness. I’ve adopted the Spanish temperament. [Refr.] This is now my music. *Viva España!* This is romance. ¡*Viva España!* Say it again. ¡*Viva España!* This serenade is *Muy bien*. ¡*España por favor!* [v2] I take my castanets off the wall because there’s going to be flamenco here. It’ll clatter on my floor when I do those upbeat heel steps, olé! Who cares about silly old pop? The Spanish style knocks it for six.

88. The first two bars are on I, the middle four on V and the final two back on I.

89. Another problem with *Viva España* was that it was released when the Franco régime was still putting political opponents in front of firing squads, two years before the establishment of democracy in Spain. The song (♫ Leo Rozenstraten, ♫ Leo Caerts) was first recorded in Dutch/Flemish by Belgian vocalist Samantha in 1971. The 1973 Vrethammar version was translated into English and reached number 4 on the UK charts in 1974. No-one seems to know why the Swedish version was recorded as ‘*Eviva España*’.

Ex. 56. *Sylvia Vrethammar (1973): Viva España (v. 1 & 2)*⁸⁷.

pasa doble $\text{♩} = 122$

v 1. Jag har var-it på sem-est-er i Mar - bell - a och bar-a tänk - er och drömmar es-pañ-ol. Och mitt
[v2] väg-gen tar jag min-a kas-tanj-et - ter för här ska dans-as flam-en-co, ska ni se. Det ska

hem går mest i röd-gult kan man säg - a; själv har jag sol-bränn-en som väl är i be - håll. På
smatt-ra i park-ett-en när jag sätt - er i - gång en riv - ig grej med klack-ar-na, ol - él Man

spanska folkets eldighet jag tänt och lagt mig till med deras tēpram - ent. Så här nu låter min mus-
tar de ord-den om i-

-ik. iY VI - VA ESP-AN-A! Så här, ni, det är rom-an-tik iY VI - VA ESP
-gen Den se - re - nad är mu-y

-A-ÑA. Jag bien. Esp-añ - a por fa - vor. v 2. I - från bien. Esp - añ - a por fa - vor.

It could be argued that Bizet had similar problems with the tonal identity of flamenco in the introduction to his 'Gypsy Song' from *Carmen* (1875);⁹⁰ but the clearest instances of $[\hat{1}-\flat\hat{7}]-\flat\hat{6}-\hat{5}$ (aeolian) replacing $[\hat{4}-\flat\hat{3}]-\flat\hat{2}-\hat{1}$ (phrygian) are in style parodies like *Viva España*, where the final note and chord of the phrase, reached via a descent including the minor third and minor second above it, is $\hat{5}/V$, not the phrygian tonic ($\hat{1}/I$). It's in this way that $[\text{Am-G-}] \text{Dm}/\text{F-E}$ creates a half cadence in A harmonic minor, not an Andalusian cadence in phrygian or Hijaz E.⁹¹ In short, jazz theorists and creators of tourist flamenco music suffer from the same problem: both seem unable to hear a final phrygian cadence as final. The ionianised brain is apparently conditioned to hear the phrygian tonic as a dominant leading to a tonic in another, non-phrygian, mode.⁹²

90. The Bizet piece (*Les triangles des sœurs tintaient*) starts in E minor with an arpeggio and ascending melodic minor scales (incl. $\text{c}\sharp$ and $\text{d}\sharp$), then passes via through Dm (same melodic minor scale patterns) and C (major scale runs) to B.

91. Cole Porter's *The Gypsy In Me* (1934) includes $\flat 2$ s (db) in its C minor verse.

92. The issue of phrygian cadences is discussed in more detail on pages 433-441.

Balkan modes

Exotic-mode Gypsies are clearly not just a Spanish affair. The ‘Other mode names’ column in Table 12 (p. 135) shows that ‘Gypsy’ qualifies not just Hijaz but also Nawa Athar and Niavent, modes that are also called ‘Byzantine’, ‘Hungarian’ or ‘Ukrainian’. ‘Romanian’, ‘Bulgarian’, ‘Klezmer’ (even ‘Jewish’) are other ethnic labels for similar modes, most of which contain an augmented second and all of which are associated with southeastern Europe.

The left column in Table 12 (p. 135) shows seven ‘Balkan’ modes written in the G clef with c as tonic ($\hat{1}$). Scale degrees appear below and tetrachord names above each mode. Tetrachords are labelled according to the following principles. If the tetrachord aligns with the first four scale steps in a ‘church’ mode comprising two identical tetrachords, it’s given that mode’s name. Otherwise, if it corresponds with the first four notes of the recommended mode name shown in column 2, it’s given that name.⁹³

The middle column in Table 12 shows the RECOMMENDED NAME for each mode. Recommendations are based on three principles.

[1] A mode name should respect the learning of those who make music in the relevant tradition and *not* be subjected to the tonal grids of jazz, euroclassical or any other alien type of music theory. That’s why the mode labels draw on the Arab-Ottoman-Greek traditions (*maqam/makam/dromos*) and steer clear of culturally irrelevant notions like the ‘dominant’.⁹⁴

[2] In cases where several adequate mode names exist, the shortest has been chosen.⁹⁵

[3] National and ethnic qualifiers are avoided for three reasons: [i] the same qualifier often applies to more than one mode; [ii] no

93. Consequently, a *phrygian* tetrachord is either $\hat{1}-b\hat{2}-b\hat{3}-\hat{4}$ or $\hat{5}-b\hat{6}-b\hat{7}-\hat{8}$, *dorian* $\hat{1}-\hat{2}-b\hat{3}-\hat{4}$ or $\hat{5}-\Delta\hat{6}-b\hat{7}-\hat{8}$, *ionian* $\hat{1}-\hat{2}-\Delta\hat{3}-\hat{4}$ or $\hat{5}-\Delta\hat{6}-\Delta\hat{7}-\hat{8}$, *Hijaz* $\hat{1}-b\hat{2}-\Delta\hat{3}-\hat{4}$ or $\hat{5}-b\hat{6}-\Delta\hat{7}-\hat{8}$. *Niavent* is $\hat{1}-\hat{2}-b\hat{3}-\#\hat{4}$ but not $\hat{5}-\hat{6}-b\hat{7}-\#\hat{8}$ (!). For more explanation, see pp. 164-165.

94. For rejection of ‘*phrygian dominant*’ as a viable mode label, see pp. 129 and 132. The issue of *Freygish* is addressed on page 123. Klezmer names also tend to be longer and more variable than those of the *maqam* world; for example, *Misheberakh*, *Avhorakhamim* and (*Klezmer*) *Bulgarish* all denote the *Nikriz* mode.

mode is exclusive to one nation or ethnic group; [iii] ethnic identities in music change, as do their geographical locations.⁹⁶

Table 12. Seven Eastern European modes containing a 1½-tone step and/or #̂.

MODE	RECOMMENDED MODE NAME with scale steps	OTHER MODE NAMES incl. misleading labels
	HIJAZ ½-1½-½-1 ½-1-1	<i>Freygish</i> , <i>Ahava Rabba</i> , Andalusian, <i>dorico flamenco</i> , <i>frigio mayorizado</i> , phrygian dominant (1), altered phrygian, flamenco mode
	HIJAZ KAR ½-1½-½-1 ½-1½-½	<i>Freygish</i> , Gypsy, Gypsy major, Spanish Gypsy, Byzantine, double harmonic minor, phrygian dominant (2)
	NAWA ATHAR 1-½-1½-½ ½-1-1	Gypsy minor, Hungarian minor, Hungarian Gypsy (1)
	NIAVENT 1-½-1½-1 ½-1½-½	<i>Nagriz</i> , <i>Souzinak</i> , Hungarian Gypsy (2), Spanish phrygian
	NIKRIZ 1-½-1½-½ 1-½-1	Romanian (minor), Ukrainian dorian, <i>Klezmer bulgarish</i> , <i>Misheberakh</i>
	LYDIAN b7 1-1-1½ 1-½-1 (no augmented 2nd)	Romanian (major), <i>Adonoy Molokh</i> , 'acoustic', 'overtone', lydian dominant
	MUSTAAR 1½-½-1-½ 1-½-1	Hungarian major

95. For example Greek *Niavent* rather than Arabic *Nahawand*. Another reason for using Greek names is that the modes they designate are most commonly played on instruments (e.g. bouzouki) whose frets are spaced in accordance with the twelve semitones of Western tuning.




96. 'Hungarian' and 'Gypsy' each qualify three different modes. *Nikriz* is variously qualified as Greek, Bulgarian, Romanian, Ukrainian, Gypsy and Jewish. The boundaries of Hungary, Romania and Ukraine have changed radically in recent history and neither the Roma nor the Ashkenazim are, as identifiable populations and for a variety of reasons, famous for staying in one spot.

The scale-step figures under the mode names in Table 12 (p. 135) give the number of tones between each of its scale degrees ($\frac{1}{2}$ = semitone, 1 = tone, $1\frac{1}{2}$ = 3 semitones). It should also be noted that individual tones in a particular mode are in practice often altered according to melodic context. Consideration of ascent or descent and the inclusion of melodic cadence formulae are two such factors, while some tunes can be a mixture of two (or more) modes.⁹⁷

The third column in Table 12 contains some alternative names for each mode. Problematic mode labels are in grey to indicate that their use is inadvisable.⁹⁸

The Roma may have chosen or been obliged to live outside mainstream society in many parts of Europe since their arrival in significant numbers during the fifteenth century, but they were often valued for their musical skills. In Romania, for example, Gypsy musicians (*țigani lăutari*) were indentured to provide entertainment for the aristocracy. Since the nineteenth century they've had a virtual monopoly on music-making at weddings and funerals.⁹⁹ Klezmer musicians (*klezmerim*) often travelled and played with the *lăutari*, performing in both secular and specifically Jewish contexts. It's therefore hardly surprising that Klezmer and Balkan Gypsy music share many common tonal traits.

97. See Segelstein (2004) for an account of such modifying and mixing in Klezmer. Please also note that: [1] in some instances Nikriz is presented with the ionian upper tetrachord ($\hat{5} \hat{6} \hat{7} \hat{8}$), in others with the dorian ($\hat{5} \hat{6} b\hat{7} \hat{8}$); [2] *maqam Mus-taar*, the last of the seven modes in Table 12, is microtonally different to the *mus-taar* mode shown in column 1 (no *sikah* on $\hat{1} = \flat\hat{1}$); [3] inconsistencies of maqam naming are frequent between the Arab, Turkish and Greek traditions (e.g. Arabic *Nagriz* as Niavent, not Nikriz) and are addressed on page 117.

98. For problematic mode names, see: [1] explanations, p. 134; [2] comments on *Freygish* (p. 123); [3] critique of 'phrygian dominant' and 'lydian dominant' (pp. 129, 132, 139-145). Fourteen sources have been used for mode names: [1] Wikipedia entries for *Arab maqam*, *Gypsy scale*, *Klezmer*, *Makam*, *Mode*; [2] *Exotic Guitar Scales* (2014); [3] *300 Scales and Arpeggios for Mountains Ocarina* (n.d.); [4] *Fiddle Styles* (n.d.); [5] *Gypsy, Flamenco, Arabic, Klezmer, Blues Whistles...* (n.d.); [6] Reffett (2003); [7] Horowitz (1992); [8] *Klezmer Music in a Few Words* (2010); [9] Segelstein (2004); [10] *Mandolin and Bouzouki Scales and Modes* (2010); [11]  maqamworld.com; [12] $\Delta\rho\acute{o}\mu\omicron\iota$ και Τρ\omicron\pi\omicron\iota  wiki.kithara.gr; [13] $\Lambda\alpha\iota\kappa\omicron\iota$ $\Delta\rho\acute{o}\mu\omicron\iota$  bouzouki-spot.com/dromoi/; [14] *Xamadoume* (n.d.) [all accessed 140221].

99. See Wikipedia entry *Lăutari* and Radulesco (2010).

Gypsy music played an important role in neighbouring Hungary, not least in the nineteenth century among members of the middle class who, in a wave of nationalism under the Dual Monarchy,¹⁰⁰ identified what they heard in the music of urban Gypsy ensembles as a Hungarian rather than Austrian or German sound.

Like the flamenco derivatives discussed earlier, it was a sound adapted to Western ears while at the same time containing enough exotic elements to come across as ‘different’. Liszt’s *Hungarian Rhapsodies* (1853) did much to spread this musical ‘Hungarianness’ around Europe. However, just as *Boléro*, composed by a Frenchman (Ravel, 1928), became international musical shorthand for Spain, it was a Spaniard (Paulo de Sarasate) and an Italian (Vittorio Monti) who formulated the most popular musical representations of Hungary and its Gypsy violinists.¹⁰¹ Both Monti’s *Csárdás* (1904) and Sarasate’s *Zigeunerweisen* (1878) start with a dramatic minor-key rubato episode in slow *quasi senza misura* tempo (as in ex. 57) and end with a breakneck $\frac{2}{4}$ section that often contains an accelerando passage.¹⁰² Super-fast scales and arpeggios (e.g. bars 2, 7 in ex. 57), phrases played as harmonics, triple and quadruple stopping (bar 4), left-hand pizzicati, glissandi, passages on the G string (*‘sul G’* in ex. 57), frenetic semiquavers etc. — are all key features of the style’s Romantic *virtuosity*. The most consistent *tonal* feature, however, is its use of the HARMONIC MINOR (Nahawand), familiar enough to urban Western ears but, with its augmented second between $b\hat{6}$ and $\Delta\hat{7}$, exotic enough to signal the ‘Other’.

100. ‘Dual Monarchy’: a phase of the Austro-Hungarian Empire. Many nationalities inside the block resented the power of the Austrian axis. There was, for example, a ‘Hungarian liberal revolution’ that occurred in 1848–1849.

101. Monti’s *Csárdás* is still performed, also by Hungarians, as a piece representing Hungarianness. It’s track 1 on the Ferenc Sánta and his Gypsy Band album *Csárdás (Hungarian Gypsy Music)* from 1994, and it was the highlight at a 2010 Jubilee performance featuring a youth wind band and majorette troupe from Hungary’s second city, Debrecen (DOI z7zQvWwAQ [140222]).

102. Slow *senza misura* introduction followed by allegro-presto $\frac{2}{4}$, often with an accelerando, is also common in Klezmer music. Both *Hava Nagila* (ex. 41, p. 123) and the vastly popular minor-key Russian song *Kalinka* are often performed with this sort of accelerando. The accelerando in *Zigeunerweisen* is marked by several *‘plus animé’* instructions in the score.

Ex. 57. *Sarasate* (1878) *Zigeunerweisen* (start of solo violin part); harmonic minor (*Nahawand*) in C (bars 5-6): $\hat{1}-\hat{2}-\flat\hat{3}-\hat{4}-\hat{5}-\flat\hat{6}-\Delta\hat{7} = c d e b f g a b \flat$ and in G (bars 2-3): $\hat{1}-\hat{2}-\flat\hat{3}-\hat{4}-\hat{5}-\flat\hat{6}-\Delta\hat{7} = g a b \flat c d e b f \sharp$.

The flashy run-up in bar 2 of example 57, in G harmonic minor without $\hat{2}$ ($a\flat$), contains the augmented second $\flat\hat{6}-\Delta\hat{7}$ ($e\flat-f\sharp$) in three different octaves. That $\flat\hat{6}-\Delta\hat{7}$ is even more audible in the appoggiature and grace notes of the G-string passage in bar 3. Bars 5-6 are little more than an ornamented B^{\dim} chord containing the distinctive augmented second $\flat\hat{6}-\Delta\hat{7}$ ($a\flat-b\sharp$) of C harmonic minor.

Swirling diminished chords, highlighted harmonic minor augmented seconds and suchlike certainly represented one contemporary aspect of Hungarianness in music but it wasn't the only one.

Bartók modes

Through extensive fieldwork among peasant communities in Hungary, Romania and elsewhere, Bartók and Kodály collected recordings of other, older music traditions from the region.¹⁰³ Initially championed as more 'authentic' than the often slick and flashy urbanised Gypsy music which had inspired Liszt's *Hungarian Rhapsodies*, Monti's *Csárdás* and Sarasate's *Zigeunerweisen*, Bartók's and Kodály's field recordings had a substantial impact on everyday tonality in the twentieth century because they inspired the creation of tonal alternatives to tired euroclassical tertiality, its Romantic chromaticism and its descent into serialism.¹⁰⁴ Bartók's own work

103. Between 1908 and 1914 Bartók recorded music in regions of what are today Hungary, Romania, Moldova, Bulgaria and Slovakia. To get an idea of where Hungarians lived in 1910 (more than 50% outside the borders of today's Hungary) see map at en.wikipedia.org/wiki/File:Trianon_consequences.png [140302].

provides proof of this new tonal sense, not just in arrangements of the music he collected (examples 58-60) but also in his own compositions (examples 61-62).

In his piano arrangement of the tune shown as example 58 Bartók sticks mainly to a tonic drone on $b\flat$. In bars 10-13 the drone shifts to d , a move which changes mode from NIKRIZ in B to MUSTAAR in D. In this way the notes $b\ c\sharp\ d\ e\sharp\ f\sharp\ g\sharp$ become $\hat{A}6\ \hat{1}\ \hat{2}\ b\hat{3}\ \hat{4}\ \hat{5}$ [5].

Ex. 58. Bartók (1915). 'Topogó' from Six Romanian Dances (*cit. mem., shown an octave lower*); hexatonic Nikriz in B: $\hat{1}\ \hat{2}\ b\hat{3}\ \hat{4}\ \hat{5}\ \hat{6} = b\ c\sharp\ d\ e\sharp\ f\sharp\ g\sharp$.

The main harmonic switch used by Bartók in example 59 is from HIJAZ in A to either $b\hat{2}/b\flat$ or $b\hat{7}/g$ (b II or vii^- — $B\flat/Gm$ in bar 3 and bars 5-7), the most usual points of counterpoise in Hijaz.¹⁰⁵

Ex. 59. Bartók (1915). 'Bucsumí tánc' Six Romanian Dances; Hijaz in A (except $c\sharp$, b. 5-6): $\hat{1}\ b\hat{2}\ \hat{A}\hat{3}\ \hat{4}\ \hat{5}\ b\hat{6}\ b\hat{7} = a\ b\ c\sharp\ d\ e\ f\ g$.

In example 60, a Hungarian bagpipe tune arranged for piano, there's no change of drone note. It's entirely in the LYDIAN FLAT SEVEN MODE which consists of a lower lydian and an upper dorian tetrachord ($\hat{1}\ \hat{2}\ \hat{3}\ \hat{4}, \hat{5}\ \hat{A}\hat{6}\ b\hat{7}\ \hat{8}$). Jazz theorists often refer misleadingly to this mode as the 'lydian dominant' but it's no more dominant than Hijaz with its equally erroneous 'phrygian dominant'

104. See *Redefining Hungarian Music from Liszt to Bartók* (Hooker, 2013).

105. With a temporary switch to G ($b\hat{7}$) in Hijaz A ($[g]\ a\ b\ c\sharp\ d\ e\ f\ g$), the mode momentarily changes to Nikriz — $\hat{1}\ \hat{2}\ b\hat{3}\ \hat{4}\ \hat{5}\ \hat{6}\ b\hat{7}$. The equivalent mode over $B\flat$ would be $\hat{1}\ \hat{2}\ b\hat{3}\ \hat{4}\ \hat{5}\ \hat{6}\ \hat{7}$, i.e. Mustaar with an ionian upper tetrachord.

label.¹⁰⁶ The mode in example 60 just can't be 'dominant' if the bagpipe drone (d) is the tonic!

Ex. 60. Bartók (1916): *Piano Sonata, I* ('Dudások' [=bagpipers]), b. 5-8; *lydian b7* in D; d e f# g# a b c# = $\hat{1} \hat{2} \hat{3} \hat{\#4} \hat{5} \hat{6} \hat{b7}$.

Example 61 presents an easily recognisable scalar instance of the lydian flat seven mode in Bartók's music, while example 62 shows the same mode (or is it?) at the start of one of the composer's best known works.

Ex. 61. Bartók (1937) *Sonata for Two Pianos and Percussion*; *lydian b7* in C; c d e f# g a b b = $\hat{1} \hat{2} \hat{3} \hat{\#4} \hat{5} \hat{6} \hat{b7}$

Ex. 62. Bartók (1939) *Divertimento for String Orchestra (I)*, b. 2-8; *Nikriz* in F; f g a b b# c d eb = $\hat{1} \hat{2} \hat{b3} \hat{\#4} \hat{5} \hat{6} \hat{b7}$.

Allegro non troppo ♩.=c.76-72

Used as signature for euroclassical music broadcasts on US Public Service TV,¹⁰⁷ the opening theme of Bartók's *Divertimento* contains many 'fun' elements (*divertimento* = entertainment, amusement). Aside from its rhythmic jokes, the extract contains elements of tonal fun that need some explanation.

Example 62 is preceded by a $\frac{9}{8}$ bar of repeated F major triads that shuttle momentarily to G major (♩) and back. That chordal accompaniment chugs along with its ♩ repetitions for

106. For critique of 'phrygian dominant' see pp. 129, 134, 148.

107. Heard/seen on Mountain Lake PBS (Plattsburg, NY; Montréal, 2006-09).

the first minute or two of the piece, sticking to $F \leftrightarrow G$ in bars 1-3 and 5. With that ongoing chordal shuttle and $f-e\flat-d$ as the main theme's first three notes, the lydian mode is clearly stated, at least until the appearance of $e\flat$ ($b\hat{7}$) in bar 2 ($A\hat{7}$ isn't heard again for some time). Bearing in mind that $A\hat{3}$ ($a\hat{4}$) is present in the accompanying F major chords, and that the note combination $b\hat{4}-c-e\flat$ ($\#4-5-b\hat{7}$) is heard three times in bars 2-3, the lydian flat seven mode is clearly established — $f\ g\ a\ b\flat\ c\ d\ e\flat = \hat{1}\ \hat{2}\ \hat{3}\ \#4\ \hat{5}\ \hat{6}\ b\hat{7}$. That tonal perception is broken by bar 4's held $a\flat$ ($\flat, \flat, \flat, b\hat{3}$), the piece's first *melodic* third of any sort. The chord change $F \rightarrow B\flat^7$ at the introduction of $a\flat$ in the melody is such standard procedure for a blues in F (see ex. 63, p. 143, bar 2) that listeners might be excused for thinking of Gershwin, but three beats or two seconds later (bar 5) we are back in lydian flat seven mode. The 'joke' is that the *melody* is not in the lydian flat seven but in the Nikriz mode — $f\ g\ a\flat\ b\flat\ c\ d\ e\flat = \hat{1}\ \hat{2}\ b\hat{3}\ \#4\ \hat{5}\ \hat{6}\ b\hat{7}$ — while the accompaniment consists of chords based on major triads (F, G, $B\flat^7$). Two conflicting types of tonality — the $b\hat{3}$, $\#4$, $b\hat{7}$ of Nikriz and Western chords based major common triads — collide to produce a tonal hybrid whose 'incongruity' must, at least at the time of its first performance, have seemed new, dynamic and, hopefully, amusing (*divertente*).

Analytical detail of a few bars by Bartók may seem incongruous in a book about everyday tonality, but it is relevant to important change in popular tonal idioms during the twentieth century. The brief allusion to Gershwin a few sentences ago hints at where this narrative might be heading.

In a short advertisement for an upcoming 2009 performance of Gershwin's Piano Concerto in F (1925) and Bartók's Concerto for Orchestra (1943), a music journalist on the *Las Vegas Sun* wrote:

'The pairing of George Gershwin and Béla Bartók might have some Las Vegas Philharmonic ticket holders scratching their heads. A jazz-influenced Broadway composer and a Hungarian composer with a background in ethnomusicology doesn't at first seem a likely coupling. But David Itkin, music director and conductor, says he selected [the] program as a way to pair two very accessible 20th century works that won't turn audiences away.'¹⁰⁸

Now, although Bartók may have heard Gershwin's music before writing his *Divertimento* (1939), and although he mentions Gershwin's influence on *Mikrokosmos* n^o 151, the point here is that a central aspect of Bartók's tonal idiom — the incorporation of Eastern European 'folk' modes into his own work — exerted influence in the opposite direction. Not only were his *Contrasts* (1940) commissioned and performed by Benny Goodman; also, such figures as Chick Corea, Robert Fripp, Herbie Hancock and Frank Zappa have all testified to, or practically demonstrated, Bartók's influence on them.¹⁰⁹ The obvious question is why they go for Bartók instead of, say, Britten, Nono, Shostakovich, Stockhausen, Webern or Xenakis.

Part of the answer may well lie in Bartók's use of metre, rhythm and percussive articulation; but just as important is his tonal idiom that draws on the field recordings made earlier in life. One obvious trait is the usually tonal basis of his music, but that's not the only, nor the most important relevant characteristic linking Bartók's idiom with an emerging North American sense of tonality that included the blues. Example 63 provides a clue to how this link works. It's a simple, standard, right-hand piano figure for accompanying a swung ($\frac{12}{8}$) blues in F at the point of its change from F(7) to Bb(7). Including its grace notes (the #2-3̂ and #4-5̂ smudges essential to blues piano), the total tonal vocabulary of example 63 is f g g#/ab a| b| bb b| c d eb or scale steps 1̂ 2̂ #2̂/b̂3̂ 3̂ 4̂ #4̂ 5̂ 6̂ b7̂ in F. Considered enharmonically and excluding the perfect fourth (4̂, bb), all those scale degrees are contained either in the NIKRIZ or in the LYDIAN FLAT SEVEN mode, both of which contain 1̂ 2̂ #4̂ 5̂ 6̂ b7̂. (The only difference is 3̂: b3̂ in Nikriz, A3̂ in Lydian flat seven).

108. From 'If you go' by Kristen Peterson in the *Las Vegas Sun*, 19 November, 2009.

109. [1] *An American in Paris* (1928) was performed across Europe in 1929-30 (Wikipedia: 'Gershwin' [140225]). [2] N^o 151 is 'Dance in Bulgarian Rhythm 4' in *Mikrokosmos* vol. 6 (1940). [3] Gillies (2007) notes: '[j]azz pianist Andrea Keller observed that Bartók's *Mikrokosmos* pieces appear as if "arranged for jazz ensemble"' (see her 2003 CD *Mikrokosmos*); and, re Chick Corea's Trio Music, 'the effect is often more like Bartók than anything else' — Bartók's 'Ostinato' (1940) was arranged and performed by Chick Corea and Herbie Hancock in 1978. [4] For Bartók's influence on King Crimson guitarist Robert Fripp, see Hage (1999). [5] '[Among] Zappa's favorite[s]... were Bartók's ... Piano Concertos (*Zappa Wiki Jawaka*, n.d.).

Moreover, both modes are used extensively by Bartók and both bear more similarity to the blues tonality discussed on pages 158-163 than to ionian, ionianised or other 'dominant' configurations.

Ex. 63. *Standard blues piano motifs in F (over F and B♭ in 12/8)*



Bartók's influence on everyday tonality can also be understood in a wider sense by briefly returning to the Bartók-Gershwin issue, because both composers worked on a similar task. Each of them developed, in different ways and using different raw materials, a tonal idiom, including harmony, that was based on and compatible with the rural or urban popular music traditions that they enjoyed and respected, but which were absent in the international concert music culture of the day. These developments took place at a time of crisis in euroclassical tonality when chromatic tertiality had disappeared from the tonical radar screen into the black hole of serialism, a time when the gap between the 'classical/serious' and 'popular/trivial' poles of Western musical life was at its most extreme. Instead of falling into the radicalist trap of musical experimentalism by refining serialism, introducing stochastic or aleatoric techniques, etc., they adopted a more radical, *not radicalist*, tonal strategy by fetching inspiration from the 'popular/trivial', i.e. from the music of the lower classes. Gershwin did it as a Broadway composer influenced by the blues and pre-bebop jazz of African Americans, Bartók as a Hungarian composer-cum-ethnomusicologist and fan of the modes and rhythms he knew so well from peasant communities in Hungary, Romania and Bulgaria. There's something intrinsically democratic and inclusive about this process, even at the practical level of music making because one Bartókian solution to the problem of harmonising melodies incompatible with euroclassical tonality was, as we saw in examples 58-59 (p. 139), to use changing drone points and quartal harmony. As we shall see later (p. 344, ff.), this can be an effective strategy when putting chords to melody in other tonalities than that of the ionian and ionianised modes.¹¹⁰

Before abandoning the Bartók connection it's worth noting that his tonal aesthetic has been adopted in certain types of contemporary popular music in Hungary. Whether or not that is due to the inclusion of the Bartók-Kodály heritage in the nation's school music curriculum during the period 1945-1990 is an issue beyond the scope of this discussion. Suffice it here to say that example 64, in break-neck tempo (212 bpm) and the NIKRIZ mode, shows (including repeats) seven seconds of a 2011 performance at the Budapest *Tanc Ház* (= House of Dance). Judging from the YouTube video from which the example is transcribed, it was a very popular occasion.

Ex. 64. *István Pál* (2011): *Elhunyt táncos barátaink emlékére* (1:07-1:14, rough transcr.); *Nikriz* in D: $\hat{1} \hat{2} \hat{b}\hat{3} \hat{\#4} \hat{5} \hat{6} \hat{b}7 = d e f\sharp g\# a b\flat c\sharp$.

Example 65 is even more remarkable because it's performed by an urban Gypsy ensemble (violins, bass, cimbalon, etc.) that only a few decades earlier would have almost certainly offered a repertoire of the Csárdás type described on pages 137-138.

Ex. 65. *Tivadar Mészáros* (1984): *Kókai Rezső/Verbunkos Rhapsody* (at 1:54; rough transcr.) *Nikriz* in C: $\hat{1} \hat{2} \hat{b}\hat{3} \hat{\#4} \hat{5} \hat{6} \hat{b}7 = c d e\flat f\sharp g a b\flat$.

Returning from Nikriz to the LYDIAN FLAT SEVEN, it should be noted that the mode is not exclusive to Eastern Europe. It's also identified by Brazilian musicians as the *Escala nordestina*, i.e. a mode associated with traditional music from the Brazilian Northeast (ex. 66).

110. The problems of harmonising traditional music were not new, even in Bartók's day. For example, Surene (1854: v) remarks that '[t]he peculiar tonality of many [...] Irish airs has been altered by different arrangers [...], in order to force them into a union with the modern system of harmony and accompaniment. Consequently, the originality of the airs has been destroyed, and only a bad and heterogeneous compound produced'.

Ex. 66. José Siqueira (1949): *Segunda cantoria de cego; lydian flat seven in A*:
 $\hat{1} \hat{2} \Delta \hat{3} \#4 \hat{5} \hat{6} \flat\hat{7} = a b c\# d\# e f\# g\sharp$ (cited by Camacho, 2004: 172).¹¹¹



The lydian flat seven mode even occurs in cheerful, widely dif-fused media music from the UK and the USA. Cited in truncated form on page 102 as familiar examples of the lydian mode, the two theme tunes cited more fully as examples 67 and 68 demonstrate that the lydian flat seven mode is not just specific to rural regions in the Balkans or Northeastern Brazil.¹¹²

Ex. 67. Brian Fahey (1960): *Theme for BBC Pick of the Pops; lydian b7 in C*; $c d e f\# g a b\flat = \hat{1} \hat{2} \hat{3} \#4 \hat{5} \hat{6} \flat\hat{7}$ (except Hijaz cadence, b. 8).



Ex. 68. Danny Elfman (1989): *The Simpsons theme, lydian flat seven in C*;
 $c d e f\# g a b\flat = \hat{1} \hat{2} \hat{3} \#4 \hat{5} \hat{6} \flat\hat{7}$



111. Ex. 66 is from a Siqueira piano composition based on the street chants of blind beggars, in particular a *desafio* sung by Rouxinol and Chico Pequeno (Camacho, 2004: 174, citing Carvalho, 1979: 37).

112. It's conceivable that examples 67 and 68 may share associations of cheerful quirkiness but that might be down to their tempo, rhythmic configuration and 'jumpy' melodic profile rather than to the lydian b7 mode.

Summary in 14 points

[1] A MODE is the result of distilling a *tonal vocabulary* down to a set of *individual occurrences* of its constituent tones. These are normally arranged in ascending *scalar order* and delimited by scale degree 1 ($\hat{1}$, the tonic) at the bottom and top of one octave.

[2] Many traditions of musical learning conceive of the OCTAVE as consisting of SEVEN BASIC SCALE DEGREES, several of which (typically $\hat{3}$, $\hat{6}$ and $\hat{7}$, but also $\hat{2}$ and $\hat{4}$) are variable in pitch.

[3] The distinctive character of a mode is largely determined by its UNIQUE SCALE DEGREE PROFILE, e.g. $\hat{1} \hat{2} \hat{3} \hat{4} \hat{5} \hat{6} \hat{7}$ (ionian), $\hat{1} \flat\hat{2} \hat{3} \hat{4} \hat{5} \flat\hat{6} \flat\hat{7}$ (Hijaz). Even so, music in the same mode can *vary* quite substantially in *mood and character* depending on which of its constituent tones are used in which way, as well as on other musical factors (see ‘Aeolian’, pp. 105-112).

[4] SIX HEPTATONIC DIATONIC MODES are in common use in the West: *ionian, dorian, phrygian, lydian, mixolydian* and *aeolian*. These six modes all contain a PERFECT FIFTH and consist of *four scalar steps of a whole tone and two of one semitone*. The locrian is less common, except in heavy metal music.

[5] The IONIAN, LYDIAN and MIXOLYDIAN are called ‘MAJOR’ modes because they contain $\Delta\hat{3}$, the DORIAN, PHRYGIAN and AEOLIAN are called ‘MINOR’ because of their $\flat\hat{3}$. The notion that major modes are happy and minor modes sad is questionable.

[6] The IONIAN mode has equivalents in many music cultures but *no pride of place* among other modes in those traditions.

[7] A *vast number of heptatonic modes* exist in addition to the six or seven more familiar to Westerners. Many of those other heptatonic modes are non-diatonic. Nineteen Greek *dromoi* and at least thirty Arab *maqamat* are in daily use.

[8] Many modes in the ARAB and OTTOMAN traditions contain *itches incompatible with Western tuning systems*, e.g. $e\flat$, $\frac{3}{4}$ -tone above d , $\frac{1}{4}$ -tone below $e\flat$ and $\frac{3}{4}$ -tone below f .

[9] A MAQAM octave is often theorised as a combination of two TETRACHORDS. This aspect of tonal theory is useful in the understanding of many types of mode.

[10] Modes containing $b\hat{2}$ or $\#\hat{4}$ and/or a scale step of an *augmented second* ($1\frac{1}{2}$ tones), as in the ‘harmonic minor’ —NAHAWAND— and HIJAZ, are very common in the Arab world, the Balkans, Greece and Turkey. HIJAZ is also common in ANDALUSIA as one of flamenco music’s two *mi* modes.

[11] The AUGMENTED SECOND interval ($1\frac{1}{2}$ tones) and the scale degree FLAT TWO ($b\hat{2}$) have been used in the West as stereotypical signals of a remarkably wide variety of ethnic ‘*Others*’, most notably Arabs, Jews and Gypsies, the latter from both the Balkans and southern Spain.

[12] The PHRYGIAN is the only diatonic heptatonic mode to include FLAT TWO ($b\hat{2}$), and the HARMONIC MINOR the only euroclassical mode to contain an AUGMENTED SECOND.

[13] The LYDIAN FLAT SEVEN mode, found in traditional music from ROMANIA, and as used by BARTÓK, has tonal similarities to *blues modes*. It is also characteristic of music from Northeastern BRAZIL.

[14] ‘Phrygian dominant’ and ‘lydian dominant’ are patent MISNOMERS. Westerners raised on a *tonal diet* of V-I in the *ionian mode* and who fail to hear a final cadence in the phrygian or Hijaz modes are effectively *deaf to the* PHRYGIAN TONIC. Similarly, music in the lydian flat seven mode cannot morph into another mode with another tonic by being that tonic’s ‘dominant’ without the music ceasing to be in lydian flat seven.

One last point

No-one can possibly hear all different tonal vocabularies as would a member of their home audience and, of course, there’s nothing more destructive to a living musical tradition than to insist on ‘authenticity’ at all costs. My remarks about pieces like the *Lawrence of Arabia* theme, *Zigeunerweisen* and ¡Y Viva España! are in other words not intended as ‘put-downs’ of those pieces but as a way of drawing attention to what a Western listener might be missing in terms of musical variety and richness if touristic impressions are allowed to cloud insights that might have some cultural depth, or even be fun. I’m clearly no opponent of hybridisation or the mixing of styles. If I were, I wouldn’t have written with such enthusiasm

about Gershwin or Bartók and their development of viable tonal idioms in the twentieth century by bringing together apparently incompatible styles of music. However, as a music educator keen to ensure that my students can find musical inspiration and interest in as wide a variety of traditions as possible, I strongly object to labels like ‘phrygian dominant’ and ‘lydian dominant’ because they belong to a terminology and attitude which assumes that other musical traditions can be forced into the conceptual grid of euroclassical or conventional jazz tonality. After all, the musicians who actually use those modes un-exotically in other cultures as part of their everyday tonality have perfectly adequate and much shorter names for the same phenomena – Hijaz (اجز, *Xιτζάτζ*, *Хиджаз*, *Hicaz*, *Hiyaz*, etc.) for example. Those labels denote tonal practices that have nothing to do with ‘dominants’ and the unstoppable march of chords anticlockwise round the circle of fifths to reach a final ‘perfect cadence’. It’s for these reasons that I find terms like ‘the phrygian dominant’ not just misleading but also, quite frankly, disrespectful and, if not arrogant, at least ignorant.

If you find my anti-ethnocentric invective unconvincing, why not try a simple two-part thought experiment? First imagine your favourite ionian-mode tune as the butt of an Egyptian parody called ‘Western Baby’, played in the ‘out-of-tune’ *maqam Rast* and containing wrongly placed V-I cadences plus seemingly pointless switches of key. That could initially be quite funny because it’s unusual for parody to go in our direction, but the joke would probably wear thin with time.

The second part of the thought experiment is easier. Just put yourself in the shoes of someone living in a Muslim town. How many times would you have heard something resembling example 69 (p. 149) proclaimed from your local minaret?¹¹³

113. Ex. 69 is a rough transcription of call to prayer chanted by Mu'ezzin Sheikh Naji Qazaaz in 2013 (📞 maqamlessons.com/analysis/adhanhijaz.html [140213]). Various online sources give *Rast* and *Hijaz* as the most common *maqamat* for *adhan* (a.k.a. ‘azaan’). *Bayati*, *Nahawand* and *Saba* are also mentioned. 30 years × 365.25 days = 10957.5 *adhans* in Hijaz mode.

Ex. 69. *Morning adhan (call to prayer), Al-Aqsa mosque, Jerusalem (2013)*



If it's your thirtieth birthday, if there are five calls to prayer every day and if Hijaz is one of the five most common modes used by the local Mu'ezzin, you'll have heard that sort of tonal statement once a day.¹¹³ That makes 11,000 hearings of something in a mode that Westerners find a bit strange. Regardless of whether or not you're a devout Muslim, it's just as much, if not more, tonal 'home' to you in your home town than the BBC News jingle is to an avid watcher of current affairs broadcasts on UK TV. I just think we should at least *try* and understand the music of elsewhere from the 'hear-point' of those for whom elsewhere is home, not just through our own culturally conditioned ears. It's also more fun that way.

[intentionally blank]

4. *Non-heptatonic modes*

If modes containing seven different scale degrees are heptatonic, eight-note modes are *octatonic*, six-note modes *hexatonic*, those with five *pentatonic*, while four- and three-note modes are *tetratonic* and *tritone*. Now, even though the most popular pentatonic modes are sometimes called ‘gapped’ because they contain two scale steps larger than those of the ‘church’ modes of Chapter 3 — *doh ré mi sol la* and *la doh ré mi sol*, for example— they are no more incomplete or empty than the octatonic start to example 70 can be considered cluttered or crowded.¹

Ex. 70. *Vigneault/Rochon (1973): Je chante pour (octatonic opening phrase)*

8 Je chan-te pour ne pas cour-rir, Je chan-te pour ne pas mour-ir.
43 1 5 b7 4 b6 2 b3 1 b6 5 4 b3 2 1 1

The point is that the most widespread convention for numbering scale degrees (in Europe, the Arab world, India, Java, China, etc.) is, as we’ve seen, heptatonic. So, when expressions like ‘thirdless hexatonic’ occur in this chapter it does not imply that the mode is in any sense deficient: it’s just a matter of using a quasi-global convention to designate a particular trait of the mode.

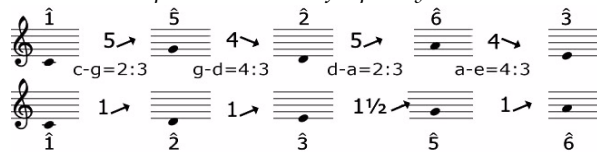
Tritonic and tetratonic

Tritonic and tetratonic tunes are common in many parts of the world, not least in traditional music from Micronesia and Polynesia, as well as among the Māori, the Inuit, the Saami and Native Americans of the great plains.² Tetratonic modes are also found in Christian psalm and response chanting (ex. 71), while the sound of children chanting tritonic taunts can still be heard in playgrounds in many parts of the world (ex. 72).

1. In D that one bar (f# d c b b a g e f#) contains $\hat{1} \hat{2} \hat{b}3 \hat{4}3 \hat{4} \hat{5} \hat{b}6 \hat{b}7$. See Rochon (1992) for an account of how that octatonic single bar came about.
2. Native American music, see Merriam (2011: 325) and Nettl *et al.* (2001: §2 (ii)); Māori and Polynesian: McLean (1996: 296, ff. and 1976: 144-148); Sami music: Erøla (2000); Inuit music: Johnston (1976).

Pentatonic

Fig. 22. *Anhemitonic*⁵ pentatonic mode frequency ratios



The most widely used modes outside the euroclassical sphere must surely be pentatonic. One reason for the ubiquity of anhemitonic pentatonicism may be, as suggested in Figure 22, that all five notes are acoustically linked by simple pitch ratios. In *doh*-pentatonic C, for example, the frequency ratio between c and g (a fifth) is 2:3, that between g and d (a fourth) 4:3, between d and a 2:3, and 4:3 between a and e. Rearranged in ascending order of pitch in the second row of Figure 22, the ‘white-key’ versions in Figure 23 (p. 154) show that those same five notes constitute modes like the *doh*- or ‘major’ pentatonic (c d e g a – no. 1 in Figure 23) and the *la*- or ‘minor’ pentatonic mode (a c d e g – no. 5).

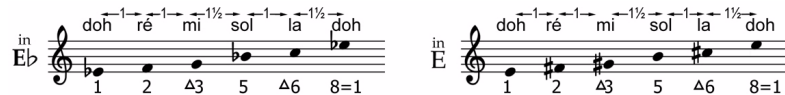
Modes 1-5 in Figure 23 (p. 154) are *anhemitonic* because they contain *no semitones*. Their scalar steps comprise three whole tones (one between *doh* and *ré*, *ré* and *mi*, *sol* and *la*), and two steps of one and a half (1½ between *mi* and *sol*, *la* and *doh*). The Japanese mode *Hirajoshi* at the bottom of Figure 23, however, is *hemitonic* because it contains semitones ($b\hat{6}-\hat{5}$ and $b\hat{2}-\hat{1}$). Like any other hemitonic mode, it cannot be played using only the black notes on a piano keyboard whereas all five *anhemitonic* modes *can*. The account that follows deals with the three most commonly heard of the five anhemitonic modes, at least in the urban West, two of which are also conceptually familiar. Those two are the *DOH*-mode or ‘major pentatonic’ (Fig. 23, n° 1) and the *LA*-mode or ‘minor pentatonic’ (Fig. 23, no. 6). The third, the *RÉ*-PENTATONIC mode (Fig. 23, n° 2), despite its presence in traditional musics from the British Isles and North America, appears to be a less familiar entity.

5. Anhemitonic = without semitone steps. N.B. some ‘natural’ instruments have more notes to the octave in higher and fewer in lower octaves (Hirt n.d., p. 13).

Ex. 76. *The East Is Red* (东方红 - Chinese trad.), b. 1-4 (DOH-pentatonic in E)

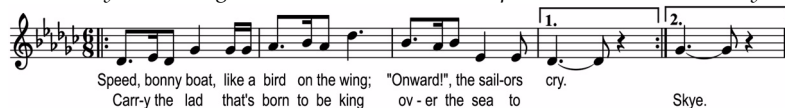


Fig. 24. Doh-pentatonic modes for examples 75 (Eb) and 76 (E)

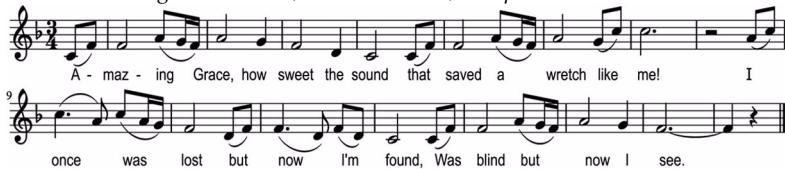


In Eb (ex. 75) the doh-pentatonic notes are eb f g bb c [eb] and, in E (Fig. 76), e f# g# b c# [e]. In addition to countless well-known tunes like *Auld Lang Syne*, *Swing Low, Sweet Chariot* and *Sukiyaki*, two other popular doh-pentatonic melodies are cited here: *The Skye Boat Song* (ex. 77) and *Amazing Grace* (ex. 78).

Ex. 77. *Skye Boat Song* (Scot. trad., cit. mem.); doh-pentatonic in Gb (black keys)



Ex. 78. *Amazing Grace* (1835; mel. cit. mem.); doh-pentatonic in F



Both doh- and la-pentatonic melodies are common in music from such far-flung parts of the world as West Africa, the Andes, East Asia (including China, Japan and Indonesia), Hungary and the British Isles.⁶

La-pentatonic

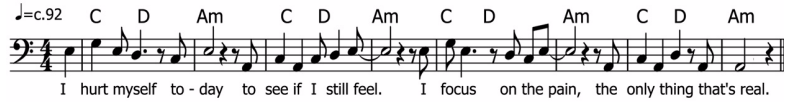
LA-PENTATONIC melody is common in traditional music from the British Isles and the Appalachians (ex. 80), as well as in blues-based popular styles (ex. 79, 81).

6. Doh-pentatonic is also common among Native Americans and the Sami. *Sukiyaki* is an anglocentric nonsense name for the song 上を向いて歩こう = 'I look up as I walk' (Sakomoto, 1961).

‘Minor pentatonic scales show up everywhere in rock music... [S]ongs by Pink Floyd, Rolling Stones, Led Zeppelin, AC/DC, Aerosmith, Van Halen,... Nirvana... feature [them] again and again.’⁷

Ex. 79. *Johnny Cash: Hurt* (2009; *LA-pentatonic A*).

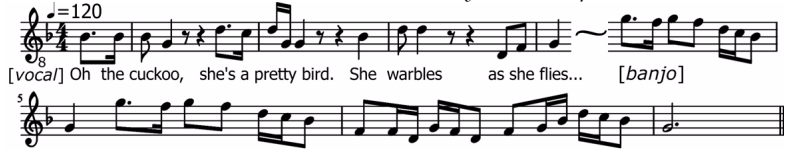
$\text{♩} = \text{c.}92$ C D Am C D Am C D Am C D Am



I hurt myself to-day to see if I still feel. I focus on the pain, the only thing that's real.

Ex. 80. ‘*The Coo-Coo Bird*’ (US trad., via Ashley, 1929; *LA-pentatonic G*)⁸

$\text{♩} = 120$



[vocal] Oh the cuckoo, she's a pretty bird. She warbles as she flies... [banjo]

Ex. 81. ‘*Boom Boom*’ (*Animals*, 1964b, covering Hooker, 1963; *la-pentatonic E*)

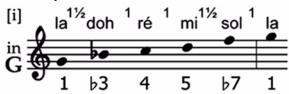
$\text{♩} = 152$



instr. Boom boom boom boom instr. voc. Gonna shoot you right down

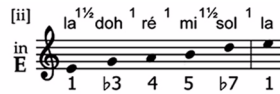
Fig. 25. *La-pentatonic modes in G and E*

(i) $\text{la}^{1\frac{1}{2}}$ doh^1 ré^1 $\text{mi}^{1\frac{1}{2}}$ sol^1 la



1 b3 4 5 b7 1

(ii) $\text{la}^{1\frac{1}{2}}$ doh^1 ré^1 $\text{mi}^{1\frac{1}{2}}$ sol^1 la




1 b3 4 5 b7 1

Examples 79-81 are all *LA-PENTATONIC*. Section 5 in Figure 23 (p. 154) shows that the five notes of the *la-pentatonic* mode — *la doh ré mi sol [la]*, spaced at intervals of $1\frac{1}{2}$, 1, 1, $1\frac{1}{2}$ and 1 tones respectively— are equivalent to heptatonic scale degrees $\hat{1} \hat{b}3 \hat{4} \hat{5} \hat{b}7$ ($\hat{1}$). In A (ex. 79), that pattern produces the notes a c d e g. In G (ex. 80) it produces g b \flat c d f (g) and in E (ex. 81) e g a b d (e) (Fig. 25).

Ré-pentatonic

Section 2 in Table 23 (p. 154) shows that the five notes of the *RÉ-PENTATONIC* mode — *ré mi sol la doh*— are equivalent to heptatonic scale degrees $\hat{1} \hat{2} \hat{4} \hat{5} \hat{b}7$. In D that *ré-pentatonic* pattern of $1 + 1\frac{1}{2} +$

7. The quote is from Joe Walker (2013) on the ‘Deft Digits Guitar Lessons’ site. A web search for “minor pentatonic” (2013-12-31) produced 685,000 hits, most of which were tutorials for rock guitarists being sold la-pentatonic improvisation lessons. See p. 161, ff. for the la-pentatonic blues mode.
8. See transcription by D K Garner  sites.duke.edu/banjoology/transcriptions/coo-coo-a-study/the-coo-coo-bird-by-clarence-ashley/ [140322].

1 + 1½ + 1 steps produces the notes *d e g a c*. In *A* (ex. 82-83) that same scale degree pattern — $\hat{1} \hat{2} \hat{4} \hat{5} \hat{b}\hat{7}$ — results in *a b d e g*, while in *C#* (ex. 84) it gives *c# d# f# g# b* and, in *C* (ex. 85), *c d f g bb*.

Ex. 82. *Shady Grove* (*US trad. via Clarence Ashley, ré-pentatonic A*)

$\text{♩} = 124$



8 Shady grove, my little love, shady grove I say. Shady grove, my little love, now I'm goin' a - way.

Ex. 83. *The Braes of Lochiel* (*Scot. trad., bars 1-5; ré-pentatonic A*)

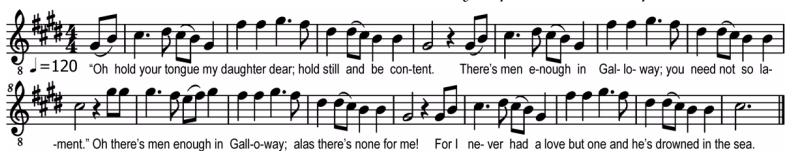
$\text{♩} = c.60$



8 Oh hold your tongue my daughter dear; hold still and be content. There's men e-nough in Gal-lo-way; you need not so la-

Ex. 84. *Lowlands Of Holland* (*UK. trad./Steeleye Span, 1970; ≈ ré-pentatonic C#*)

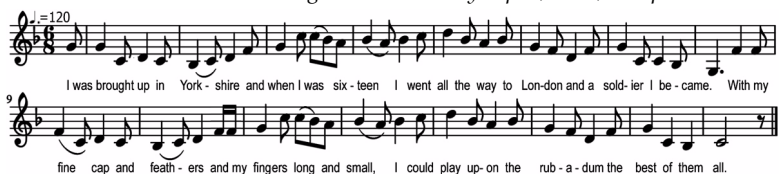
$\text{♩} = 120$



8 Oh there's men enough in Gall-o-way; alas there's none for me! For I ne-ver had a love but one and he's drowned in the sea.

Ex. 85. *Female Drummer* (*Eng. trad. via Steeleye Span, 1971; ≈ ré-pentatonic C*)



$\text{♩} = 120$



9 I was brought up in York-shire and when I was six-teen I went all the way to Lon-don and a sold-ier I be-came. With my fine cap and feath-ers and my fingers long and small, I could play up-on the rub-a-dum the best of them all.

Ré-pentatonic tunes seem more unfamiliar than *doh-* and *la-*modes to most of my students, many of whom hear, for example, *The Female Drummer* (ex. 85) in a 'minor' mode (usually *dorian*) despite there being nothing minor (or major) about it because it contains no third at all, neither minor ($e\flat$) nor major ($e\sharp$). Nor is the mode in any way unresolved or incomplete, even though many musicians insist on referring to it as 'suspended'.⁹

Diligent readers will have observed that examples 82-83 are entirely *ré-pentatonic* but that, strictly speaking, examples 84 and 85 are not. That's because there's an e ($b3$ in *C#*) in bar 9 of example 84

9. For example: [1] 'Suspended pentatonic tutorial'  IAR7P0rVWMA; [2] 'Egyptian-suspended' in Wikipedia article 'Pentatonic scales'; [3] Advice from *The Jazz Theory Book* (Levine, 1995) that the 'suspended pentatonic' is good for playing over Gm^7_{7c}  apassion4jazz.net/jazz-chords-scales.html. [All visits 140214].

and an $\text{a}\sharp$ ($\Delta 6$ in C) in bars 3-5 and 11-13 of example 85. So, if neither $\flat 3$ nor $\Delta 6$ are part of the *ré*-pentatonic mode, why are examples 84 and 85 so labelled? It's because those extra notes mark a temporary counterpoise¹⁰ to an overriding *ré*-pentatonic tonality. Since that interpretation sounds a bit spurious, I had better explain.

The single $\text{e}\sharp$ in bar 9 of *The Lowlands Of Holland* (ex. 84) marks a momentary change from C \sharp *ré*-pentatonic to either C \sharp *la*-pentatonic or E *doh*-pentatonic. It occurs near the start of the third of four 4-bar periods, a typical half-way point for going tonally 'elsewhere' before 'returning home': it's the 'B' in a standard AABA strophic pattern whose three 'A' periods stay consistently in C \sharp *ré*-pentatonic. In *The Female Drummer* (ex. 85) the highlighting of a tonal 'elsewhere' works differently. Here the $\text{a}\sharp$ ($\Delta 6$ in C) serves to underline the importance of the tune's counterpoise on $\flat b$ ($\flat 7$). It could be argued that the $\text{a}\sharp$'s function is that of a momentary leading note to the $\flat b$.¹¹ That interpretation does not work on the extracts shown as examples 95-102, all of which are unequivocally *ré*-hexatonic and discussed on pages 172-173.

Songs like *The Female Drummer* and *The Lowlands Of Holland* are, as we just saw, basically pentatonic with a momentary hexatonic 'extra'. Blues tonality, so influential on everyday music in the twentieth century, is similar on that count but in a very different way.

Blues pentatonic

Viewed in highly schematic terms, blues melody is based on the anhemitonic *doh*- and *la*-pentatonic modes (Fig. 26, n^{os} 1 and 2, p. 159). The lower line in Figure 26 (n^{os} 3 and 4) shows the sort of tonal material you're likely to actually hear. Not only are the modes presented in descending order in accordance with the blues-typical tumbling strain (see p. 183, ff.); they also show some common alternatives to strictly pentatonic pitches in terms of substitution, inflection and harmonic or melodic context.¹²

10. *Counterpoise*: see Glossary and pp. 161-164.

11. The $\text{a}\sharp$ is always followed by $\flat b$ in this tune. Only one of the three $\text{a}\sharp$ s is on a strong beat (bars 5 and 12). The other two (bars 3-4, 11-12) are both unaccented upbeats to $\flat b$. See also Fig. 29, p. 167 and p. 172, ff.

Fig. 26. Blues pentatonic modes: [1] doh-pentatonic; [2] la-pentatonic; [3] blues/gospel major pentatonic; [4] blues minor pentatonic.

Doh-pentatonic blues

The BLUES-GOSPEL MAJOR PENTATONIC mode is so called because it resembles the standard DOH-PENTATONIC mode with its $\Delta\hat{3}$ and $\Delta\hat{6}$. The qualifier ‘gospel’ simply alludes to its frequent use in gospel-related styles, as shown on page 160 in examples 86 (Alex Bradford) and 87 (Smokey Robinson),¹³ while the ‘blues’ epithet is obvious from the twelve bars of Bessie Smith in example 88. In this mode, the two scale degrees most commonly subjected to variation are $\hat{6}$ and $\hat{3}$. $\hat{6}$ can be replaced by $b\hat{7}$ if the underlying harmony so demands, for example $b\flat$ instead of $a\flat$ over C^7 .¹⁴ Even more common is a blue note on $\hat{3}$, either as $b\hat{3}$ or as a slide from $b\hat{3}$ towards $\Delta\hat{3}$ (notated as an ascending $d\sharp$ -e in Figure 26 and as a passing $e\flat$ in descent). A straight $b\hat{3}$ with no slide or bend ($e\flat$ in C) replaces $\Delta\hat{3}$ when the harmonies shift to a chord on IV (F^7 if the blues is in C). Finally, the $[\hat{2}]-\hat{1}-\hat{6}-\hat{1}$ at the end of example 3 in Figure 26 shows the notes often used around the tonic in this mode. Two examples serve to illustrate how this mode is used in gospel-related styles.

Example 86, taken from a 1955 recording by gospel vocalist Alex Bradford, is entirely doh-pentatonic in A ($a\ b\ c\sharp\ e\ f\sharp = \hat{1}\ \hat{2}\ \Delta\hat{3}\ \hat{5}\ \Delta\hat{6}$), except for the alteration of $c\sharp$ to $c\flat$ ($b\hat{3}$ replaces $\Delta\hat{3}$) over the D^7 (IV)

12. For a detailed presentation of blues-mode pitches and the frequency with which they were used in 44 ‘downhome’ blues recordings, see Titon (1977: 155), as reproduced and explained in Lilja (2009: 158).
13. The abandonment of blues by African Americans during the Civil Rights and Black Power movements of the 1960s in favour of gospel and soul is socio-politically well documented in *Right On! From Blues to Soul in Black America* (Haralambos, 1974). Its tonal aspect, from la-pentatonic blues modes with flat fifths to a more doh-pentatonic sound is less well-known.
14. $\hat{6}$ can occasionally be replaced by $\hat{7}$ if the chords move on to a V but it’s more ‘gospel’ for melodic lines to stick to doh-pentatonic over V.

86. Another famous doh-pentatonic blues example (e f# a b c# in A) is the John Lomax recording of Arkansas State Prison inmates singing *The Rock Island Line* (Pace, 1934).

La-pentatonic blues

The most significant trait in the BLUES MINOR mode is its treatment of la-pentatonic $\hat{5}$. It can be stated 'straight', but it can also be 'slid up to' from $\#4$ just below, as with the e#-f# in bar 1 of example 89 and in bar 2 of example 90; or it can be inserted as, or altered wholesale to, $b\hat{5}$, usually followed by $\hat{4}$, as in those same two examples, most notably on the last 'money' in the Valentine Brothers track (ex. 90). In the blues minor mode, $b\hat{3}$ and $b\hat{7}$ are more rarely the object of slides or bends. They are usually articulated as 'straight' $b\hat{3}$ s and $b\hat{7}$ s, occasionally as $\flat\hat{3}$ and $\flat\hat{7}$.

Ex. 89. Robert Johnson (1936): Kind Hearted Woman Blues

8 $J=88$ B7
I got a kind - heart-ed wo-man — do an-y-thing'n this world for me

Ex. 90. Valentine Brothers (1982): Money's Too Tight To Mention, 2:15-2:33

8 $J=110$ Bm Em7
8 *tutti* Money's too tight to ment - ion. *solo* Whoa, money, money, money, money, mon - ey —
5 *tutti* Money's too tight to ment - ion. *solo* I can't ev-en qual-i-ty for my pen-sion

Among other famous recordings featuring these traits of the minor blues mode are Robert Johnson's *Crossroads* (1937, in B), Charlie Patton's *Stone Pony* (1934, in F) and Texas Alexander's *Peaceful Blues* (1929, in F#), all of which contain $b\hat{3}$ or $\flat\hat{3}$, as well as $b\hat{5}$ and $b\hat{7}$ accompanied by major chords on the guitar.

The la-pentatonic blues mode's $b\hat{5}$ became a defining trait of bebop. It allowed musicians to do all sorts of clever things with harmony (p. 270, ff.) and became synonymous with jazz notions of cool. The descending $b\hat{5}$ (Cb in F) is given this 'cool' treatment in the tritone triplet figure Cb-bb-ab-f ($b\hat{5}$ - $\hat{4}$ - $b\hat{3}$ - $\hat{1}$) in bars 4 and 6 of example 91.¹⁵

Ex. 91. *Bobby Timmons* (1958): *Moanin'*; $b\hat{5}$ as bebop blues.

$\text{♩} = 125$ *swing*

Ex. 92. *Henry Mancini* (1963): *The Pink Panther* (repeated $b\hat{5}$ extract).

$\text{♩} = 116$

As a much used musical sign of 1950s streetwise sophistication, $b\hat{5}$ became a sitting duck for satire. Just five years after Art Blakey's popular recording of *Moanin'* (ex. 91), Henri Mancini (ex. 92) set the comic incompetence of Inspector Clouzot — including his P.I. trenchcoat and other delusions of cool— to a barrage of flat fives ($b\flat$ is $b\hat{5}$ in *The Pink Panther's* E minor blues pentatonic mode). The $b\flat$ is held relentlessly in bar 3 of the extract in example 92 and is hammered home four times in bar 6 before trickling down in triplets — like the $b\hat{5}-\hat{4}-b\hat{3}-\hat{1}$ figure in *Moanin'* — to the final tonic.¹⁶

Despite the flat five's fall from grace as the tonal epitome of cool — 'jazz is not dead, it just smells funny', said Frank Zappa,¹⁷ — the lapentatonic blues mode and its $b\hat{5}$ returned with a vengeance in early heavy metal, as heard in examples 93 and 94, as well as in tracks like *Rat Salad* (Black Sabbath, 1970b), *Highway Star* (Deep

15. '[Dizzy] Gillespie is generally credited with introducing the flattened fifth into bebop as a major stylistic device, and it became a feature of every bopper's style' (Jack Chambers in *Milestones*, 1983: 30).

16. Similar $b\hat{5}-\hat{4}-b\hat{3}-\hat{1}$ triplet 'trickle-downs' occur in *Work Song* (Nat Adderley, 1960). For a full account of flat-five connotations becoming stereotypical, including *Our Man Flint* (Goldsmith, 1966), *Hey, Big Spender* (Coleman & Fields, 1966) and a Philadelphia Cream Cheese ad, see 'Church of the flattened fifth and P.I. cool' in Tagg & Clarida (2003: 580-588).

17. In *Bebop Tango* (*Of the Old Jazzmen's Church*) (Zappa, 1974).

Purple, 1972b) and *Wrathchild* (Iron Maiden, 1981).¹⁸ Such prominent use of the la-pentatonic blues mode's $\flat\hat{5}$ in early metal may well have reinforced the predilection among some exponents of the style for the tritone in general, rather than as part of the blues la-pentatonic mode.¹⁹

Ex. 93. *Cream: Sunshine Of Your Smile* (1968): blues la-pentatonic riff in A



Ex. 94. *Deep Purple: Smoke On The Water* (1972a, 0:26-0:35): opening guitar riff with bass, blues la-pentatonic in G²⁰

Theoretical bridge from five to six

One last piece of theory is needed before taking on the hexatonic modes. It involves dividing the octave into two halves, one pentatonic, the other heptatonic. In Figure 27 (p. 164) the pentatonic trichords on *mi* and *sol* are greyed out because they're the same as those starting on *la* (scale steps 1½, 1, 1) and *ré* (1, 1½, 1). The THREE PENTATONIC TRICHORDS between $\hat{1}$ and $\hat{5}$ are therefore: [1] the DOHPENTATONIC TRICHORD $\hat{1} \hat{2} \Delta\hat{3} \hat{5}$ (scale steps 1, 1, 1½); [2] the RÉ-PENTATONIC TRICHORD $\hat{1} \hat{2} \hat{4} \hat{5}$ (1, 1½, 1); [3] the LA-PENTATONIC TRICHORD $\hat{1} \flat\hat{3} \hat{4} \hat{5}$ (scale steps 1½, 1, 1).

The other scalar half of the hexatonic modes discussed below consists of one of the THREE SYMMETRICAL HEPTATONIC TETRACHORDS shown first in Figure 28: [1] the DOH or ionian TETRACHORD $\hat{1} \hat{2} \Delta\hat{3} \hat{4}$

18. See Lilja (2009: 158-161).

19. For example: [1] the brazen $g^2/g^3\backslash c\#^3$ at the start of *Black Sabbath* (Black Sabbath, 1970a); [2] any online heavy metal locrian guitar tutor, e.g. 'Slipknot Anthrax Lamb of God metal licks guitar lesson using locrian mode next level guitar' on www.youtube.com/watch?v=MwTHXY6BMZk [140626]; [3] the Slayer Album *Diabolus in Musica* (1998). It is, however, important to remember, as Lilja (2009: 161) explains, that pentatonicism, with or without the tritone ($\#4$ or $\flat5$), is just one of several types of tonality used in heavy metal.

20. See also power chord section, pp. 280-284.

(tone step pattern 1, 1, 1/2); [2] the RÉ or dorian TETRACHORD $\hat{1} \hat{2} \hat{b}3 \hat{4}$ (1, 1/2, 1); [3] the MI or phrygian TETRACHORD $\hat{1} \hat{b}2 \hat{b}3 \hat{4}$ (1/2, 1, 1). Since the other ‘church’ modes are asymmetrical, their names are less useful as tetrachord qualifiers than the three just mentioned.²¹

Fig. 27. The three anhemitonic PENTATONIC TRICHORDS: Doh, Ré and La.

N.B. white notes
 mi (1 b3 4) is same trichord as la;
 sol (1 2 4) is same trichord as ré.
 black notes

Fig. 28. 3+1 octave-symmetrical tetrachords

	on white notes	lower ← in C → upper
1.	$\begin{matrix} 1 & 2 & \Delta 3 & 4 \\ 5 & 6 & \Delta 7 & 8 \end{matrix}$ 	$\begin{matrix} \text{doh/ionian} & & \text{doh/ionian} \\ 1 & 2 & \Delta 3 & 4 & 5 & \Delta 6 & \Delta 7 & 8=1 \end{matrix}$
2.	$\begin{matrix} 1 & 2 & \flat 3 & 4 \\ 5 & \Delta 6 & \flat 7 & 8 \end{matrix}$ 	$\begin{matrix} \text{ré/dorian} & & \text{ré/dorian} \\ 1 & 2 & \flat 3 & 4 & 5 & \Delta 6 & \flat 7 & 8=1 \end{matrix}$
3.	$\begin{matrix} 1 & \flat 2 & \flat 3 & 4 \\ 5 & \flat 6 & \flat 7 & 8 \end{matrix}$ 	$\begin{matrix} \text{mi/phrygian} & & \text{mi/phrygian} \\ 1 & \flat 2 & \flat 3 & 4 & 5 & \flat 6 & \flat 7 & 8=1 \end{matrix}$
4.	(not applicable)	$\begin{matrix} \text{Hijaz} & & \text{Hijaz} \\ 1 & \flat 2 & \Delta 3 & 4 & 5 & \flat 6 & \Delta 7 & 8=1 \end{matrix}$

The Hijaz tetrachord is included in Figure 28 because, like the other three, it’s symmetrical in the sense that it can be used in the same heptatonic mode as both upper and lower tetrachord (*Hijaz Kar*, Fig. 20, p. 116). It also constitutes the upper half of the harmonic minor mode ($\hat{5} \hat{b}6 \hat{\Delta}7 \hat{8} = \hat{1} \hat{b}2 \hat{\Delta}3 \hat{4}$) whose lower tetrachord is dorian ($\hat{1} \hat{2} \hat{b}3 \hat{4}$). Among other *heptatonic modes built on two differ-*

21. Why aren’t *aeolian*, *mixolydian* etc. used as tetrachord qualifiers? See p. 164.

ent tetrachords are the *mixolydian*, whose lower half is ionian $\hat{1} \hat{2} \Delta \hat{3} \hat{4}$ and its upper dorian ($\hat{5} \Delta \hat{6} \flat \hat{7} \hat{8} = \hat{1} \hat{2} \flat \hat{3} \hat{4}$), and the *aeolian* with its lower dorian and upper phrygian tetrachords ($\hat{1} \hat{2} \flat \hat{3} \hat{4}$ and $\hat{5} \flat \hat{6} \flat \hat{7} \hat{8} = \hat{1} \flat \hat{2} \flat \hat{3} \hat{4}$). The lydian and locrian, as well as *Niavent* (*Nawa Athar*), *Nikriz* and *Mustaar* are all *asymmetrical* because, by containing $\sharp \hat{4}$ or $\flat \hat{5}$, their lower tetrachord cannot be transposed a fifth to the upper half of the octave (Fig. 20, p. 116; Table 12, p. 135).

The explanations just offered let us understand that, for example: [1] the doh-hexatonic mode consists of a lower heptatonic ionian (doh) tetrachord ($\hat{1} \hat{2} \Delta \hat{3} \hat{4}$) and a pentatonic upper ré trichord ($\hat{1} \hat{2} \hat{4}$), a fifth higher as $\hat{5} \Delta \hat{6} \hat{8}$; [2] the quartal ('thirdless') la-hexatonic mode consists of a pentatonic lower ré-trichord ($\hat{1} \hat{2} \hat{4}$) and a heptatonic upper mi-tetrachord ($\hat{1} \flat \hat{2} \flat \hat{3} \hat{4}$), a fifth higher as $\hat{5} \flat \hat{6} \flat \hat{7} \hat{8}$.

Hexatonic modes

No names

Hexatonic modes are, as we shall shortly see, common in melody from the British Isles and North America. And yet, while pentatonic and heptatonic modes may be covered in music theory courses, hexatonic modes are conspicuous by their absence, with one exception — the 'whole-tone scale', probably included because of its use by accredited euroclassical composers like Debussy. More popular hexatonic modes, those containing a perfect fifth, like the 'seventhless' doh-mode, don't seem to make it into the academy. And so far I've been treating them as if they were either deficiently heptatonic (e.g. the 'seventhless' doh-mode), or pentatonic with one note too many (e.g. the 'extra' $\Delta \hat{6}$ in the otherwise ré-pentatonic *Female Drummer*). Nor do hexatonic modes appear to have ready names like 'lydian' or 'la-pentatonic' allowing them to be easily identified or discussed without cumbersome periphrasis.

The aim of this section is therefore to bring some semblance of order into what seems hitherto to have been something of a conceptual no-man's land, to explain how common hexatonic modes are constructed, and to suggest simple ways in which those modes can be identified and named. To make this task less daunting I've chosen to focus on hexatonic modes playable on the white keys of a pi-

ano keyboard. I've identified those modes in two ways: by relative tonic note — *doh, ré, mi, fa, sol* and *la*— and by the nature of each mode's third scale degree ($\hat{3}$). The three types of third are: [1] $\hat{A}\hat{3}$ — MAJOR HEXATONIC; [2] $b\hat{3}$ — MINOR HEXATONIC; [3] no third at all — QUARTAL HEXATONIC. After the initial systematic table (Fig. 29, p. 167) and some theoretical explanations, examples are discussed in order of the three types of third just mentioned.

The hexatonic modes in Figure 29 (p. 167) share common features. Apart from consisting by definition of six different tones, each of them contains four scalar steps of a whole tone ('1' in the right-hand column), one of a semitone ('½'), and one of three semitones ('1½'). They also all consist of a pentatonic trichord and a heptatonic tetrachord (Figures 27-28, p. 164). The boundary between the two, just below the fifth in each mode, is marked in Figure 29 by a small vertical dash ('|') in the left column. For example, the much used DOH-HEXATONIC mode — *doh ré mi fa sol la (doh)*— contains no seventh. Its lower half consists of four notes or three steps: $c d e f = \hat{1} \hat{2} \hat{A}\hat{3} \hat{4} = 2$ tones plus 1 semitone — 1, 1, ½, i.e. an ionian or *doh* tetrachord, while its top half is a *ré*-pentatonic trichord ($g a c = \hat{1} \hat{2} \hat{4}$, or one whole tone plus three semitones — 1, 1½). Together that produces $\hat{1} \hat{2} \hat{A}\hat{3} \hat{4} \hat{5} \hat{A}\hat{6} [\hat{1}]$ for the whole mode ($c d e f g a [c]$ in C). The equally ubiquitous LA-HEXATONIC mode, on the other hand, is 'sixthless' — $a b c d e g [a] = \hat{1} \hat{2} b\hat{3} \hat{4} \hat{5} b\hat{7} [\hat{1}]$ in A— and consists of a *ré* tetrachord ($\hat{1} \hat{2} b\hat{3} \hat{4}$) in the lower half and a *la*-pentatonic trichord in the upper ($\hat{1} b\hat{3} \hat{4}$ as $\hat{5} b\hat{7} \hat{8} [= \hat{1}]$ for $e g a$ in A).

Similar deconstruction of each mode in Figure 29 reveals a unique combination of tetrachord and trichord, except for the second *mi* mode and the final *sol* mode. These two are greyed out because, although they can be generated on the white notes of the piano with *e* and *g* as tonic, they produce the same scale degrees as other hexatonic modes: the $\hat{1} b\hat{3} \hat{4} \hat{5} b\hat{6} b\hat{7} [\hat{1}]$ in E ($e g a b c d$) is the same as aeolian hexatonic in A ($a b c d e g$), while the $\hat{1} \hat{2} \hat{4} \hat{5} \hat{A}\hat{6} b\hat{7}$ in G ($g a c d e f$) is identical to *ré*-hexatonic in D ($d e g a b c$).²²

22. To save space, other duplicates are not included in Figure 29, for example: seventhless *doh*-hexatonic can be produced on F and G as well as on C; *doh* ionian can also be produced on F.

Fig. 29. 'White-note' hexatonic modes containing a perfect fifth.²³

Doh/C		Doh (no 7) 1 2 Δ3 4 5 Δ6 1 	Doh (no 4) or ionian 1 2 Δ3 5 Δ6 Δ7 1
La/A	on white notes	La (no 6) 1 2 b3 4 5 b7 1 	in C 1 1/2 1 1 1 1/2 1
	Æolian (no 2)	1 b3 4 5 b6 b7 1 	1 1/2 1 1 1/2 1 1
	La quartal (no 3)	1 2 4 5 b6 b7 1 	1 1 1/2 1 1/2 1 1
Ré/D	Ré (quartal) (no 3)	1 2 4 5 Δ6 b7 1 	1 1 1/2 1 1 1/2 1
	Dorian (no 7)	1 2 b3 4 5 Δ6 1 	1 1/2 1 1 1 1 1/2
Mi/E	Mi or phrygian (no 6)	1 b2 b3 4 5 b7 1 	1/2 1 1 1 1 1/2 1
	Æolian	1 b3 4 5 b6 b7 1 	1 1/2 1 1 1/2 1 1
Fa/F (see footnote)	Fa or lydian (no 7)	1 2 Δ3 #4 5 Δ6 1 	1 1 1 1/2 1 1 1/2
Sol/G	Mixolydian (no 4)	1 2 Δ3 5 Δ6 b7 1 	1 1 1 1/2 1 1/2 1
	Sol (no 6)	1 2 Δ3 4 5 b7 1 	1 1 1/2 1 1 1/2 1
	Ré (quartal)	1 2 4 5 6 b7 1 	1 1 1/2 1 1 1/2 1

The hexatonic modes in Figure 29 have been named according to the following principles.²⁴ If the tones of the white-note mode are

23. For explanations of Figure 29, see following text and footnote 24 (p. 168).

part of a heptatonic ‘church’ mode, and if its hexatonic scale degree profile is not duplicated elsewhere in the table, it is given the relevant ‘church’ mode’s name. That’s why the tertial mode in D is called DORIAN HEXATONIC: its combination of $b\hat{3}$ $\Delta\hat{6}$ and $b\hat{7}$ is uniquely dorian. It’s also why the *sol* mode containing $\Delta\hat{3}$ $\Delta\hat{6}$ and $b\hat{7}$ is MIXOLYDIAN HEXATONIC, and why the *mi* mode featuring $b\hat{2}$ is exclusively phrygian; it’s also the only *mi* mode and can therefore be called either MI HEXATONIC or PHRYGIAN HEXATONIC. In the same way, given that the fourthless doh mode containing $\Delta\hat{3}$ $\Delta\hat{6}$ and $\Delta\hat{7}$ is the only one listed to contain those ionian scale degrees,²⁵ it’s called IONIAN HEXATONIC, while its widely used ‘seventhless’ cousin ($\hat{1}$ $\hat{2}$ $\Delta\hat{3}$ $\hat{4}$ $\hat{5}$ $\Delta\hat{6}$) can be called simply DOH HEXATONIC.

If a hexatonic mode contains no third, it’s qualifiable as quartal. Using the white keys of a piano, hexatonic quartal modes can be constructed on A/La ($\hat{1}$ $\hat{2}$ $\hat{4}$ $\hat{5}$ $b\hat{6}$ $b\hat{7}$ — LA QUARTAL HEXATONIC), D/Ré ($\hat{1}$ $\hat{2}$ $\hat{4}$ $\hat{5}$ $\Delta\hat{6}$ $b\hat{7}$ — RÉ HEXATONIC) and G/Sol ($\hat{1}$ $\hat{2}$ $\hat{4}$ $\hat{5}$ $\Delta\hat{6}$ $b\hat{7}$, same degrees as D/Ré). Ré quartal is called simply RÉ HEXATONIC because its first four notes ($\hat{1}$ $\hat{2}$ $\hat{4}$ $\hat{5}$) include the ré-pentatonic trichord $\hat{1}$ $\hat{2}$ $\hat{4}$.

Both the fourthless and the sixthless modes on G/Sol are uniquely mixolydian ($\hat{1}$ $\hat{2}$ $\Delta\hat{3}$ $\hat{5}$ $\Delta\hat{6}$ $b\hat{7}$ and $\hat{1}$ $\hat{2}$ $\Delta\hat{3}$ $\hat{4}$ $\hat{5}$ $b\hat{7}$) but that adjective is reserved for the first of the two because it is even more specifically mixolydian than the G-mode without $\Delta\hat{6}$, which can be called simply SOL HEXATONIC.

To summarise: the hexatonic modes in Figure 29 (p. 167) can be categorised in several ways. Here I do so in terms of three types of thirds: [1] MAJOR HEXATONIC, i.e. those containing a major third — the *do*, *sol* and *fa* modes; [2] MINOR HEXATONIC, i.e. those containing a minor third — the *ré-tertial*, the (‘sixthless’) *la* mode, the *la-aeolian*

24. By ‘hexatonic white-note modes’ is meant those that can be played on the white notes of a piano keyboard if the tonic is set to the note stated in the left hand column of Figure 29, e.g. A for the *la*-hexatonic, the aeolian hexatonic, and *la*-quartal hexatonic modes. Locrian hexatonic modes ($\hat{1}$ $b\hat{3}$ $\hat{4}$ $b\hat{5}$ $b\hat{6}$ $b\hat{7}$, $\hat{1}$ $b\hat{2}$ $b\hat{3}$ $\hat{4}$ $b\hat{6}$ $b\hat{7}$) are not included in Figure 29 because [1] they lack perfect fifth and [2] I can bring to mind no music in those modes.

25. That mode can also be produced on F, but since a *fa* mode without $\#\hat{4}$ negates its most distinctive trait, it is not counted here (see also footnote 23, p. 167).


and the *mi* mode. [3] QUARTAL HEXATONIC, i.e. those with neither major nor minor third – the *ré-* and the *la-quartal* modes.

Major hexatonic

Examples 95-97 all include a *semitone* between scale degrees 3 ($\Delta\hat{3}$) and 4 ($\hat{4}$).²⁶ They aren't pentatonic because all heptatonic scale degrees except $\hat{7}$ are present in all three tunes.²⁷ Here we're dealing with the seventhless DOH-HEXATONIC mode, so called because $\hat{1}$, $\hat{2}$, $\Delta\hat{3}$, $\hat{4}$, $\hat{5}$ and $\Delta\hat{6}$, can, if C (doh) or G (sol) is tonic, be played on the white notes of a piano keyboard. This mode is common in traditional and popular music from the British Isles and the USA.²⁸

Ex. 95. 'This Old Man' (Eng. trad., cit. mem.) *doh-hexatonic*;

$\hat{1} \hat{2} \Delta\hat{3} \hat{4} \hat{5} \Delta\hat{6} = d e f\# g a b$ in D).



Ex. 96. The Claudy Banks (Eng. trad., via *The Albion Country Band*, 1970);

doh-hexatonic $\hat{1} \hat{2} \Delta\hat{3} \hat{4} \hat{5} \Delta\hat{6} = e f\# g\# a b c\#$ in E)



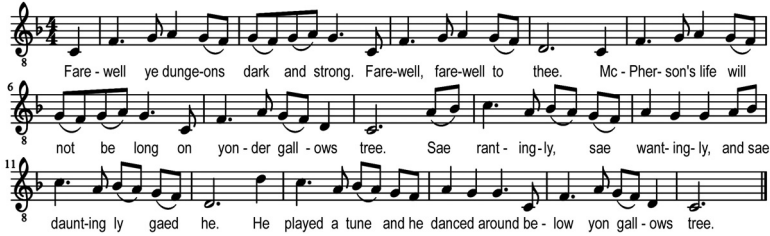
26. $f\#-g$ in ex. 95 (in D), $g\#-a$ in ex. 96 (in E), $a-b\flat$ in ex. 97 (in F).

27. Neither $c\sharp$ nor $C\sharp$ is included in example 95, neither $d\sharp$ nor $d\sharp$ in example 96, but scale degrees 1, 2, 3, 4, 5 and 6 are all clearly present in both.

28. e.g. *Oh! Susanna* (Foster), *Loch Lomond* (Scot. trad.), *The False Knight* (Eng. trad. via Steeleye Span, 1970), *Fallin' Out* (Jennings, 1987), *The Fields Have Turned Brown* (Stanley, 1950), *Last Train From Poor Valley* (US trad./Blake, 1974).

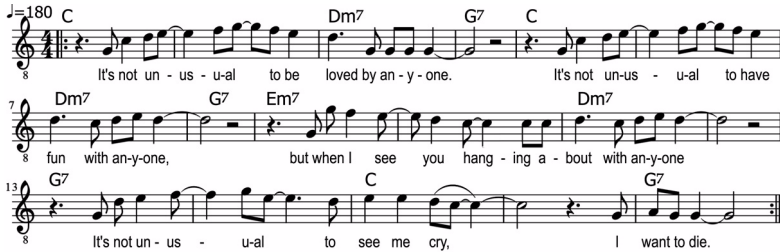
Ex. 97. *MacPherson's Farewell* (Scot. trad., mel. cit. mem.); doh-hexatonic

$\hat{1} \hat{2} \hat{3} \hat{4} \hat{5} \hat{6} = f g a b b c d$ in F.



Finally, to underline the ubiquity of the seventhless major hexatonic or doh-hexatonic mode (it's not unusual!), here's Tom Jones.

Ex. 98. *Tom Jones: It's Not Unusual* (1965); doh-hexatonic in C (no $b\flat$)

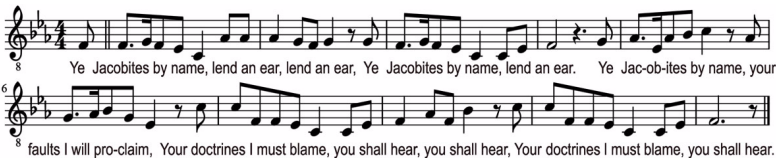


Minor or la-hexatonic

Minor hexatonic tunes are common in traditional music from the British Isles and the Appalachians. Examples 99-104 are all in the sixthless LA-HEXATONIC mode — $\hat{1} \hat{2} \hat{b} \hat{3} \hat{4} \hat{5} \hat{b} \hat{7}$.


The tune usually sung to Robert Burns' political poem *Ye Jacobites By Name*, is la-hexatonic and cited as example 99.

Ex. 99. *Ye Jacobites By Name* (1791; Scot. trad. via *The Corries*, 1971); la-hexatonic F: $f g a b b c e b$ (no $d\sharp$, no $d\flat$)



The Maid Of Coolmore (ex. 100), a slow traditional song of parting, is performed by The Bothy Band in la-hexatonic B. It contains $b c\sharp d e f\sharp a$ but neither $g\flat$ nor $g\sharp$.

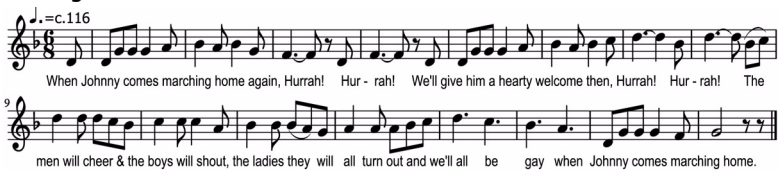
Ex. 100. The Maid Of Coolmore (*Ir. trad. via Bothy Band, 1976*); *la-hexatonic B*



The first time that I met her she passed me by. The next time that I
met her she bade me good-bye. But the last time that I met her she grieved my heart
so. For she sailed down off ire-land a-way from Cool-more.

La-hexatonic tunes aren't only found in traditional songs from pre-industrial Scotland and Ireland. *When Johnny Comes Marching Home* (ex. 101) may date from the time of the US Civil War but it's still a well-known tune on the repertoire of countless marching bands. In la-hexatonic G, it contains no sixth, neither $e\flat$ nor $e\sharp$.

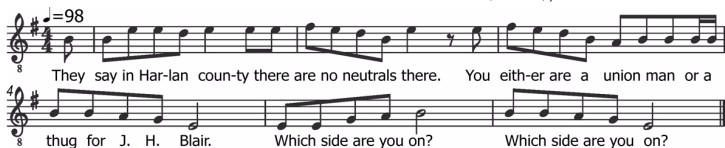
Ex. 101. *When Johnny Comes Marching Home* (*US trad.*); *la-hexatonic G*:
g a b \flat c d f.



When Johnny comes marching home again, Hurrah! Hur - rah! We'll give him a hearty welcome then, Hurrah! Hur - rah! The
men will cheer & the boys will shout, the ladies they will all turn out and we'll all be gay when Johnny comes marching home.

Which Side Are You On? (ex. 102), in la-hexatonic E, contains $e\sharp$ g a b d but neither $c\sharp$ nor $c\sharp$. First recorded in the early 1930s, it's one of the USA's most popular union songs. And the hook line of The Hollies hit *Bus Stop* (ex. 103) is in la-hexatonic A. It contains a b c d e and g but neither $f\sharp$ nor $f\sharp$.

Ex. 102. *Florence Reece: Which Side Are You On?* (1931); *la-hexatonic E*



They say in Har-lan coun-ty there are no neutrals there. You eith-er are a union man or a
thug for J. H. Blair. Which side are you on? Which side are you on?

Ex. 103. *Hollies: Bus Stop* (1966); *la-hexatonic A*: a b c d e g, no $f\sharp$, no $f\sharp$.



Bus stop, wet day, she's there, I say 'Please share my um - brel - la.

Finally, the Dolly Parton hit *Jolene* (1973; ex. 104, p. 172) is in la-hexatonic C \sharp and contains $c\sharp$ d \sharp e $f\sharp$ g \sharp b but neither $a\sharp$ nor $a\sharp$.

Ex. 104. Dolly Parton: Jolene (1973); $\hat{1} \hat{2} \hat{b}\hat{3} \hat{4} \hat{5} \hat{b}\hat{7}$ *la-hexatonic C#*

Jo - lene, Jo-lene, Jo-lene, Jo - lene —, I'm begging of you please don't take my man. Jo - lene, Jo-lene, Jo-lene, Jo - lene —, Please don't take him just because you can. Your beauty is beyond compare with golden locks of flaming hair, with iv'ry skin and eyes of em'rald green. Your smile is like a breath of spring, your voice is soft like a summer rain and I cannot com-pete with you, Jo-lene.

Quartal or ré hexatonic

Ex. 105. 'The Drunken Piper', bars 1-8, no grace notes (fr. Scots Guards Settings of Pipe Music, Vol 1, 1954); in *ré-hexatonic A* (sounding Bb):

$\hat{1} \hat{2} \hat{4} \hat{5} \Delta\hat{6} \hat{b}\hat{7} = a b d e f\# g$ in A.

Ex. 106. 'Wondrous Love' (US trad., arr. Hauser, Southern Harmony (1854) via Popular Music in Jacksonian America (1982); *ré-hexatonic F*;

$\hat{1} \hat{2} \hat{4} \hat{5} \Delta\hat{6} \hat{b}\hat{7} = f g b b c d e b$ in F)

What wondrous love is this, O my soul, O my soul? What 'wondrous love is this, O my soul? What wondrous love is this that caused the Lord of bliss to bear the dreadful curse for my soul, for my soul, to bear the dreadful curse for my soul?

As argued earlier, *The Female Drummer* (ex. 85, p. 157) can be heard as basically *ré-pentatonic* ($\hat{1} \hat{2} \hat{4} \hat{5} \hat{b}\hat{7}$) with an unaccented $\Delta\hat{6}$ added in at certain points. It can also be classed as *ré-hexatonic* like unequivocally *ré-hexatonic* examples 105-107, *The Drunken Piper*, *Wondrous Love*, and *Tiocfaidh an samhradh*. They all contain scale degrees $\hat{1} \hat{2} \hat{4} \hat{5} \Delta\hat{6} \hat{b}\hat{7}$.²⁹

29. *Tiocfaidh an samhradh* [tʰlʌki ən 'sɑʊrɪ] means 'summer is coming'. Most of *Brenda Stubbert's Reel* (Greaves, 2010; Cuthill, 2010) is *ré-pentatonic*. Thanks to Chris McDonald (Cape Breton) for this and several other references.

Ex. 107. *Tiocfaidh an samhradh* (Ir. trad. via Bhreatnach, 2007); ré-hexatonic A;
 $\hat{1} \hat{2} \hat{4} \hat{5} \Delta \hat{6} \flat \hat{7} = a b d e f\sharp g$ in A

Lento, a piacere ($\text{♩} = c. 100$)

8 Tiocfaidh an samh - raidh agus fásfaidh an féar — Is tiocfaidh an duilliúr glas —
 5 — ar bharr na gcrabh. — Tiocfaidh mo rú - n searc le ban -
 10 — ú an la - e — Ag - us buail-fidh sí tiú - n suas le cumha'mo dhiaidh.

Although there's neither $c\sharp$ nor $C\sharp$ in *The Drunken Piper* (ex. 105 in ré-hexatonic in A), neither $a\flat$ nor $a\flat$ in *Wondrous Love* (ex. 106, in F), neither $c\sharp$ nor $C\sharp$ in *Tiocfaidh an samhradh* (ex. 107 in A), and neither $e\sharp$ nor $e\flat$ in *The Female Drummer* (in C, ex. 85, p. 157), my music students, schooled in euroclassical and/or jazz theory, have habitually identified those thirdless tunes as dorian (as if $\hat{1} \hat{2} \hat{b}\hat{3} \hat{4} \hat{5} \hat{6} \flat \hat{7}$). They rarely mistake the mode for mixolydian even though that mode also contains $\hat{6}$ and $\flat \hat{7}$. How come?

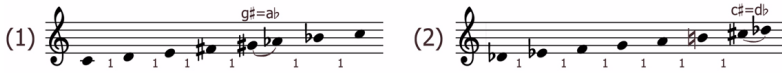
The thought process seems to be that if the tune is not in a major mode, it 'has' to be in the minor; and, if so, it 'has' to be dorian, because that's the only minor mode to contain $\Delta \hat{6}$. It's as if the major-minor dualism of euroclassical music theory precluded any mode that doesn't fit into its scheme. Quartal ('thirdless') modes like *ré-* or *sol-*hexatonic may seem less familiar than their major or minor cousins but that's no reason for pretending they don't exist.

Non-tonical modes

The whole-tone scale

All the hexatonic modes discussed above are TONICAL,³⁰ but one NON-TONICAL hexatonic mode is also part of everyday tonality. The WHOLE-TONE SCALE is so called because its six scale degrees are all separated by a whole tone. Unlike the hexatonic modes presented so far, it contains no perfect fifth and can only be transposed to one other position, as shown in Figure 30.

30. TONICAL = having a tonic; see p. 52, ff., p. 63 and the Glossary.

Fig. 30. *The two whole-tone scales*

Ex. 108. Debussy (1910): *Voiles*, bars 1-4; whole-tone scale c d e f# g#/ab b \flat



One use of the whole-tone scale is to exploit its non-tonicity — it contains neither perfect fifth nor fourth— to suggest something indeterminate or unrooted, like the hazy, impressionistic upper-register fluttering of Debussy's *Voiles* (= 'Sails' or 'Veils', ex. 108).

The 'Dave Conservatoire' puts it this way:

[The whole-tone scale] 'is often used to produce a dreamy, fantasy-like character to music and is used in film and television soundtracks to indicate moving from one dimension to another — a flashback or dream sequence, for example.'³¹

Indeed, *Star Trek* teleportations are set to an equally magical electronic whole-tone ripple and shimmer. But the indeterminate fantasy element of the whole-tone scale can, depending on instrumentation, register, dynamics, etc., also become less magical and more mysterious, even sinister, as in Herrmann's score for the chase scene in Hitchcock's *North by Northwest* (1959).

The other main everyday use of the whole-tone scale is in jazz where it acts as 'go-to' tonal vocabulary for melodic improvisation over chords containing an augmented triad. Jazz musicians can use the C whole-tone scale (no. 1 in Fig. 30) over a standard augmented chord based on any of the six notes in the scale (e.g. C⁷⁺ E⁹⁺ A \flat 7^{aug}) and the B whole-tone scale (no. 2 in Fig. 30) for the same chord types based on any of *its* six notes (e.g. E \flat 7⁺, F⁹⁺, G7^{aug}).³²

31. daveconservatoire.org/lesson/wholetonescales [140216].

32. The 'Prometheus scale', $\hat{1} \hat{2} \hat{3} \hat{\sharp 4} \hat{6} \hat{b7}$, is a much more esoteric non-tonical type of hexatonic mode and hardly qualifies as 'everyday tonality'. Augmented triads are presented in Chapter 7 (p. 222). C⁷⁺ and C⁹⁺ are chord numbers 9 and 18 in Table 16 (p. 232).

Octatonic

Like its whole-tone cousin, the octatonic scale only has two versions. Both run in alternate steps of whole and half tones.

Fig. 31. *The two octatonic scales*



The octatonic scale is also similar to the whole-tone scale in three other ways. First, since it lacks either the perfect fifth (no. 1 in Fig. 31) or perfect fourth (no. 2), it sounds quite non-tonal. Second, that element of tonal instability makes it suitable as another film music mystery mode, as in the Poledouris underscore for the passing spacecraft in *Starship Troopers* (1997) or in Herrmann's music for *The Day the Earth Stood Still* (1951).³³ Third, the octatonic scale is a favourite with jazz musicians needing to improvise over diminished chords to the extent that, in jazz theory, the mode is often called the 'diminished scale'. 'Master the diminished scale in two seconds', says one online jazz tutor while another posting plugs:

'THE defining treatise on the diminished scale. It explains everything you need to know about this versatile scale and how/where to use it in your solos.'³⁴

Final thoughts on non-ianian modes

Mode names often reflect, as we have seen, hegemonic identification of tonal vocabulary in ethnic terms like 'Gypsy'. Even the 'church' modes were originally named after ancient Greek provinces and several maqam labels are geo-ethnic (e.g. *Iraqi, Kurd, Hijaz*).³⁵ From a contemporary Northern European or North American hearpoint, the phrygian mode is often, as we saw in

33. Examples provided by Murphy (2006) in 'The Major Tritone Progression in Recent Hollywood Science Fiction Films'.

34. The online tutor is at hearandplay.com/main/diminished-scale-in-2-second. The treatise advertised is Walt Weiskopf's *Understanding the Diminished Scale – a guide for the modern jazz player*. Its online plug is at jazzbooks.com/jazz/product/UDS [both 140216].

35. Hijaz/Hejaz) is an area in the west of today's Saudi Arabia (see Glossary).

Chapter 3, assumed to sound Hispanic or, if not, Balkan, Arab or Jewish (make your mind up!), while anhemitonic pentatonicism can be heard, just as confusingly, as Scottish, Irish, ‘Celtic’, ‘Oriental’, Chinese, Andean, etc. US film music frequently uses such hegemonic perception of tonal idiom to transmit cultural stereotypes of place and sometimes it actually works. In fact, modes can, if used discerningly, be just as efficient as instrumental timbre when it comes to establishing cultural location in audiovisual contexts. For example, while the sound of a koto might in itself conjure up something of ‘traditional Japan’ to non-Japanese listeners, ethnic connotations would be much clearer if it played something in the fourth position of the pentatonic *Hirajoshi* mode (Fig. 23, p. 154).

Given that mode and mood are etymologically related, it is no surprise to find that different modes are also perceived as connoting different moods. Such connotations are culturally specific and are illustrated in the modal commutations of the first line of *God Save The Queen* (ex. 130, p. 186). For example, the equation of minor modes with ‘sad’ and major with ‘happy’ may well have some validity within euroclassical tonality and related popular styles but it is largely inapplicable to the music of other cultures. Similarly, rock and pop music using aeolian harmony in a certain way has had a tendency to be associated with the ominous,³⁶ while mixolydian film and pop music veers more towards a mood of wide open spaces. Within African American music, descending minor pentatonic modes with ‘blues’ fifths are more likely to connect with either outdated jazz ‘cool’ or with blues, old times and oppression, while melismatic major pentatonic melody is more likely to link with the positive ecstasy of gospel music, or with hope for a brighter future in the fight for Civil Rights, or, more recently, with more somatic types of individualised abandon (‘whoa-oh, baby, yeah!’).³⁷

36. See Björnberg (1989). See also Chapter 8, p. 386, ff.

37. For latter-day melismatic doh-pentatonicism of a more erotic nature, see, for example *So Emotional* (Whitney Houston, 1987), or *We Belong Together* (Mariah Carey, 2005), or *Lovin’ You* (Minnie Riperton, 1974).

During the hegemony of euroclassical major-minor tonality, music from the continent's fringe areas (Spain, Russia, Scandinavia, the Balkans and British Isles) was often characterised by the musicological establishment as 'modal', because, although much music produced in those areas conformed to the central, ionian norms of modality ('tonality!'),³⁸ much of it — typically rural popular music — did not: it conformed to modes regarded as archaic by the European bourgeoisie during the ascendancy of that class. Some of these modes, notably those containing a flat seventh and the two commonest anhemitonic pentatonic modes are regarded, rightly or wrongly, as typical of rural music from the British Isles. These modes blended with compatible tonal vocabularies of West African origin to contribute to the development of North American popular styles that challenged the hegemony of euroclassical major-minor tonality during the twentieth century on a global scale. Who knows what is happening to that global tonality as North America no longer seems to be 'the future'?...³⁹

Summary in 14 points

[1] Modes containing less than seven tones are no more empty than modes containing more than seven are necessarily cluttered.

[2] TRITONIC AND TETRATONIC melody is common in many parts of the world, including the urban West.

[3] PENTATONIC melody is found all over the world. ANHEMITONIC PENTATONICISM (what can be played on only the black notes of a piano keyboard) is particularly common.

[4] An anhemitonic PENTATONIC OCTAVE contains three whole tone steps and two steps of 1½ tones.

[5] The constituent tones in any anhemitonic pentatonic mode are related to each other by SIMPLE PITCH FREQUENCY RATIOS.

[6] Anhemitonic pentatonic modes can have DOH, RÉ, MI, SOL or LA as tonal centre. The DOH-PENTATONIC mode is also called MAJOR PENTATONIC because it's the only one to include $\Delta\hat{3}$. The MI- and LA-

38. See the 'tonal v. modal' falsehood, pp. 54-57.

39. 'Bluesy pentatonic doesn't work over a sinister riff' (cf. *ftnt.* 76, p. 126).

MODES are MINOR PENTATONIC because they include $\flat\hat{3}$. The RÉ- and SOL-MODES are QUARTAL PENTATONIC because they contain $\hat{4}$ but neither $\sharp\hat{3}$ nor $\flat\hat{3}$. MI-PENTATONIC is unusual because it has no $\hat{5}$.

[7] The most familiar pentatonic modes in the West are those based on DOH and LA. Blues pentatonicism is essentially based on those two modes. The DOH-PENTATONIC BLUES mode is common in pre-war jazz and in gospel-related styles. The LA-PENTATONIC BLUES mode is more common in guitar blues, in blues-based rock and 'cool' jazz.

[8] HEXATONIC MELODY is extremely common but no accepted terminology exists for the designation of tonical hexatonic modes.

[9] TONICAL HEXATONIC MODES used in the West consist of a heptatonic tetrachord and a pentatonic trichord. There are nine such modes that can be played on the white notes of a piano keyboard and that contain a perfect fifth. A hexatonic octave of this sort contains four whole-tone steps, one semitone step and one step of $1\frac{1}{2}$ tones.

[10] Hexatonic modes in common use are the seventhless DOH-HEXATONIC, the sixthless LA-HEXATONIC and the thirdless RÉ-HEXATONIC.

[11] The WHOLE-TONE SCALE is also hexatonic but it is non-tonical because it contains neither perfect fifth nor perfect fourth.

[12] The OCTATONIC SCALE runs in alternate steps of whole and half tones. It also has a non-tonical character because it contains either no perfect fourth or no perfect fifth.

[13] The whole-tone and octatonic scales can only be transposed to one other position. They are both often used as mystery cues in film and TV.

[14] The culturally specific use of modes to suggest geo-cultural identity is often confused and ethnocentric but it can still work on audiences who are not the object of that identification.

5. Melody

Melody derives from the two ancient Greek words: *mélōs* (μέλος = song, or the music to which a song is set) and *ōdē* (ὠδή = ode, song, poem). In English the word has three main meanings: [1] a monodic¹ tonal sequence, accompanied or unaccompanied, perceived as a musical statement with distinct rhythmic profile and pitch contour; [2] the monodic musical foreground to which *accompaniment* and *harmony* are generally, at least within most popular music traditions of Europe and the Americas, understood as providing the background; [3] all such monodic tonal sequences and/or aspects of musical foreground within one complete song (e.g. ‘*Auld Lang Syne* is a popular Scottish melody’). It should be noted in the latter case that *mélodie*, *Melodie*, *melodia*, *melodi* (French, German, Latin and Scandinavian languages respectively) can in popular parlance sometimes denote the entirety of any *tune* or *song*, including lyrics and accompaniment, in which melody, according to definitions [1] and [2], is a prominent feature.

Defining parameters

General characteristics of melody

It is difficult to be precise or consistent about which characteristics constitute melody since its definition according to [1] and [2] above is contingent on cultural consensus. Nevertheless, the following parameters, most of them documented by Stefani and Marconi (1992: 13-24), seem to determine what is more likely to be popularly understood, at least within a mainstream European or American context, as typically melodic about a monodic tonal sequence:

- easy to recognise, appropriate and to reproduce vocally;
- perceptible as occupying durations resembling those of normal or extended exhalation (the ‘extended present’, i.e. consisting of phrases lasting between about two and ten seconds);
- delivered at a rate usually ranging from that of medium to very slow speech;

1. *Monodic*: (literally) having one single strand, strain, path, etc.

- generally articulated with rhythmic fluidity and unbroken delivery of tonal material within one sequence: legato rather than staccato;
- distinctly profiled in terms of pitch (melodic contour) and rhythm (accentuation, metre, relative duration of constituent events);
- delivered with regularity and metric articulation of breathing;
- relative simple in terms of tonal vocabulary;
- tending to change pitch more by intervallic steps rather than by leaps;
- spanning rarely more than one octave.

In other words, a monodic tonal sequence is *less* likely to be considered melodic if it is not clearly tonal, or if it is difficult to appropriate and reproduce, or if it is too long or too short; or if its constituent notes are delivered too fast, or if it consists of no more than one or two very long notes, or if it is broken up into very short units consisting of just one or two notes, or if there is little or no metrical regularity between phrases, or if it exhibits no clear tonal or rhythmic profile, or if it is too chromatic, or if it contains too many large intervallic leaps or covers too large a pitch range. Indeed, it is for the following reasons that monodic sequences of the following types, even though they may exhibit some melodic traits, are less likely than, for example, nursery rhymes, folk tunes or jazz standards to be considered melodic: *rap* declamation and *Sprechgesang* because of unclear tonal articulation, *recitative* because of irregular metricity, *riffs* because they are too short. Even so, some riffs are more singable than the melodic lines they accompany (e.g. the ‘verse’ parts of *Satisfaction* (ex. 109), *Layla* (ex. 110) and *Hoochie Coochie Man* (Waters, 1970)), while some literally monotonous monodic sequences of tones still qualify as melody (e.g. the verse parts of *Samba de una nota só* (ex. 111), *Un homme et une femme* (Lai, 1966) and *Subterranean Homesick Blues* (Dylan, 1965a)). Moreover, important sections of some well known melodies are based on little more than repetitions or sequential variations of motifs almost too short to qualify as melodic phrases, for example *Volare* (ex. 112) and *Les feuilles mortes* (ex. 113).

Ex. 109. *Rolling Stones* (1965): Satisfaction

voc. E A(4) 3) E A(4) 3)
 but he can't be a man 'cause he doesn't smoke the same cigar-ettes as me

lead gtr.

bass gtr.

Ex. 110. *Derek and the Dominoes* (1970): Layla

vocal 'melody' Ebm Cb Db Eb
 LAY - LA You've got me on my knees LAY -
 I'm begg-ing darl - ing, please

guitar 'accompaniment'

Ex. 111. *A. C. Jobim* (1960): Samba de uma nota só

G#m7 G7 F#m7 F7b5
 Eis aqui est-e samb-i - nha de um - a no-ta só
 OTRAS not - as vão entr - ar, mas a bas - e é um - a só.

Ex. 112. *D. Modugno* (1958): Volare

Bb9 Cm7 F7 Bb F7 Bb
 Vol - ar - e, O, O, Cant - ar - e O O O O.

Ex. 113. *J. Kosma*: Les feuilles mortes

Gm7 C7 F#A BbA Em7b5 A7 Dm
 C'est une chans-on qui nous ress-emble. Toi, tu m'aim-ais; Moi, je t'aim-ais. Et nous viv-ions tous deux en-semble. Toi qui m'aim-ais; Moi qui t'aim - ais.

Metaphorical nomenclature

The nature of melody can also be understood by examining words and expressions either commonly associated or partly synonymous with *melody*. For example, *melodic line* emphasises the monodic and sequential (horizontal) aspects of melody while *melodic phrase* and *melodic statement* draw attention to the relationship between melody and human speech or declamation. *Motive* and *motif* denote movement by definition and melodies are thought of as movement in two-dimensional space – forwards, upwards, downwards, etc. –, often with culturally specific patterns of im-

plication (expected or unexpected continuation, see Meyer 1987), while *melodic profile*, *contour* and *figure* refer to qualities of distinct linearity, shape and gesture. *Strain*, meaning tune, also links melody with notions of distinct characteristics (cf. ‘a genetic strain’) while *lay*, another archaic synonym, is defined as ‘a song’ or ‘short poem meant to be sung’ (*Oxford Concise Dictionary*, 1995).

Tune, Middle English variant of *tone*, highlights melody’s tonal nature, while *air*, in the sense of *tune*, suggests speech, gesture and movement that have metaphorically taken off (‘melody hath wings’, ‘*volare - cantare*’, see ex. 112), thereby emphasising the notion of melody as heightened discourse transcending speech.

These transcendent notions of melody can in turn be related to the connotations of monodic pitched declamation necessitated, in the interests of comprehension and before the invention of microphones and PA systems, by acoustic settings characterised by long reverberation times, for example the chanting of prayers and biblical texts in cathedrals and large churches, or the Mu’ezzin’s call to prayer from the minaret across the town in the relative stillness of dawn or dusk. They are also related to the everyday observation that emotionally heightened speech exhibits greater variation in pitch and resembles melody more than does talking in a normal voice.

In short, melody is tonal monodic movement, temporal and spatial, which is inextricably connected with human utterance, both gestural and vocal.

Typologies of melody

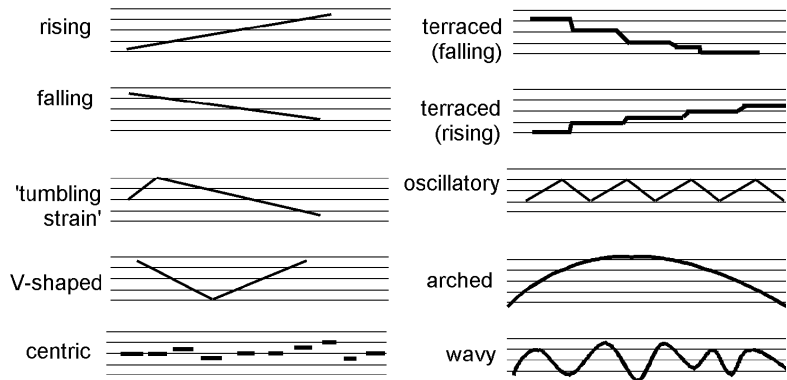
Structurally, melodies resemble or differ from one another according to several factors: [1] pitch contour, [2] tonal vocabulary, [3] dynamics and mode of articulation (incl. phrasing), [4] rhythmic profile, [5] metric and periodic organisation. They can also be categorised in ‘experiential’ (aesthetic, perceptual, semiotic) categories (Stefani and Marconi, 1992: 111-229). Structural and experiential typologies are interrelated.

Structural typologies

Pitch contour

Figure 32 shows the basic pitch contour types used by ethnomusicologists in the classification of melody (Skog 1977). Each contour type is illustrated by the following examples: [1] *rising* – ex. 114, 128 (phrase 1); [2] *falling* – 115, 128 (phrase 2) and [3] *tumbling* – ex. 116, 117, 118, 129 (bars 1-2); [4] *V-shaped* – ex. 119, 120 (bars 3-4), 123 (bar 1); [5] *centric* – ex. 121, 122; [6] *terraced (falling)* – ex. 120 (bars 1-2), 123 (bars 3-4) and [7] (*rising*) – ex. 123 (bars 2-3), 129 (bars 4-9); [8] *oscillatory* – ex. 124 and the double V-shape of ex. 119; [9] *arched* – ex. 125, 127 (phrase 2); [10] *wavy* – ex. 126, 127 (phrase 4-6).

Fig. 32. *Melodic contour categories*



Boundaries between melodic contour types are fluid. For example, the double V-shape of ex. 119 has an oscillating character while parts of ex. 124's oscillatory profile have the shape of a flat V. Similarly, many centric contours (ex. 121-122) can also be heard as oscillating, while some 'wavy' phrases can be heard as short arcs (ex. 126, bars 2-4, 4-5). Moreover, a 'tumbling strain' is little more than an overriding melodic descent with initial rising anacrusis or with intermediate, subsidiary rises in pitch (hence 'tumbling'). It should also be noted that certain styles show a predilection for particular contours, for example blues-related styles for the 'tumbling strain' (ex. 116-118).

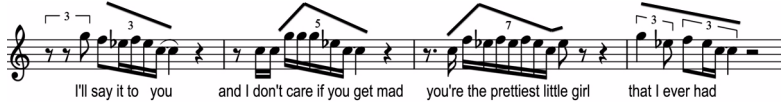
Ex. 114. Cole Porter: I Get A Kick Out Of You (1934); rising



Ex. 115. The Wrangle Taggle Gypsies (Eng. trad., cit. mem.): falling



Ex. 116. Muddy Waters (cited by Miani, 1992); tumbling



Ex. 117. Nashville Teens: Tobacco Road (Loudermilk, 1964); intro, tumbling



Ex. 118. Beatles: Can't Buy Me Love (1964); tumbling



Ex. 119. Ellington: Satin Doll (1953, start of middle 8); V-shaped



Ex. 120. Warszawjanka (Polish trad.): terraced (descent), V-shaped



Ex. 121. Billy J Kramer and the Dakotas: From A Window (1964); centric



Ex. 122. Mark Snow: X-Files Theme (1996); centric



Ex. 123. The Grand Old Duke of York (*English trad.*); *V-shaped, terraced*

Oh! The Grand old Duke of York, He had ten thousand men, He marched them up to the top of the hill and he marched them down again

Ex. 124. *Beatles*: If I Needed Someone (1965); *oscillatory*.

If I need-ed some-one to love you're the one that I'd be think-ing of

Ex. 125. Ack Värmland du sköna (*Sw. trad.*); *arched (+ terraced descent)*

Ack Vär - me-land, du skön - a, du här - llig - a land, du kron-a bland Sve-a-rik-es länd - er.

Ex. 126. *P. De Rose*: Deep Purple; *wavy*

When the deep purple falls ov-er sleep-y garden walls and the stars be-gin to twink-le up ab - ove

Ex. 127. *Beatles*: Yesterday (1965); *wavy, falling, centric, rising*

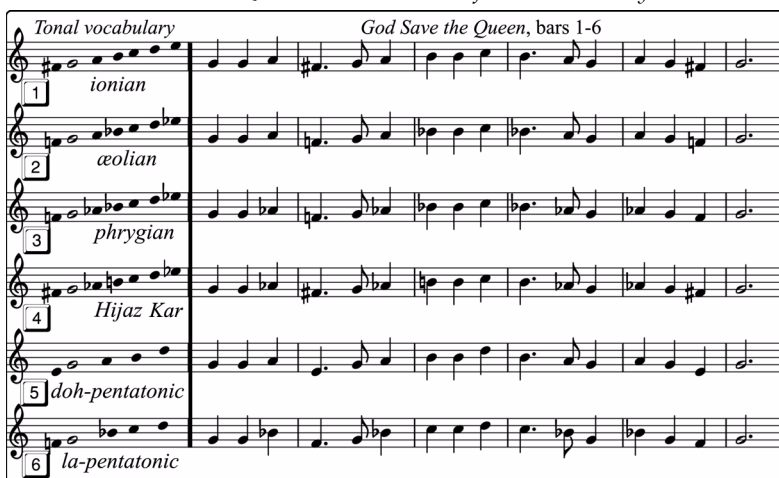
Pitch contour alone is not enough to distinguish the style or character of one melody from another. Example 128 illustrates how tonal vocabulary, rhythmic profile and metricity, not pitch contour, can be the operative distinguishing factors.

Ex. 128. (a) *Misirlou*; (b) *E. Y. Harburg*: Brother, Can You Spare A Dime?

Once I built a rail - road I made it run, I made it run a-against time.

Ex. 129. *Vigneault/Rochon: Je chante pour* (1978)


Je chan-te pour ne pas cour-ir. Je chan-te pour ne pas mour-ir. Pour oubli-er que mon che-
 -min ne va pas plus loin que ma main, pour oubli-er que l'esc-alier n'est plus haut que mon sou-
 -lier, et que le mur vient de lui-même à mon renc-on tre et que je t'aime pour en pri-er.

*Tonal vocabulary*Ex. 130. *God Save the Queen: commutations of tonal vocabulary*


Tonal vocabulary | *God Save the Queen, bars 1-6*

1 *ionian*

2 *aeolian*

3 *phrygian*

4 *Hijaz Kar*

5 *doh-pentatonic*

6 *la-pentatonic*

The popular device of putting major-key tunes into the minor and vice versa testifies to the fact that changing tonal vocabulary can radically alter the character of a melody. Example 130 shows the first six bars of the UK national anthem's melody: [1] as is, in the major key (ionian mode) and with the same melodic contour, rhythm, metre, etc., but in the following modes — [2] aeolian (or dorian); [3] phrygian; [4] Hijaz Kar; [5] doh-pentatonic; [6] la-pentatonic (see p. 155, ff.). All these variants would most probably be heard by members of the UK cultural mainstream as 'ethnic' or 'folksy': ([2], [5] and [6] as potentially 'Celtic', [5] as conceivably

also as ‘Chinese’, [3] as vaguely ‘Spanish’, [4] as possibly ‘Arab’ and [6] as vaguely ‘bluesy’. The same six bars could also be changed, without altering other parameters, to create a whole-tone or octatonic mode, or even a dodecaphonic tone row if you wanted to produce a more unsettling effect on your listeners.

Dynamics and mode of articulation

The structure and character of a melody are determined also by [1] how loud or soft it is presented in part or as a whole (yelling and crooning the same tune produces radically different effects); [2] what timbre or instrument is used to articulate it – imagine Led Zeppelin’s *Whole Lotta Love* delivered *bel canto*, or your national anthem played on kazoo; [3] in what tessitura it is executed (influences whether it will sound growled or screeched, squeaky and strained); [4] if lyrics are included, which language and what kind of accent and diction are used – just imagine Big Mama Thornton’s *Hound Dog* (1953) with Italian lyrics; or Queen Elizabeth II delivering a Grandmaster Flash ‘message’; or a stirring union song crooned by Bing Crosby or mumbled in the manner of Radiohead’s Thom Yorke in the verse part of *Creep* (1992).

The characteristics of a melodic line are also determined by [4] its phrasing and accentuation. Examples 131a and 131b are of identical length, melodic contour and tonal vocabulary, but differ so radically in phrasing that ex. 131b needs notating *alla breve*. Whereas the original version (ex. 131a), with its staccato punch and syncopation, is well suited to the funky trickster character played by Eddy Murphy in *Beverly Hills Cop*, ex. 131b resembles more some lyrical or pastoral theme with an archaic flavour and would be more appropriate played by strings than by a synthesiser of mid nineteen-eighties vintage.

Ex. 131. *Faltermeyer*: Axel F (1984) – (a) original; (b) as legato tune

(a) $\text{♩} = 120$ synth. *f*

(b) $\text{♩} = 120$ vlns. *mp*

Rhythmic profile

As much as showing difference in phrasing, example 131 also illustrates how difference of rhythmic profile influences the affective character of melody. Rhythmic profile is also related to bodily movement and posture, as well as to patterns of language.

Body and melodic rhythm

Example 131a's rhythmic profile — its staccato quality with short pauses, its lack of anacrusis, its sudden disjunct leaps for agogic effect, its anticipated downbeats (especially bar 4) — corresponds much more closely with skipping or jumping movement than with the flowing, legato, constant type of movement immanent in the regularly measured downbeat dotted crotchets, crotchets and up-beat quavers of example 131b.

Ex. 132. Song of the Volga boatmen (Russian trad.)

Эй ух-нем! Эй ух-нем! Е-ще раз - ик, Е-ще раз! Ра-зо - вьем мы бе-ре-зу.
 Ра-зо - вьем мы куд-ря-ву! Ай-да, да айда, ай-да, да ай-да, ра-зо - вьем мы куд-ря-ву!

Similar links between melodic rhythm and body movement can be found in work song. For example, the slow, heavy task of hauling barges, with its repetitive to-and-fro of body and arms, is better helped by the kind of steady, measured rhythm and short phrases (as well as restricted oscillatory pitch contour) evident in ex. 132 than by the brisk 2/4 or 6/8 call-and-response patterns of continuous melody spanning an octave which can be found in numerous British shanties sung to help with nautical work involving quicker, more circular types of movement ('capstan' and 'windlass' songs, the latter sung when hoisting sails with a winch). *A-Roving, Billy Boy* (ex. 133), *Bound For The Rio Grande, What Shall We Do With The Drunken Sailor* (ex. 276, p. 394) *Fire Down Below and Johnny Come Down To Hilo* all belong to this category.

Ex. 133. *Capstan Shanty Billy Boy* (English trad., Northumbria)

Where have you been all the day, Bill - y Boy, Bill - y Boy? Where have you been
all the day, my Bill - y Boy? I've been walk - ing all the day with my
charm - ing Nan - cy Grey. And it's Nan - cy kitt - le my fan - cy, Oh, my charm - ing Bill - y Boy.

Clear links also exist between body and melodic rhythm in dance music. The polka, jig, reel, waltz, samba, cueca, rumba, tango, etc. exhibit unique and easily identifiable traits of melodic rhythm. Similar observations can be made about differences between the melodic rhythm of lullabies, marches, dirges, cattle calls, field hollers etc. whose melodic rhythm tallies with the relevant type of bodily activity and/or acoustic conditions of that activity.

Language and melodic rhythm

Since melody is so often a matter of singing words, melodic rhythm is also determined by the rhythmic particularities of the language in which those words are sung. For example, a melodic phrase in 6/8 ending $\text{♪} \text{♪} \text{♪}$, especially with descending pitch contour (ex. 134 at 'el día' and 'cantaría'), is less likely to occur in English than in Latin language song, as evidenced by the following trisyllabic words and phrases: *volare, cantare, amore, nel cuore* (Italian), *querida, contigo, belleza, te quiero, llorando, tristeza, tan solo, en pena, tus ojos*, (Spanish). On the other hand, the onbeat 'Scotch snap' $\text{♪} \text{♪} \text{.}$ or $\text{♪} \text{♪} \text{.}$ (Tagg, 2011c), especially with rising pitch contour, are unlikely to appear in Germanic or Latin-language song simply because English is one of the few European languages to feature this trait (e.g. 'mother', 'brother', 'do it', 'hit it', or, in ex. 135, at 'Jenny', 'body', 'pettie', 'coatie', 'coming').

Ex. 134. *Ferlosio: El gallo negro*.


Quando cant - a el gal - lo neg - ro es que ya se - ac - ab - a el di - a. Si cant - ar el gal - lo ro - jo ot - ro gal - lo can - ta - ri - a.

Ex. 135. *Comin' Through The Rye* (*Scot. trad.*)



Oh Jenny's a' wet, poor body, Jenny's sel-dom dry. She draigh-t a' her pett-ie coatie coming thru' the rye.

Culturally specific melodic formulae

Melodies can also be recognised as belonging to particular cultures not only due to idiosyncrasies of language rhythm but also because particular turns of melodic phrase have become by convention associated with those cultures. This observation applies to patterns of melodic ornamentation, for example the onbeat  figure often found in popular non-Spanish notions of Spanish melody (ex. 136-138).

Ex. 136. *Library music hispanicism 1: Cordigliera* (*CAM (Italy)*)




trpt., castanets, etc.

Ex. 137. *Library music hispanicism 2: Duncan: Wine Festival* (*Boosey & Hawkes*)



Ex. 138. *Library music hispanicism 3: Haider: Spanish Autumn* (*Selected Sounds*)



Similarly, Irish traditional music (ex. 139) is often recognisable by its use of quick semiquaver triplets ( or 'did-dle-y [day]').

Ex. 139. *Poitín* (*Irish trad.*) – *semiquaver triplets*



But culturally specific melodic traits can be found in more substantial patterns of pitch contour and rhythmic profile. For example, pentatonic or hexatonic melodic cadences of the type $\hat{8}[\hat{1}]-\hat{6}-\hat{5}$ are

typical of many traditional melodies from the British Isles, (ex. 140 bar 3, first time; ex. 97 (p.170), bars 7-8 and 15-16).

Ex. 140. Skye Boat Song (*Scot. trad., cit. mem.*)

Speed, bonny boat, like a bird on the wing; "Onward!", the sail-ors cry.
Carr-y the lad that's born to be king ov - er the sea to Skye.

Another typical trait is the major-mode descent to $\hat{6}$, as in bars 4 and 12 of *Macpherson's Farewell* (ex. 97, p. 170) and in all three extracts cited as example 141. Nor are $\hat{6}\hat{1}$ melodic cadences, as in the *Skye Boat Song* (ex. 140), untypical of the tradition.

Ex. 141. (a) *Rossa's Farewell to Erin* (*Irish trad.*); (b) *The Boys of Wexford* (*Irish trad.*); (c) *Soldier, Soldier* (*English trad.*)

(a) Fare - well to friends of Dub - lin town. I bid ye all Ad - ieu.
(b) We brave - ly fought & conqu - ered at Ross and Wex - ford town
(c) Oh, sold - ier, sold - ier, won't you mar - ry me with your musk-et, fife and drum?

Also quite characteristic for traditional melody from the British Isles is the repeated final $\hat{1}$ or $\hat{5}$, as shown in example 142.

Ex. 142. *Repeated final note cadence formulae.* (a) *John Barleycorn* (*English trad.*); (b) *The Banks of Newfoundland* (*English trad.*); (c) *The Kerry Recruit* (*Irish trad.*); (d) *The Bonny Labouring Boy* (*Irish trad.*)

(a) And these three men made a sol - emn vow John Barl - ey - corn must die.
(b) Say fare - well to the virg - in rocks on the banks of the New - found - land.
(c) A - bout four years a - go I was dig - ging this land.
(d) They would not let me tarr - y with my bon - ny Ir - ish boy.

Strings of appoggiature, on the other hand, unusual in popular melody from traditional music from the British Isles, are all the

more common in popular melody of the euroclassical tradition (ex. 143) and its pastiches (ex. 144), or of Arabic origin (ex. 145-146).

Ex. 143. *Carissimi: Aria 'I Triumph!' (Vittoria!)*

At length I have brok - en the bond - age of years.

Ex. 144. *Abba: Fernando (1975)*

And I'm not a - shamed to say the roar of guns and can-nons al-most made me cry.

Ex. 145. *Egyptian trad. (cit. mem., see ftnt. 61, p. 118)*

$\text{♩} = 120$

Ex. 146. *Mameluk, a.k.a. Aya-Zehn (Egyptian trad.)*

Finally, the $5\text{-}\hat{4}\text{-}\hat{1}$ cadence is typical of traditional Russian melody (ex. 147), while $8[\hat{1}]\text{-}\hat{4}\text{-}7\text{-}5$ patterns are an idiosyncratic of Scandinavian melody (ex. 148-149). Grieg bangs home that point three times in four seconds at the start of his famous piano concerto in A minor (ex. 150), used as the theme music for *A Song of Norway* (1970).

Ex. 147. *Russian 5-4-1 melodic cadences: (a) V. Soloviov-Sedoy: Podmoskovnye Vechera; (b) Aturov: Partisan Song (see ex. 32, p. 110)*

(a) Не слышны в саду даж-е шо - рох - и

(b) При-ам - урск - их парт - и - зан.

Ex. 148. *Mikaelidagen (Sw. trad., cit. Ling, 1964: 114)*

Nu lid - er det till Mik - a - el - i dag - en, då säl - bu - kull - or - na tjänt ut sitt år.

Ex. 149. 'Vårvindar friska' (Sw. trad., Vi gör musik, 1970: 114)

Musical notation for Ex. 149, 'Vårvindar friska'. The score is in 4/4 time, key of D major. The melody consists of eighth notes. Above the staff, the interval sequence 8 Δ7 5 is indicated. The lyrics are: Vår - vind - ar frisk - a lek - a och visk - a lund - ar - na kring likt älsk - and - e par.

Ex. 150. Grieg: *Piano Concerto in A minor, Op. 16* (1868: start)

Musical notation for Ex. 150, Grieg's *Piano Concerto in A minor, Op. 16*. The score is in 2/4 time, key of A minor. It features a piano introduction with a tempo marking of $J=84$ and a dynamic marking of *ff*. The interval sequence 8 Δ7 5 is indicated above the staff. The notation includes various ornaments and articulations.

Patterns of recurrence

Melody can also be categorised according to the manner in which constituent phrases or motifs are organised into a larger whole in patterns of variation and recurrence. Middleton (1983) suggests a sliding scale of musical syntaxes stretching from the *monadic* (circular, mythic, unchanging, etc.) to the *infinite set* (linear, narrative, teleological, 'nothing to be heard twice'), a scale along which any type of musical statement, including melody, can be placed.

Ex. 151. Roy Milton: *Hucklebuck* (1949).

Musical notation for Ex. 151, Roy Milton's *Hucklebuck*. The score is in 4/4 time, key of E-flat major. It features a repetitive melodic pattern. The lyrics are: Do the hucklebuck, Do the hucklebuck. If you don't know how to do it, boy, you're out of luck. Push your partner out, Then you hunch your back. Start a lit - tle movement in the sac - o - il - i - ac Wig-gle like a snake, Waddle like a duck, That's the way you do it when you do the hucklebuck.

MONADIC melody is typical for song whose narrative interest resides in other factors than those mentioned so far, such as in changing lyrics, varying metre (e.g. chanted psalms, prayers), harmonic progression (e.g. *One Note Samba*, ex. 111), rhythmic punch (e.g. *Hucklebuck*, ex. 151), etc. At the other end of the spectrum are things like the dodecaphonic tone row, constrained by avant-garde imperatives of non-repetition and absent from popular song.² Instead, patterns of recurrence and difference vary from the rela-

tively simple, single-layered (or ‘immediate’) to the multi-layered (or ‘delayed’). Common processual devices in European and North American popular melody are *reiteration*, *recapitulation*, *sequence*, *inversion*, *anaphora*, *epistrophe* and ‘ready-steady-go’. The ordering of melodic segments on a larger scale, for example into the eight-bar sections of a 32-bar (AABA) jazz standard, is a question of episodic song form (diataxis) rather than of melodic typology.

REITERATION —consecutive recurrence(s) of a very similar or identical motif or phrase — is found in examples 109 and 110 (p.181, both melodic line and riff), as well as in examples 132 (p.188, bars 1 and 2, bars 5-6 and 7-8), 136 (bar 1, p. 190), 146 (bars 1-2, p.192) and 151 (p.193, throughout).

RECAPITULATION —recurrence of motif or phrase after different intervening material— is illustrated at the musematic level by example 132 (p.188) in which the motif of bars 1 and 2 recurs in bar 4 after different material in bar 3 and again in the final bar of the song. Melodic recapitulation is more commonly thought of on a larger scale, for example in terms of recapitulating the A section of a song in AABA form, such as the first line of example 127 (*Yesterday*, p.185) recurring after an intervening middle section. However, recapitulation on this time scale is more an issue of overall episodic form (diataxis) than of melodic profile.

SEQUENCE —reiteration of rhythm and relative pitch profile at a different absolute pitch— can be found in *Autumn Leaves* (ex. 113, p. 181), *El gallo negro* (ex. 134, p. 189), *Poitin* (ex. 139, p. 190, bars 1-2, 5-6), *Vårvindar friska* (ex. 149, bars 1-2), and in Gershwin’s *Foggy Day in London Town* (ex. 152, p. 195) where ‘B’ (bars 1-4) is repeated a fourth higher (bars 5-8) and ‘A1’ (d- \flat , bar 3) acts as a sequential variation of ‘A’ (c- \flat , bar 1).

INVERSION (repeating rhythm profile but substituting up for down and vice versa) also occurs in example 152 (p.195) whose bars 9-12 are an upside-down variant of bars 1-4.

2. The most concentrated occurrence of different tones in a single phrase in popular song are, as far as I’m aware, the eight different pitches of the first bar of the vocal line in *Je chante pour* (Vigneault/Rochon, 1978; ex. 129, p. 186).

Ex. 152. *Gershwin: A Foggy Day in London Town (1937) adapted from Middleton (1983:251).*

ANAPHORA — repeating the same element at the start of successive phrases— is inherent in terms of rhythmic and relative pitch profile in any sequential repetition (see above). It can also recur at the same absolute pitch, as in the d-c#-d figure of ex. 153 (p.195) or the c-d figure of ex. 153b. Even the single note f recurring at the start of each short motif in *Axel F* (ex. 131) and rising in turn to different pitches (ab, bb, c, db, f) functions anaphorically.

Ex. 153. *Melodic anaphora — (a) Silvers: April Showers; (b) Akst: Am I Blue? as quoted by Middleton (1983: 250).*

EPISTROPHE — repeating the same or similar element at the end of successive phrases— is found at the words ‘far away’, ‘here to stay’ and ‘yesterday’ of bars 3, 5 and 7 in *Yesterday* (ex. 127, p. 185).

‘READY-STEADY-GO’ is a popular melodic device consisting of a motif, simply reiterated or repeated by sequential transformation and followed by new rhythmic material or pitch pattern. For example, bars 1-2 and 3-4 of Akst’s *Am I Blue?* (ex. 153b, p.195) are rhythmically identical (‘ready, steady’) but instead of leading to yet another long held note, the same anaphoric figure in bar 5 introduces the tonally and rhythmically different material of bars 6 and 7 (‘go!’). The device can work at several levels, as shown in ex. 154. The

function of such repetition is propulsive and similar to that of gaining momentum by circling on the spot before hurling a discus.³

Ex. 154. Rossini: *William Tell Overture* (1829) a.k.a. *The Lone Ranger theme* (1949); *propulsive repetition* ('ready-steady-go!')

Connotative typologies

Families of melody definable according to the kind of structural parameters described so far can be grouped together in more connotative or perceptual categories. Concepts like the Arabic *maqam*, Iranian *dashtgah* and Indian *rāga* all exemplify the formalisation of links observed in particular cultures between, on the one hand, categories of tonal, rhythmic and motivic structure and, on the other, certain regional locations or ethnic groups, or specific moods, attitudes, activities, types of behaviour, times of the day, etc.

Stefani and Marconi (1992: 111-229) expound several connotative categories of popular melody in the West, in particular those they call DREAM, DESIRE AND TENDERNESS, MEDITATION, SUPERMUSIC and RECITATION. To illustrate how this type of categorisation works and to save space, I've chosen to focus here on just three of those connotative categories: DREAM, SUPERMUSIC and RECITATION.⁴

'Dream'

Stefani and Marconi characterise 'DREAM' structurally in such terms as slow movement, smooth articulation, arched or waved pitch profile spanning a large range, phrase length well in excess of normal breathing, continuous transformation of main motif(s), unexpected intervals, lack of hard scansion and accentuation, etc. More connotatively they note similarities with slow motion camera work, soft focus, suspended animation, large spaces, fluid ges-

3. See 'Episodic markers' in Tagg (2013: 516-519).

4. For other categories, see Stefani and Marconi's *La melodia* (1992). I'm regrettably unaware of any translation from the original Italian.

tures like unpredictable flight, beauty, the unreal, etc. This melodic category, including its connotations, is exemplified here by Schumann's *Träumerei* (ex. 155), *Deep Purple* ('When the deep purple falls over sleepy garden walls', ex. 126, p. 185), *Stardust* (ex. 156), *The Dream of Olwen* (ex. 157) and *In A Monastery Garden* (ex. 158).

Ex. 155. R. Schumann: *Träumerei*, Op. 15 n^o 7 (1838)



Ex. 156. Carmichael. *Stardust* (1929)

Musical notation for Ex. 156: Carmichael's *Stardust* (1929). The piece is in 4/4 time, marked Moderato. The melody is accompanied by chords: F⁶, Fm^Δ, Fm⁶, C, and A⁷. The lyrics are: "Sometimes I won-der why I spend the lonely night dreaming of a song. The mel-od-y haunts my reverie".

Ex. 157. Charles Williams: *The Dream of Olwen* (1947)

Musical notation for Ex. 157: Charles Williams' *The Dream of Olwen* (1947). The piece is in 6/8 time, marked $\text{♩} = c.92$. The melody is accompanied by a complex sequence of chords: F, Gm^{1/5}, C₃, F, Am^{7b5}, D⁷, Gm, Cm^{6/5}, D₃, Gm, Bm^{7b5}, E⁷, C⁹, F^Δ, F⁷, B_b, Eb⁹, Ab, C₅, Am, Fm, Dm^{7b5}, C⁹, and break. The notation continues with "etc.".

Ex. 158. Ketèlbey: *In A Monastery Garden* (1915)

Musical notation for Ex. 158: Ketèlbey's *In A Monastery Garden* (1915). The piece is in 6/8 time, marked $\text{♩} = 76$. The melody is characterized by long, sweeping lines.

'Supermusic'

Typical examples of SUPERMUSIC are the main themes from *Star Wars* (ex. 159), *Superman* (ex. 160), *Dallas*, *Dynasty*, *Kojak* (ex. 163), *The FBI* (ex. 161), *Counterspy*, *The Gun Fight at O.K. Corral*, *How The West Was Won* (ex. 162), *The Champions*, etc. They are, according to Stefani and Marconi (1992), characterised by crisp articulation, forte dynamics, a medium to brisk pace, brass instruments, ascending leaps of the fourth, fifth and octave, etc. This set of melodic tropes is associated with heroism (Tagg, 2000a: 191-200).

Ex. 159. J. Williams: *Star Wars* (1977); main theme

Ex. 160. J. Williams: *Superman* (1978); from main theme

Ex. 161. B. Kaper: *The FBI theme* (1965)

Ex. 162. A. Newman: *How The West Was Won* (1963); film theme

Ex. 163. W. Goldenberg: *Kojak* (1972); TV theme

'Recitation'

RECITATION is usually articulated metrically rather than parlando rubato (recitative). It is characterised structurally by a reciting tone to which most of the phrase's syllables are set, as well as by a cadence formula and, often, an initial lead-in motif. Recitation tunes are generally of a declamatory character. For example, the underlined syllables in 'How many roads must a man walk down before you can call him a man?' from Dylan's *Blowing in the Wind* (1963) are all declaimed at the fifth (a in D major). The principle of lead-in motif (*intonatio/initium*), reciting tone (*tuba* or *tenor*) and cadence formula (*terminatio/finalis*) is illustrated in example 164. 'Once the voice is activated' (*intonatio*)... 'it stays still in a manner of speaking, giving no further information about itself and drawing the listener's attention to the "message", i.e. to the words' (Stefani & Marconi, 1992: 132).

Ex. 164. 'Recitation' melody — (a) Latin psalmody, tone 2 (*plagal*); (b) Brassens: *Le gorille* (1952); (c) *The Who*: *Pinball Wizard* (1969)

Intonatio — Tenor/Tuba (reciting note) — Terminatio (ending)

(a) Glo - ri - a in excelsis De - o et in terra pax ho - mi - ni - bus

(b) C'est à trav - ers de larges grilles que les femelles du can - ton

(c) Ev - er since I was a young boy I played the sil - ver ball

Melisma

This final section of the chapter deals with a concept that can be quite useful when describing melodic lines. From Ancient Greek *melízō* (μελιζω = warble or play an instrument), MELISMA means a string of several consecutive notes sung to one syllable.⁵ *Melismatic* is usually contrasted with *syllabic*, the latter meaning that each note is sung to a different syllable. *Melismatic* and *syllabic* are used relatively to indicate the general character of a vocal line in terms of notes per syllable, some lines being more melismatic, others more syllabic. It is doubtful if a sequence of notes sung staccato to the same syllable, for instance 'oh-oh-oh-oh-oh' in *Peggy Sue* (Holly 1957) or *Vamos a la playa* (Righeira 1983), constitutes a melisma because each consecutive 'oh' is articulated as if it were a separate syllable (*staccato* = detached, cut up). A melisma, on the other hand, is executed legato, each constituent note joined seamlessly to the preceding and/or subsequent one (*legato* = joined). Since inhalation before the start of a new phrase constitutes a break in the melodic flow, no melisma can last longer than the duration of one vocal exhalation. Since several notes are sung to one syllable within the duration of one musical phrase, melismas contain no long notes.

Melismatic singing differs more than syllabic singing from everyday speech in that it is uncommon to change pitch several times, within the duration of one spoken syllable. When such spoken

5. While two consecutive notes to one syllable hardly constitute a melisma, three or, better, four or more such notes are definitely melismatic.

pitch change does occur in English, for instance a quick descending octave portamento on the word 'Why?', it tends to signal heightened emotion. Together with the general tendency to regard melody as a form of heightened speech transcending the everyday use of words (p.179, ff.), it is perhaps natural that melismatic singing is often thought to constitute a particularly emotional type of vocal expression. Such connotations are further underlined by the fact that some of the most common words to be sung melismatically in English-language popular song are exclamations (e.g. *oh!*, *ah!*, *yeah!*⁶) or potentially emotional syllables like *love*, *feel*, *alright*, *pain*, *fly*, *cry*, *goodbye* and *why?*).

Melismas occur in most musical cultures, for instance in the Mu'ezzin's call to prayer, in raj music, in the *alap* sections of Northern Indian *dhrupad* performances, in the Saami *jojk*, in the Russian *bilini*, Ukrainian *duma*, Romanian *doina*, etc.⁷ They also occur in most plainchant settings of *Alleluia* and *Kyrie eleison*, as well as at particularly emotional points in arias from the European opera and oratorio repertoire. While Lutheran chorales are largely syllabic, a significant minority of low-church hymns do feature short melismatic passages (ex.165).

Ex. 165. *Jesus Christ is Ris'n Today* (Methodist Hymn Book, 1933, n^o 204)

The image shows a musical score for the hymn 'Jesus Christ is Ris'n Today'. It is written in 2/4 time and consists of two staves: a treble clef staff for the melody and a bass clef staff for the accompaniment. The melody is divided into two sections: a 'SYLLABIC' section and a 'MELISMATIC' section. The syllabic section covers the first six measures, with the lyrics 'Je - sus Christ is ris'n to - day.' underneath. The melismatic section covers the next six measures, with the lyrics 'All - - - - le - lu - - al' underneath. The melismatic section features a long, flowing melodic line with many notes, including some with grace notes, and a final sustained note.

Particularly influential on the development of melisma in Anglo-American popular song are various florid, highly ornamented, often pentatonic or hexatonic vocal traditions originating in the British Isles, i.e. the sort of vocal delivery found in Gaelic keening (*caoine*) and slow, solo ballad singing in the *sean-nós* style (ex. 166).⁸

6. See, for example, Luca Vitone's 20-minute collage of 'yeah-s' (1998).

7. For raj and dhrupad, see *Khaled (1992) and *Dagar (n.d.) respectively; for *jojk*, see Edström (1977); for the other styles, see Ling (1997:84-9, 106-7).

Ex. 166. Extract from *Cuil Duibh-Re* (Ir. trad.), as performed by Diarmuid O'Súillebháin (transcr. Tomás O'Canainn, repr. in Ling 1997:92)

Na tull-te coimheas - car de bharr liag - reach gan ceó - - - glan namh.

These 'old' ways of singing appear to have been the antecedents of the florid vocal lines produced by the Old Baptist and similar 'dissenting' congregations of the USA's middle south (ex. 167).⁹

Ex. 167. Extract from *Guide Me O Thou Great Jehovah* (*Cwm Rhondda*), Old Regular Baptist congregation; adapted from transcr. in Wicks (1989:73)¹⁰

Hold — me with thy power - ful hand

Hold — me with — thy — power - ful — hand.

Such vocal techniques have strongly influenced the popular music of both white and black US Americans, the former through white gospel music into songs by Country artists like Dolly Parton, Emmylou Harris, Bonnie Raitt and George Jones (Wicks 1989), the latter through African-American gospel singers into the mainstream of the international pop music market. The protracted, proclamatory 'We—ll!' at the start of *Shout* (Isley Brothers 1959; Lulu 1964) provides an early example of the gospel melisma in Anglo-American hit recordings. Similar melismas were not uncommon in Motown vocal lines (e.g. 'Mr Po-o-o-stman', Marvelettes 1961¹¹ and Beatles 1963), nor in Merseybeat influenced by gospel styles (ex. 168-169).

Ex. 168. Beatles: *Not A Second Time* (1963)

8 Not a second time, ————— Not a second time. ————— etc.

8. See also *Moloney (1973) and Hebridean 'home worship', ex.172, p.210, ff.

9. See also *Watson (1964) and Wicks (1989).

10. See extract from homophonic original of this tune as example 175, p.213.

11. See example 177, p.216.

Ex. 169. *Searchers: Goodbye, My Love* (1965)

8 Good - bye my love. Don't

5 cry my love. etc.

Since the types of melisma mentioned here have, since World War II, been most widely disseminated through recordings made or influenced by African-American artists, it is often assumed that such melismatic techniques are of African origin. However, given that none of the forty music examples in the chapters dealing with vocal lines in African music (Nketia 1974:147-174) contain syllables set to more than two separate notes, the popular assumption that melismatic ornamentation is inherently 'black' must be challenged in the same way that the identification of the banjo, an instrument of African origin, with 'white' music must also be regarded as historically inaccurate (Tagg 1989).

In the 1980s pentatonic melismas deriving from gospel traditions became very common in recordings by solo divas like Whitney Houston who, for instance, on the word 'much' in the phrase 'I wish I didn't like it so much' from *So Emotional* (Houston 1987), launches into a florid pentatonic melisma consisting of at least six short separate notes each time the phrase occurs in the lead-up to the chorus. These virtuoso techniques had become such a mannerism of abandon by the 1980s that they were easily parodied, for example by Nile Rodgers in the 'Soul Glow' shampoo jingle from the Eddy Murphy movie *Coming to America* (1988), or by Frank Zappa who, in *You Are What You Is* (1981), set prosaic concepts like 'appropriate' and 'post office' to ecstatically delivered pentatonic gospel melismas.

Summary in 11 points

[1] Melody is a MONODIC TONAL STRAND of music that is EASY TO RECOGNISE, APPROPRIATE AND TO REPRODUCE VOCALLY.

[2] Melody occupies DURATIONS resembling those of normal or extended EXHALATION — the EXTENDED PRESENT.

[3] Melody is usually delivered at a rate ranging from that of MEDIUM TO VERY SLOW SPEECH.

[4] Melody is usually articulated with RHYTHMIC FLUIDITY AND UNBROKEN DELIVERY of tonal material.

[5] Melody is DISTINCTLY PROFILED in terms of pitch and rhythm

[6] Melody tends to be RELATIVELY SIMPLE IN TERMS OF TONAL VOCABULARY, changing pitch more often by steps rather than leaps and rarely spanning much more than one octave.

[7] TYPOLOGIES of melody can be STRUCTURAL OR CONNOTATIVE.

[8] The most common STRUCTURAL TYPOLOGY of melody is based on PITCH CONTOUR — rising, falling, tumbling, terraced, V-shaped, arched, centric, wavy.

[9] JUST AS IMPORTANT as pitch contour to a melody's specific identity are TONAL VOCABULARY, RHYTHMIC PROFILE (including language rhythm), METRICITY, DYNAMICS, MODE OF ARTICULATION, CULTURALLY SPECIFIC MOTIFS and PATTERNS OF RECURRENCE, including REITERATION, SEQUENCE, ANAPHORA, EPISTROPHE, etc.

[10] CONNOTATIVE TYPOLOGIES of melody includes such categories as 'Dream', 'Supermusic' and 'Recitation'.

[11] A MELISMA is a string of several consecutive notes sung to one syllable. *Melismatic* is usually contrasted with *syllabic*, the latter meaning that each note is sung to a different syllable. Melismatic singing is often thought to constitute a particularly emotional type of vocal expression.

6. Polyphony

The aim of this chapter is to provide short overviews, including definitions, of important concepts that recur in this book: POLYPHONY, DRONE, HETEROPHONY, HOMOPHONY and COUNTERPOINT.

The tonal elements discussed so far have been treated either as generally applicable concepts like *tone*, *pitch* and *TUNING*, or in terms of monody, modes and melody. One of the definitions of *melody* was ‘the monodic musical foreground to which accompaniment and harmony are generally... understood as providing the background.’ Both *harmony* and *accompaniment* usually imply that at least two notes are sounded at the same time, i.e. that the music is polyphonic. But what *is* polyphony?

Polyphony: three meanings

POLYPHONY, from Greek *poly* (πολύς = many) and *fonē* (φωνή = sound), can mean three things:

1. music in which at least two sounds of differing *pitch* or *timbre* are heard at the same time;
2. music in which at least two tones of clearly differing fundamental *pitch* are heard simultaneously — TONAL POLYPHONY.
3. tonal polyphony of the type used by certain European composers between c.1400 and c.1650.

The third meaning, popular with teachers of euroclassical music history, is incongruous because the type of polyphony alluded to is just one among many. *Polyphony* used in the third sense is often opposed to *homophony* which, according to definitions one and two, is also unmistakably polyphonic (p.212, ff.). Since the output of Palestrina, Byrd or Josquin des Prez is hardly what you’re most likely to hear on a polyphonic synthesiser, polyphony will not be used according to the restrictive third definition but according to definitions 1 — all polyphony — or 2 — tonal polyphony.

According to the first definition, any music featuring the simultaneous occurrence of sounds for which no fundamental pitch is discernible can be called polyphonic, especially when such sounds are produced by different instruments or voices articulating different rhythmic patterns. The notion of a polyphonic synthesiser rhymes well with this general definition since such instruments allow for the simultaneous occurrence of several different non-tonal as well as tonal sounds, whereas monophonic synthesisers cater only for one pitch and timbre at a time. This *general* definition of the term means that sound combinations such as drumkit patterns, or solo vocal line plus hand clap/foot stamp (like Janis Joplin's *Mercedes Benz* (1971)), or fife and drum music (e.g. Royal Welsh Fusiliers, n.d.) can all be qualified as polyphony.

The second definition of *polyphony* is *tonal*. In this sense, solo and unison playing or singing without tonal accompaniment would be monophonic but performing in parallel intervals would be polyphonic. A single or unison melodic line accompanied by a drone is also polyphonic according to both definitions 1 and 2.

The degree to which music can be regarded as polyphonic is determined by the cultural habitat of that music's producers and users. For example, the *consecutively* articulated notes of arpeggiated guitar or piano accompaniment are both intended and perceived as harmony or as chords rather than as melody. This principle is illustrated in the right-hand keyboard configuration of the chord loop in *The House Of The Rising Sun*, shown as example 170a. The arpeggiated pattern may be written one note at a time but it's normal practice to hold each note in each arpeggio until it is struck again, as suggested for the A minor triad in example 170b. If played on the piano, the sostenuto pedal would be down, as in example 170c and each note would sound until repeated or until the pedal was released. Besides, even if you played those arpeggios as written they would still sound more like a chord than a monophonic line for two reasons: [1] notes played in quick succession in recurring patterns each spanning no more than just a second or two build a

single gestalt;¹ [2] the notes are organised in regularly grouped units, each unit corresponding to sounds recognisable as a chord in the cultural context of the relevant musical style.

On the other hand, the fast descending scalar pattern played on sitar at the end of a *rāga* performance (e.g. Shankar 1970) may for similar reasons of reverberation sound like a chord to Western ears but it is by no means certain that such a cascade of notes is in its original context intended to be heard as a chord or cluster.

Ex. 170 *Arpeggiated right-hand keyboard figures. (a) and (b) Animals: House Of The Rising Sun (1964): (a) as notated; (b) as heard; (c) Elton John: Your Song (1971): first chord.*

(a) *Am* *C* *D* *F*
 [There] is a house in New Orleans

(b) *Am*

(c) *E♭* *F#m*

There are numerous types of tonal polyphony. This chapter deals very briefly with the basics of drones, heterophony, homophony and counterpoint. I've covered those topics in more detail elsewhere and harmony, the favourite topic of conventional music theory in the West, is discussed in Chapters 7-15.²

Drone

Drones are basically ongoing notes that sound at the same pitch throughout part or whole of a piece of music. They occur in two basic forms, both of which are mainly used as accompaniment to a melodic line, vocal or instrumental, performed either in another register or by another instrument. In its first form a drone is a con-

1. That's because of the *phonological loop* (see Glossary; Tagg, 2013: 273). A *gestalt* [gɛl'talt] is a composite unit that is perceived as a single whole.
2. Drones and alternate tuning are discussed on pages 340-349. For more about homophony, heterophony and counterpoint, see the sections 'Synchrisis and social anaphones', 'Participants, strands and layers', 'Synchritic organisation and social meaning', 'Cross rhythm', 'Group-type manifestations' and 'Responsoriality' in Chapter 12 of *Music's Meanings* (Tagg, 2013: 446-474).

tinuously sounding single note or combination of two notes, such as produced by most sorts of bagpipes.³ While the first type of drone is uninterrupted and *continuous*, the second has a *rhythmic* character in that note[s] of identical pitch are repeated at short intervals. Drones act as tonal reference point and background for the changing pitch of other strands in the music. They are a common feature in many forms of music throughout the world and are more usually instrumental than vocal. Drones are also used in vocal and instrumental training (e.g. violin) as a way of improving intonation.⁴

Vocal drones can be found in, for example, the antiphonal rhythms of traditional hymn singing from Tahiti (*himene*) as well as in riffing vocal repetitions heard in some types of gospel singing in the USA (e.g. Swan Silvertones, 1952: 1:15-2:00). Instrumental drones can be produced by the same player on the same (set of) instrument(s) that perform the melody, or by a separate (set of) instrument(s): bagpipes, hurdy-gurdy, *launeddas* (Sardinia) and Jew's harp belong to the former category; didgeridoo (Australia), *komuz* (Kirghizstan) and *tanpura* (India) to the latter.

Some string instruments, such as the *vina* (India) and other members of the lute family, are provided with one or more drone strings to be plucked at appropriate junctures for purposes of tonal reference and rhythmic impetus. Rhythmic drone effects are also produced by fiddlers who make frequent, often percussive, use of open strings (e.g. Robertson, 1922; Ståbi et al., 1965), by banjo players (p. 334, ff.) and by guitarists, most notably when alternate tuning is involved (e.g. Hooker, 1960; Mitchell, 1971; Steeleye Span, 1971; Watson, 1971; Cooder, 1974; Folk och Rackare, 1976; Thomp-

3. Balkan bagpipes (*gajda*, *kaval*) generally have just one drone pipe. Scottish great pipe (Highland bagpipe) drones are in octaves that produce a strong overtone at the fifth. Small British pipes (incl. Northumbrian) have a drones at the tonic and fifth. Uilleann pipes (Ireland) have three non-melody pipes, the extra pipe providing a major third that is only sounded occasionally.
4. For use of drones to improve violin intonation, see Muresan (2012).

son, 1988). There is much more on this topic and its relation to ‘thirdless’ harmony in the section ‘Open tuning and drones’ on pages 340-349. In that connection it is worth noting that a ‘top-down’ drone, with $\hat{1}$ pitched consistently highest in the accompaniment, states the tonic ‘root’ of each sonority. This means that lower parts, including the bass line, may well be playing notes extraneous to whatever chord is identified with the droned tonic.

The connotative charge of drones varies according to cultural perspective and media context. In the heyday of euroclassical music drones were often used to evoke pastoral or bucolic settings (e.g. Handel 1741; Beethoven 1808b; Alfvén 1904). More recently, drones have become increasingly common and can be heard in, for example, folk rock, ambient and ‘Celtic mood’ music,⁵ as well as in such styles as house, techno and other types of electronic dance music. In the latter case, the drone’s connotations, if any, have yet to be clearly established. However, the connotations of one latter-day drone are quite clear: the ‘doomsday mega-drone’ underscoring ongoing threat scenarios in such popular TV productions as *V* (De Vorzon & Conlan, 1983) or *Twin Peaks* (Badalmenti, 1990).⁶

It seems that the drone has deeper connotations on the Indian sub-continent. For example, Coomaraswamy (1995: 77-80) describes the tanpura, the droned string instrument of much rāga music which is heard before, during and after the melody, as ‘the timeless and whole which was in the beginning, is now and ever shall be.’ The account continues:

-
5. Down-tempo ‘ambient’ and ‘Celtic’ sounds are often associated with such paramusical phenomena as ‘chill-out’, reflexion, bygone rural days of yore, broad stretches of time and space, etc.
 6. ‘Doomsday megadrone’ is an apt phrase coined in the late 1980s by Anders Wintzéus (Göteborg) to denote this sort of threatening sub-bass rumble. In *V* (Warner, 1983-87) the drone accompanied alien reptiles, bent on harvesting humans as food, hovering in huge flying saucers over world metropolises (mainly Los Angeles of course). In *Twin Peaks* (1989-91) an omnipresent evil and its doomsday megadrone constantly oppressed a superficially idyllic mountain community.

Heterophony also occurs in the final chorus of trad jazz performances and, more elaborately, in traditional ‘home worship’ from the Hebrides (ex. 172) where each florid improvisation on the same hymn tune is thought to present each individual’s personal relation to the same God.⁸ In other words, heterophony involves at least two individuals who may be ‘saying the same sort of thing at almost the same time’ but not ‘with one voice’.

Heterophony is also at the heart of most forms of Indonesian gamelan music in which several layers of heterophony can combine to produce chordal effects (Hood, 1980).

The five vocal strands of example 172 seem to base their melismatic ornamentations on the first four melody notes of a popular pentatonic and *homophonic* low-church hymn tune (*Martyrdom*, ex. 173). The relevant four notes in example 172 are d-g-e-d, i.e. $\hat{5}\hat{1}\hat{6}\hat{5}$, the same scale degrees as the initial e \flat -a \flat -f-e \flat (‘As pants the heart’) in the soprano voice of example 173 (p. 212).

Ex. 172 *Hebridean Home Worship: 5-voice heterophonic version of Martyrdom (Psalm 84); transcr. Thorkild Knutsen (1968).*

The musical score for Ex. 172 consists of five staves of music, each with a vocal line and lyrics. The lyrics are: 'Tha cui - - - d - gea - ra - - - bs', 'Tha cui - - ui - - d - gea - ra - - a - bs', 'Tha cui - - - d - gea - ra - - - bs', 'Tha cui - - - uid - - - ra - - - bs', and 'Tha cui - - - d ea - - - rbs'. The music features complex rhythmic patterns and melismatic ornamentations on the first four notes of the melody.

8. See also Wicks (1989). I’m often reminded of heterophony when I try to connect low-voltage contact points with two wires of different length. Both go from *A* to *B* but trace slightly different paths between the two points.

Homophony

Ex. 173 Martyrdom (*Congregational Praise*, no. 390, b. 1-8)⁹

From the Greek *ὁμόφωνος* (*homófonos* = sounding in unison or at the same time), homophony is the type of polyphony in which different strands of the music (instruments, voices, parts, tracks) move in the same rhythm at the same time. *Homophony* is in other words the polyphonic antithesis of *counterpoint*. Even if example 173 contains a few passing notes occurring in some parts and not others,¹⁰ it is still basically homophonic because all syllables both start and finish at exactly the same time in all four voices. Example 174, however, is 100% homophonic.

Ex. 174 Old 100th (*French Psalter*, 1551)

One of the most common homophonic traits in pop music has been singing or playing in parallel thirds or sixths (ex. 169 p.202) but, as the voice profiles in example 174 show (at 'earth do dwell'), contrary motion is in one sense just as homophonic as parallel motion.

In conventional historical musicology, homophony is sometimes opposed to what is confusingly called just 'polyphony', as if homophony were not a type of polyphony and is if polyphony only meant a particular kind of contrapuntal polyphony practised by

9. The tune Martyrdom is attributed to Hugh Wilson (1766-1824) and adapted by Robert A. Smith (1780-1829).
10. Extra notes occur in the soprano and alto parts in bar 2 ('for'), in the alto part in bar 7 ('in'), in the tenor at bars 1 and 3 ('the', 'cool') and in the bass part (bar 7 at 'the').

European composers of the late Renaissance (see p.205). This culturally restrictive use of the term is problematic because no viable label remains to denote the sort of polyphony in which one voice or instrumental part leads melodically while others provide chordal accompaniment. Moreover, chordal accompaniment in many types of popular music is characterised by riffs (bass, guitar, backing vocals, etc.) and thereby, as we shall see, to a significant extent contrapuntal. It would certainly be misleading to call such music ‘homophonic’.

Music can be considered homophonic (or contrapuntal) only in relative terms. For example, although example 175, taken from one of the most popular hymn tunes in nonconformist Christianity, like examples 173 and 174, fulfils the criteria of homophony, it is less homophonic than example 174 because: [1] each voice in example 175 has its own melodic profile, producing both contrary and oblique motion (bars 1-2 and bar 3 respectively); [2] the alto, tenor and bass parts in bars 1 and 2 include passing notes below longer notes in the tune; [3] the excerpt ends with a small contrapuntal intervention on E7 in the alto and bass parts (bar 4).

Ex. 175 *Cwm Rhondda (refrain) (John Hughes, 1873-1932)*

Bread of heav - en, Bread of heav - en, Feed me now and ev - er - more ev - er - more.

Example 176 (p. 214) exhibits both homophonic and contrapuntal traits. While lead singer (♫) and backing vocalist (♫) sing homophonically, their combined, parallel melodic statements are counterpointed by bass line, drumkit (not shown) and by flauto dolce ostinato in octave unison with the violins. This mixture of homophonic and contrapuntal elements provides the basic texture for most music in pop, rock and related styles of music.

Ex. 176 *Abba: Fernando (1975): repeat and fade*



Counterpoint

Counterpoint (adj. contrapuntal), from Latin *contrapunctus* (originally *punctus contra punctum* = ‘note against note’) means two things. [1] It is a type of polyphony whose instrumental or vocal lines clearly differ in melodic and/or rhythmic profile. [2] It also means, by analogy, the intentional contradiction in music of concurrent verbal or visual events, especially in the audiovisual media.¹¹ It is the first meaning that concerns us here.

Counterpoint is often understood as the *horizontal* aspect of polyphony, *harmony* as its *vertical* aspect. The problem with this distinction is that since chords, the building blocks of harmony, are usually sounded in *sequence* and since each constituent note of each chord can often be heard as *horizontally related* to a note in the next one (‘voice leading’), harmony frequently gives rise to internal

11. *Counterpoint* also denotes the technique whereby music is used to contradict the face value of concurrent actions or words. For example, to highlight essential aspects of the drama that are not visible or otherwise audible, Morricone, in the Bertolucci film *1900* (1976), uses music in the most delicate and noble vein of Viennese classicism to accompany two visual sequences showing peasants in abject poverty. Counterpointing can also be used ironically to provoke reflective distancing on the part of the audience. Kubrick’s use of Vera Lynn’s rendition of *We’ll Meet Again* (1942) to underscore the atomic holocaust at the end of *Dr. Strangelove* (1963) clearly illustrates this phenomenon.

melodies, some of which may ‘clearly differ in melodic and/or profile’, i.e. they will exhibit contrapuntal traits. Conversely, the simultaneous sounding of lines with differing melodic profile entails by definition consideration of the music’s vertical aspect – its harmony. Therefore, since melodic profile is as much a matter of rhythm as of pitch, it is more accurate to consider homophony (music whose parts move at the same time in the same rhythm) as the polyphonic antithesis to counterpoint. Even so, polyphonic music can be considered contrapuntal or homophonic only by degree, never in absolute terms. For example, the final chorus in most trad jazz band performances of almost any number (many instrumentalists improvising different rhythmic and tonal lines around the same tune and its chords, e.g. King Oliver, 1923), though partly heterophonic, is more contrapuntal than the preceding solos (one melodic line, a bass line and chordal rhythm). Such final choruses are decidedly more contrapuntal than conventional hymn singing (voices moving to different notes in the same rhythm), much more so than doubling a vocal line at the third or sixth (following the same pitch profile in the same rhythm). In short, the more differences there are between concurrent parts in terms of melodic rhythm and pitch profile, the more contrapuntal the music.

Imitative counterpoint of the type taught to composition students in Western universities is uncommon in popular music, even though well-known canons like *Frère Jacques*, *Three Blind Mice*, *London’s Burning* and *Row Your Boat* must be among the most frequently sung songs in the world. Indeed, despite the fact that canonic singing is also widespread in some parts of Africa,¹² the most common forms of counterpoint in popular music are: [1] the simultaneous occurrence of different melodies in the overlap between call and response (ex. 177, p. 216); [2] the contrapuntal interplay between (a) melodic line, (b) accompanying or lead instrument, (c) bass line (ex. 178, p. 216).

12. For example, the Ekonda of Zaire, the Shona of Zimbabwe, the Jabo of Liberia; see Nketia, 1974: 144-5.

Ex. 177 *Call and response overlap: Please Mr. Postman (Marvelettes, 1961)*

♩ = 106

Woe yeah

Please Mister Post-man, look and see. Is there a lett-er in your

Please, please, Mist-er Po - [w] o - [w] ost - man

bag for me? I've been wait-ing here a might-y long time...

Ex. 178 *Melodic line, lead and bass in Satisfaction (Rolling Stones, 1965)*

♩ = 132

voc. But he can't be a man cause he doesn't smoke the same cig-ar-ettes as me.

ld. gtr.

bs. gtr.

Although the lead guitar and bass lines in *Satisfaction* may look like heterophony in parallel fifths, their timbre and rhythmic patterning are quite different — ♩ ♩ ♩ ♩ ♩ ♩ (guitar) v. ♩ ♩ ♩ ♩ ♩ ♩ (bass). Moreover, both parts contrast with the two-note recitation-tone profile of the vocal line and with its rhythmic pattern ♩ ♩ ♩ ♩ ♩ ♩ | ♩ ♩ ♩ . It's all a matter of degree. The more differences there are in polyphony between parts or voices in terms of rhythm, melodic profile, start and end points, etc., the more it will be contrapuntal. The fewer the differences on those counts, the more homophonic it will become until we arrive at tunes in parallel thirds, parallel fifths (*organum*)¹³ and parallel octaves (unison).

13. *Parallel organum*, the singing of plainchant in parallel fifths, was practised in several parts of Europe between c.800 and c.1200. Examples from *Musica Enchiriadis* (c.850) and the Chartres school (11th century) are given in Davidson & Apel (1949:21-22).

Summary in 7 points

[1] POLYPHONY is music in which at least two sounds of differing *pitch or timbre* are heard at the same time.

[2] TONAL POLYPHONY is music in which at least two tones of clearly differing fundamental *pitch* are heard simultaneously.

[3] DRONES consist basically of ongoing or frequently recurring notes that sound at the same pitch throughout part or whole of a piece of music. A drone usually demands just intonation of the other pitches it accompanies.

[4] HETEROPHONY is polyphony resulting from simultaneous differences of pitch produced when two or more people sing or play more or less the same melodic line at the same time. Heterophony is common in music from the Eastern Mediterranean and the Arab world.

[5] HOMOPHONY is a type of polyphony in which different strands of the music move in the same rhythm at the same time. It is the polyphonic antithesis of counterpoint.

[6] COUNTERPOINT is a type of polyphony whose instrumental or vocal lines clearly differ in melodic and/or rhythmic profile. It is the polyphonic antithesis of homophony.

[7] Differences between homophony and counterpoint are relative. There are often contrapuntal elements in more homophonic music and often homophonic passages in more contrapuntal music.

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7. Chords

Even if Chapters 3-5 were mainly about melody and the monophonic aspects of mode, it was impossible to totally avoid mentioning chords and harmony. Now, harmony is no side issue in the rest of this book: it's the central topic. If that is so we'll need a vocabulary capable of designating harmony's nuts and bolts. That's why this chapter is devoted to explanation of the chord-naming conventions used in the rest of this book. And that, in its turn, means that this is not a discursive chapter. It's intended rather as a reference resource whose core consists of the various charts and tables displaying TERTIAL chords, their designations and abbreviated labels (pp. 223, 226, 232-233, 235). Please note that QUARTAL harmony is dealt with separately in Chapter 10.¹

Definition and scope

CHORD, from Greek χορδή (*chordē*, Latin *chorda*), originally meant the string of a musical instrument. Eventually, *chord* came to denote the simultaneous sounding of two or more different tones by any polyphonic instrument or by any combination of instrument(s) and/or voice(s). The simultaneous sounding of notes of the same name, i.e. unison pitches or pitches separated by octave intervals, does not qualify as a chord. A two-note chord is a DYAD, a three-note chord a TRIAD, a four-note chord a TETRAD and a five-note chord a PENTAD.

Chords need not be heard as such by members of a musical tradition whose polyphony emphasises the interplay of independent melodic lines (counterpoint) much more strongly than music in the Western post-Renaissance tradition of melody and accompaniment. In most types of popular music chords are generally regarded as belonging to the accompaniment part of that dualism.

1. In conventional music theory the notions TERTIAL (to do with thirds) and TRIADIC (to do with triads) are often confused; see pp. 249-251 for clarification of this issue. See pp. 293, 295-301 for details of difference between tertial and quartal harmony.

Tertial triads

Tertial chords are based on the stacking of thirds. Tertial TRIADS are fundamental harmonic building blocks in euroclassical music, in most forms of jazz and in many types of popular music.

A TRIAD is *any chord containing three different notes*. The *tertial common triad* is a particular, and particularly common, type of triad constructed as two simultaneously sounding thirds, one superimposed on the other. As Figure 33 shows, c and e (separated by a major third) together with e and g (minor third) constitute the *major common triad* of C major (c-e-g), while d and f (minor third) together with f and a (major third) make a D minor triad.

Fig. 33. *Tertial common triads on each degree of C ionian / A aeolian*

	C	Dm	Em	F	G	Am	B°
Triad notes:	c-e-g	d-f-a	e-g-b	f-a-c	g-b-d	a-c-e	b-d-f
Roman numerals (Ionian)	I	ii	iii	IV	V	vi	vii°
Roman numerals (Aeolian)		iv	v	bVI	bVII	i	ii°

Two types of tertial chord shorthand appear in Figure 33: [1] LEAD-SHEET CHORD SHORTHAND (C, Dm, Em, etc.); [2] ROMAN NUMERALS (I, ii, iii, IV etc.). Both systems are in common everyday use. Lead-sheet chord shorthand, explained on pages 229-244, is ‘absolute’ in that, for example, the abbreviation C denotes a major triad based on c \sharp and on no other note, Dm a minor triad based on d \sharp and no other note, etc. The roman numeral system is, however, ‘relative’.

Roman numerals

Roman numerals denote chords and their relation to the tonic (keynote) of *any* key or mode. This sort of *relative* chordal designation can, with few modifications, be transferred to the study of any polyphonic music for which one keynote or tonic can be established. More specifically, each roman numeral designates the *root* note of the scale degree on which the chord is built. For example, the *upper-case* roman ‘one’ (I) in Figure 33 means a *major* common triad with scale degree 1 ($\hat{1}$) at its root. In the key of C, where $\hat{1}$ is c \sharp , ‘I’ designates *not the note* c \sharp but a C major *triad* built on c.²

Minor triads are expressed using *lower-case* roman numerals. As shown in Figure 33, ‘vi’ means a minor triad on scale degree 6 ($\Delta\hat{6}$). In the C major scale, the ionian mode, $\Delta\hat{6}$ is $\mathfrak{a}\mathfrak{h}$, so ‘vi’ means an A minor common triad (Am). The ‘i’ under that ‘vi’ in Figure 33 designates the same A minor common triad, except that it is now, as ‘i’, the triad on scale degree 1 ($\hat{1}$) in A aeolian (A ‘natural minor’). The lower line of roman numerals in Figure 33 reveals that what was the tonic major triad I (‘one’) in C major becomes \flat III (‘flat three’) in A aeolian. It’s the same C major triad as before but this time in the key of A aeolian, not C ionian. It further reveals that the F and G major triads that were IV (‘four’) and V (‘five’) in C ionian are \flat VI (‘flat six’) and \flat VII (‘flat seven’) in A aeolian. That’s worth knowing because \flat VI \rightarrow \flat VII \rightarrow i (or I) constitutes the highly popular aeolian cadence, no matter which key you’re in – F \rightarrow G \rightarrow Am (or A) in A, C \rightarrow D \rightarrow Em (or E) in E, Ab \rightarrow Bb \rightarrow Cm (or C) in C, etc. It’s the aeolian equivalent of the ionian cadence formula IV \rightarrow V \rightarrow I (F \rightarrow G \rightarrow C in C, Ab \rightarrow Bb \rightarrow Eb in Eb, etc.). These relationships should become clearer after perusal of Table 14 (p. 223).

The major triads in Figure 33 are C, F and G. As we just saw, they occupy scale degrees $\hat{1}$, $\hat{4}$ and $\hat{5}$ in the ionian mode as the triads I, IV and V but occur on degrees $\flat\hat{3}$, $\flat\hat{6}$ and $\flat\hat{7}$ in the aeolian as the triads \flat III, \flat VI and \flat VII. The minor triads Dm, Em and Am are on scale degrees $\hat{2}$, $\hat{3}$ and $\hat{6}$ in the ionian (ii, iii, vi) and on $\hat{4}$, $\hat{5}$ and $\hat{1}$ (iv, v, i) in the aeolian. Moreover, the major scale’s $\Delta\hat{7}$ ($\mathfrak{b}\mathfrak{h}$ in C) and the minor scale’s $\hat{2}$ ($\mathfrak{b}\mathfrak{h}$ in A) produce a diminished triad (vii° and ii°) that is rarely heard without the addition of a fourth note. The two most common diminished tetrads are the diminished seventh (e.g. C^{dim}) and the half-diminished chord (‘seven flat five’, e.g. $\text{Cm}^{\flat 5}$). They appear top right in Table 13 (p. 222).³ There’s one tertial triad that, unlike the three types shown in Figure 33, cannot be generated by superimposing two mode-specific thirds. It’s the augmented triad and it’s included with the other three types in Table 13.

2. When other chord-specific notes than the root are pitched lowest, such a chord is called an inversion (see p. 225).
3. $\text{ii}^{\flat 5}$ and $\text{vii}^{\flat 5}$ are very common in the euroclassical and jazz repertoires.

Table 13: Four types of tertial triads (on C) + 2 diminished tetrads

C Cm C⁺ C[°] Cm7^{b5} or C^ø C^{dim}
 major minor augmented diminished half diminished diminished 7th

<i>triad type</i>	<i>thirds</i>	<i>fifth</i>	<i>notes</i>	<i>lead sheet⁴</i>
major	maj + min	perfect	c e g	C
minor	min + maj	perfect	c e ^b g	Cm
augmented	maj + maj	augmented	c e g [#] /a ^b	Caug /C ⁺
diminished	min + min	diminished	c e ^b g ^b /f [#]	Cdim/C [°]

As shown in Figure 33 (p. 220) and Table 13, major triads consist of a minor third on top of a major third (e.g. e-g over c-e for C), minor triads of a major third over a minor third (e.g. e^b-g over c-e^b for C minor), while augmented triads comprise two superimposed major thirds (e.g. e-g[#] over c-e) and diminished triads two minor thirds (e.g. e^b-g^b over c-e^b). In principle, all tertial triads of the type contained in Table 13 contain a root note, its third and its fifth.

Table 14 (p. 223) shows lead sheet and roman-number symbols for each scale degree in all seven heptatonic ‘church’ modes.⁴ It’s included mainly for reference purposes when discussing chord sequences and functions in different keys and modes. However, some aspects of symbol convention in Table 14 need explanation.

[1] Since the locrian mode’s tonic triad is diminished (I[°]) and includes no perfect fifth, it is rarely used as a chord in ‘everyday tonality’ and will be discussed no further in this context. Of course, that does not mean that the locrian mode is never used melodically; on the contrary, it is very common in heavy metal.⁵

[Text continues with §2 on page 224 after Table 14.]

4. See pp. 94-99 for explanation of *diatonic ‘church’ modes*. See pp. 229-244 for full explanation of *lead sheet* and *lead-sheet chord shorthand*.
5. See pp. 162-163, esp. *fnnt.* 19 (p. 163).

Table 14: Roman-numeral triads for all seven steps in all ‘church’ modes

	I	ii	iii	IV	V	vi	vii
<i>ionian</i> in C	 C	 Dm	 Em	 F	 G	 Am	 Bm
	Dm or D	Em	F	G	Am	Bm7 ^{b5}	C
<i>dorian</i> in D	 i	 II	 bIII	 IV	 v (V)	 vi ^{7b5}	 bVII
in C	 Cm or C	 Dm	 Eb	 F	 Gm	 Am7 ^{b5}	 Bb
	Em or E	F	G	Am	Bm7 ^{b5}	C	Dm
<i>phrygian</i> in E	 i	 bII	 bIII	 iv	 v ^{7b5}	 bVI	 bvii
in C	 Cm	 C	 Db	 Fm	 Gm7 ^{b5}	 Ab	 Bbm
	F	G	Am	Bm7 ^{b5}	C	Dm	Em
<i>lydian</i> in F	 I	 II	 iii	 +iv ^{7b5}	 V	 vi	 vii
in C	 C	 D	 Em	 F#m7 ^{b5}	 G	 Am	 Bm
	G	Am	Bm7 ^{b5}	C	Dm	Em	F
<i>mixo-lydian</i> in G	 I	 ii	 iii ^{7b5}	 IV	 v	 vi	 bVII
in C	 C	 Dm	 Em7 ^{b5}	 F	 Gm	 Am	 Bb
	Am or A	Bm7 ^{b5}	C	Dm	Em	F	G
<i>aeolian</i> in A	 i	 ii ^{7b5}	 bIII	 iv	 v (V)	 bVI	 bVII
in C	 Cm or C	 Dm7 ^{b5}	 Eb	 Fm	 Gm	 Ab	 Bb
	B ^o	C	Dm	Em	F	G	Am
<i>locrian</i> in B	 i ^o	 II	 iii	 iv	 V	 VI	 vi
in C	 C ^o	 Db	 Eb	 Fm	 Gb	 Ab	 Bbm

[2] Common triads based on scale degrees in all modes except the ionian involve at least one roman-numeral symbol preceded by an accidental, usually \flat . That's because the roman numbering of tertial triads comes from the theory of euroclassical music whose default mode is ionian. Consequently, the roman numbering of triads in other modes has to indicate divergence from that ionian standard.⁶ That's why 'III', for example, always means a major triad on $\hat{3}$, the major-third scale degree in relation to the tonic, i.e. an E major triad in C, or a C \sharp major triad in A, etc., whereas ' \flat III' designates a major triad on $\flat\hat{3}$, the minor third in relation to the tonic, i.e. an E \flat major triad in C, a C major triad in A. Similarly, 'vi' always indicates a minor common triad on the major sixth ($\hat{6}$), i.e. an A minor triad in C, an F \sharp minor triad in A, etc.

[3] It is not uncommon for music in the dorian, phrygian or aeolian mode to use a PERMANENT PICARDY THIRD as tonic triad: $\dot{\mathbf{i}}$ becomes I. The triad on $\hat{5}$ can also be 'majorised' in some cases: \mathbf{v} can become V. These devices are explained on pages 276-284 and marked in columns 1 and 5 (I and V) in Table 14.

Ex. 179. I vi ii⁷ V⁷ sequence ('vamp') in C and D major

The image shows two musical staves. The left staff is in C major (one flat) and the right staff is in D major (two sharps). Each staff shows four chords with their corresponding roman numerals below them. In C major: C (I), Am (vi), Dm7 (ii⁷), G7 (V⁷). In D major: D (I), Bm (vi), Em7 (ii⁷), A7 (V⁷).

Bearing in mind that pitches extraneous to the tertial common triad, most frequently the flat seventh, are expressed as superscripted arabic numerals, it is clear that |I-vi-ii⁷-V⁷| designates the same chord progression in *any* major key, whereas |C Am Dm⁷ G⁷| and |D Bm Em⁷ A⁷| designate the same sequence in two keys only (C and D major respectively, ex. 179). Similarly, a repeated |I- \flat VII-IV| progression (C B \flat F in C) is found as D C G (in D) throughout Lynyrd Skynyrd's *Sweet Home Alabama* (1974) and as G F C at the end of The Beatles' *Hey Jude* (1968b; in G). Note that tertial triads built on pitches foreign to the ionian mode must be preceded by the requisite accidental, for example ' \flat VII' for a major triad

6. Chords based on $\flat\hat{3}$ are ' \flat III/ \flat iii', those on $\hat{3}$ are 'III/iii'.

built on $b\flat$ in the key of C major. Similarly, notes within a tertial chord that are extraneous to the current key of the piece must also be preceded by the requisite accidental, e.g. ‘ $ii7^b5$ ’ for the second-degree seventh chord in C minor with d as root and containing also f , $a\flat$ and c .

Inversions

Fig. 34. C major triad inverted →

In most popular music the lowest note in a chord is usually also its root. However, in choral

The figure shows four chords on a grand staff (treble and bass clefs). Above each chord are its constituent notes. Below the bass staff are figured bass symbols. The chords are: 1. C major triad in root position (C, E, G), with figured bass 'I'. 2. C major triad in first inversion (E, G, C), with figured bass 'I/3'. 3. C major triad in second inversion (G, C, E), with figured bass 'I/5'. 4. C7 tetrad in third inversion (Bb, C, E, G), with figured bass 'vii⁶₂'.

settings and in music strongly influenced by the euroclassical tradition, tertial chords are often *inverted*, i.e. the chord’s root note does not have to be its lowest. The first three chords of Figure 34 show a C major common triad [1] in root position (with c in the bass), [2] in *first inversion* (with its third, e , in the bass) and [3] in *second inversion* (with its fifth, g , in the bass). The final chord of Figure 34 is a tetrad (a chord containing four different notes): it’s a C major triad with the flat seventh ($b\flat$) in the bass, i.e. the tetrad C^7 in third inversion (with its seventh, $b\flat$, as lowest note).

European textbook harmony symbols, derived from figured bass techniques of the baroque era (bottom line of symbols in Fig. 34), are largely incompatible with the way in which chords are understood by most musicians today. Therefore, if inversions need to be referred to, they are most commonly denoted in the absolute terms of lead sheet chord symbols (top line in Fig. 34), sometimes in the relative terms of roman numerals, as shown in the line of symbols between the two staves, i.e. as $I/3$ for the tonic triad with its third as bass note, $I/5$ for the same chord with its fifth in the bass, etc.

Recognition of tertial chords

Individual chords can be identified and named according to their constituent notes and harmonic functions. They can also be recognised phenomenologically. Table 15 (pp. 226-229) lists some common tertial chords together with references to their occurrence in well-known pieces of popular music. It also shows, where applica-

ble, with which musical styles or with what kind of mood the chords are often associated.

Table 15: Familiar occurrences of tertial chords (ends on page 229)

chord short- hand	full chord descrip- tion	occurrences	style
	(common) major triad	First and final chord of most national anthems, <i>White Christmas</i> (Crosby 1942), the <i>Internationale</i> (Degeyter 1871), <i>Blue Danube</i> waltz (Strauss 1867). Chords in chorus of <i>Yellow Submarine</i> (Beatles 1966). <i>Happy Birthday</i> , last chord.	
m	(common) minor triad; 'minor'	1st long chord in Pink Floyd's <i>Shine On Crazy Diamond</i> (1975). 1st chord in <i>It Won't Be Long</i> , <i>She Loves You</i> and <i>I'll Be Back</i> (Beatles 1963b; 1964a). 1st and last chord in Chopin's Funeral March (1839).	
+	augmented triad; 'aug- mented', 'aug' [o:g]	Gershwin's <i>Swanee</i> (1919) at "how I love you!". Second chord in <i>Being For The Benefit Of Mr Kite</i> and <i>Fixing A Hole</i> (Beatles, 1967)	
6	added sixth chord; 'six', 'add six'	1st chord, at 'When whipperwills call', in <i>My Blue Heaven</i> (Donaldson 1927). 1st and last chord in <i>Mack The Knife</i> (Weill, 1928); in chorus of <i>Alabama Song</i> , at 'Moon of Alabama' (Weill, 1927). Last 'Yeah' in <i>She Loves You</i> (Beatles, 1963b).	jazz 1920-40s
m6	minor triad with added (maj.) sixth; 'minor six'	First chord in verse of <i>Alabama Song</i> , at 'Show us the way to the next'... (Weill, 1927). First chord after fanfare in the Wedding March (Mendelssohn, 1843).	
7	(dominant) seventh chord; 'seven [chord]'	Penultimate chord in most hymns and national anthems. First chord in Beatles' <i>I Saw Her Standing There</i> (1963a), <i>I Wanna Be Your Man</i> (1963c), <i>She's A Woman</i> (1964d), <i>Taxman</i> (1966), <i>Get Back</i> (1969b).	
7+	seventh chord with augmented fifth; 'seven plus', 'seven aug' [o:g])	Cole Porter (1933): <i>You're Bad For Me</i> , upbeat to chorus. Miles Davis (1961): <i>Some Day My Prince Will Come</i> , second chord, at 'day'. Mary Hopkins (1968): <i>Those Were The Days</i> , at 'were the' (upbeat to chorus). Beatles (1969a): <i>Oh! Darling</i> , after 'broke down and died' before reprise of hook.	

chord short- hand	full chord descrip- tion	occurrences	style
7 _b 5	seventh chord with diminished fifth; 'seven flat five'	Jobim (1963): <i>Garota da Ipanema</i> , penultimate chord; (1964): <i>Samba da una nota so</i> , 4th chord; (1969): <i>Desafinado</i> , 2nd chord.	bossa nova, bebop
Δ or maj or maj7	major seven[th] chord; 'major seven'	Cole Porter (1932): <i>Night And Day</i> , first chord of chorus. Erroll Garner (1960): <i>Misty</i> , 1st downbeat chord of chorus. Beatles (1963d): <i>This Boy</i> , 1st chord. Tom Jones (1965): <i>It's Not Unusual</i> , 1st chord. Burt Bacharach (1968): <i>This Guy's In Love With You</i> , 1st three chords. Beatles (1969a): <i>Something</i> , 2nd chord.	jazz standards, pop 1960s-70s
m7	minor seven[th] chord; 'minor seven'	Youmans (1925): <i>Tea For Two</i> , first chord (on 'tea'). Bacharach (1964): <i>Walk On By</i> , first chord. Beatles (1965b): <i>Michelle</i> , second chord; (1968a): <i>Rocky Raccoon</i> , 1st chord in hook; (1969a): <i>You Never Give Me Your Money</i> , first chord.	jazz standards, pop 1960s-70s
m ^A 7 m ^A 9	minor, major seven[th]/ninth (or nine)	Hagen (1944): <i>Harlem Nocturne</i> (the 'Mike Hammer' theme), first downbeat chord of tune. Norman/Barry (1962): <i>James Bond Theme</i> , final chord.	& spics detective
m7 _b 5	minor seven flat five or half diminished	Addinsell (1942): <i>Warsaw Concerto</i> , 2nd chord. Miles Davis (1973): <i>Stella By Starlight</i> , 1st chord. Nat King Cole (1955): <i>Autumn Leaves</i> (Kosma), 1st chord of middle eight.	& classics romantic
dim	diminished seventh chord; 'diminished', 'dim'	Beatles (1963b): <i>Till There Was You</i> , 2nd chord (at 'hill'); Beatles (1967a): <i>Strawberry Fields</i> , at 'nothing is real'.	horror chord silent movies.
9	(dominant) ninth chord; 'nine'	Beatles (1964a): <i>Things We Said Today</i> , at 'dreaming' ('some day when we're dreaming'); (1969a): <i>Because</i> , highlighted chord at 'round'/'high'/'blue'.	swing bebop
+9	plus nine chord	Hendrix (1967b): <i>Purple Haze</i> , 1st chord. Beatles (1969a): <i>Come Together</i> , start. Blood Sweat & Tears (1969): <i>Spinning Wheel</i> , first chord.	rock c. 1970, jazz fusion

chord short- hand	full chord descrip- tion	occurrences	style
maj9	major nine chord	Jobim (1963): <i>The Girl from Ipanema</i> , 1st chord.	
m ⁹	minor nine chord	Warren (1938): <i>Jeepers Creepers</i> , 1st chord of chorus. Weill (1943): <i>Speak Low</i> , 1st chord in chorus. Raksin (1944) <i>Laura</i> , 1st chord in chorus.	jazz stands.
11	chord of the eleventh; 'eleven chord', 'eleven'	Righteous Brothers (1965): <i>You've Lost That Lovin' Feeling</i> , 1st chord. Beatles (1967b): <i>She's Leaving Home</i> , at 'leaving the note', 'standing alone', 'quietly turning', 'stepping outside', 'meeting a man'; (1970): <i>Long And Winding Road</i> , at first occurrence of 'road'. Abba (1977): <i>Name of the Game</i> , at repeated 'I want to know'.	gospel, soul, fusion, post-bop
m ¹¹	minor eleven chord	Miles Davis (1959): <i>So What</i> , all chords. Goldenberg (1973): <i>Kojak Theme</i> , first two chords under melody.	post- bop
13	chord of the thirteenth; or thirteen chord	Degeyter (1871): <i>Internationale</i> , upbeat to chorus. Big Ben Banjo Band (1958): <i>Luxembourg Waltz</i> , 1st chord (upbeat). Beatles (1969a): <i>Because</i> , just before ecstatic "Ah!" on D chord.	pre-jazz, swing, bebop
add9	major triad with added ninth	Bacharach (1970b): <i>Close To You</i> , 1st chord (at 'why do birds suddenly appear?'); Nilsson (1974): <i>Without You</i> , 1st chord.	pop ballads
m ^{add9}	minor triad with added ninth; minor add nine	Al Hirt (1966): <i>Music To Watch Girls By</i> , 1st chord. Lionel Richie (1983): <i>Hello</i> , 1st chord. Rota (1966): <i>Romeo and Juliet</i> , main theme, 1st chord.	sad, bitter- sweet
/3	major triad in first inversion	Beach Boys (1966): <i>God Only Knows</i> , hook line at 'knows what I'd be'. Foundations (1967): <i>Baby, Now That I've Found You</i> , at 'let you go' and 'even so'. Procol Harum (1967b): <i>Homburg</i> , 3rd and 4th chords in introduction.	'classical'
/5	major triad in second inversion	Beach Boys (1966): <i>God Only Knows</i> , 1st chord. Foundations (1967): <i>Baby, Now That I've Found You</i> , at 'love you so'. Procol Harum (1970): <i>Wreck of the Hesperus</i> , start of major key section.	'classical'
m ₅	minor triad in second inversion	Simon & Garfunkel (1966): <i>Homeward Bound</i> , 2nd chord; Sinatra (1969): <i>My Way</i> , 2nd chord.	'classical' reflective ballads,

<i>chord short- hand</i>	<i>full chord descrip- tion</i>	<i>occurrences</i>	<i>style</i>
7/7	seventh chord in third inversion	Beach Boys (1966): <i>God Only Knows</i> , at 'are stars above you'. Foundations (1967): <i>Baby, Now That I've Found You</i> . Procol Harum (1967): <i>Homburg</i> , 2nd chord. Abba (1974a): <i>Waterloo</i> , 2nd chord, on the 'oo' of 'At Waterloo' in verse 1.	'classical'
/7	major triad with major seventh in bass	Procol Harum (1967): <i>Whiter Shade Of Pale</i> , chord 2. Eric Clapton (1974): <i>Let It Grow</i> , 2nd chord.	'classical', reflective
SUS4	suspended fourth chord; 'sus four', 'suspension'	Beatles (1965a): <i>You've Got To Hide Your Love <u>Away</u></i> . Rolling Stones (1965): <i>Satisfaction</i> , 2nd of two chords in main riff. Marvin Gaye (1966): <i>Ain't No Mountain</i> , 1st chord in introduction.	pop 1960s- 70s

Lead sheet chord shorthand

G, D7, Em7, C#m7^{b5}, B^bsus4, Am^{add9} and so on: these are just a few examples of the shorthand used to designate individual chords in many forms of popular music. The rest of this chapter aims to explain how that system of chord labelling works.

LEAD SHEETS are sheets of paper displaying the basic information necessary for performance and interpretation of a piece of popular music. Elements usually included on a lead sheet are: [1] melody, including its mensuration, in staff notation; [2] lead sheet chord shorthand, usually placed above the melody; [3] lyrics, if any. Such types of written music are used extensively by musicians in the fields of jazz, cabaret, chanson and many types of dance music. Lead sheets consisting of lyrics and chord shorthand only are common among musicians in the rock, pop and Country music sphere. Lead sheets originated for reasons of copyright. In the 1920s, the only way to protect authorship of an unpublished song in the USA was to deposit a written copy with the Copyright Division of the Library of Congress in Washington. To protect the rights of songs recorded by early blues artists, musicians had to provide the Library of Congress with a transcription of the melody's most salient

features along with typewritten lyrics and basic elements of the song's accompaniment (Leib, 1981:56).⁷ Such a document was called a lead sheet, its function descriptive rather than prescriptive, not least because: [1] the most profitable popular music distribution commodity of the time was not the recording but three-stave sheet music in arrangement for voice and piano; [2] most big band musicians read their parts from staff notation provided by the arranger. However, guitarists and bass players of the thirties usually played from a mensurated sequence of chord names, i.e. from 'basic elements of the song's accompaniment' as written on a lead sheet. With the decline of big bands and the rise of smaller combos in postwar years, with the increasing popularity of the electric guitar as main chordal instrument in such combos, and with the shift from sheet music to records as primary music commodity, lead sheets ousted staff notation as the most important scribal aide-memoire for musicians in the popular sphere. Other reasons for the subsequent ubiquity of lead sheets are that: [1] their interpretation demands no more than rudimentary notational skills; [2] since they contain no more than the bare essentials of a song, an extensive repertoire can be easily maintained and transported to performance venues.

By LEAD SHEET CHORD SHORTHAND is meant: [1] symbols used on a *lead sheet* to represent, descriptively or prescriptively, the chords of a song or piece of music; [2] the widespread system according to which music practitioners most frequently denote chords.

Since there are probably as many variants of lead sheet chord shorthand in circulation as there are musical subcultures, it is impossible to provide a definitive overview of the system. Still, even though a few of these variants diverge from the codification practices described below, most variants follow by and large the principles expounded in this chapter. Table 16 (pp. 232-233) provides a

7. Among those artists were Sippie Wallace, Bertha 'Chippie' Hill and Eva Taylor. Among musicians providing those lead sheets were George Thomas, Richard M Jones and Clarence Williams. Thanks to Paul Oliver for this information (phone conversation, 2000).

selection of fifty tertial chords and their lead sheet symbols, all with the note c as root. Table 17 (p.233) shows how the shorthand translates into spoken English used by musicians.⁸

Lead sheet chord shorthand table: explanations

Table 16 (pp.232-233) charts fifty different chords based on the note c. Each chord is identified with: [1] its number in the chart so that it can be referred to concisely from the commentary following the tables; [2] the stack of thirds from which each chord derives its lead-sheet shorthand; [3] a valid way of spacing (voicing) each chord at the piano. The first section of the chart (p. 232) is presented in ascending order of the number of thirds supposedly contained in the chords: first simple triads, then seventh chords, ninths, elevenths and thirteenth. That part of the table is followed by a selection of added, suspended and inverted chords (p. 233).

Fig. 35. Symbols used in Table 16 (overleaf)

The diagram illustrates the construction of chords from stacked thirds. It features four staves:

- Stacked thirds (theoretical):** A single staff showing vertical stacks of notes in various intervals (thirds, fourths, fifths, sixths, sevenths, ninths, elevenths, thirteenths).
- R.H. (Right Hand):** A staff with a treble clef and a circled '8' below it, indicating an octave lower. It shows chord voicings for C major, C minor, and C7.
- Viable voicing on piano:** A staff with a bass clef showing the same chord voicings as the R.H. staff, but with the notes positioned as they would appear on a piano keyboard.
- L.H. (Left Hand):** A staff with a bass clef showing the same chord voicings as the Viable voicing staff.

 Annotations include:

- '98 ← chord n°s in table → 99' at the top, indicating the range of chords covered.
- '> = note omitted' with a symbol above the C major triad.
- 'C-10 ← alternative shorthand' pointing to a specific voicing.
- 'C11 ← Lead sheet chord shorthand → C+9' pointing to another voicing.
- 'enharmonic alternative' pointing to a different voicing of the same chord.

The top line in Table 16 (overleaf) is not for playing. As visualised in Fig-

ure 35, it just presents the stacking of thirds at the theoretical basis of each chord. The lower two staves, however, present a viable way of playing each chord on a piano keyboard. Please note that the little '8' under the treble clef of the piano part follows the practice of notation for guitarists and tenor vocalists. That means your right hand has to play everything one octave lower than written. The left hand part should be played as notated. Table 17 (p. 233) spells out the chord names in Table 16. That is followed (p. 234, ff.) by a detailed explanation of lead-sheet chord shorthand and its conventions. [Text continues on page 234 after Table 17]

8. For a short guide to the aesthetic identification of chords and for fuller structural description of common chords, see Table 15, (p.226,ff.).

Table 16: Lead sheet chord shorthand chart for C (1)⁹

The chart displays chord shorthand for C (1) across four sections: TRIADS (chords 1-4), SEVENTHS (chords 5-8), NINTHS (chords 9-17), and ELEVENTHS (chords 18-25). A final section, THIRTEENTHS (chords 26-32), is shown at the bottom. Each chord is represented by a treble clef staff with stacked thirds and a grand staff (treble and bass clefs) with a viable piano voicing. Chord symbols are placed below the grand staff.

Section	Chord	Symbol
TRIADS	1	C
	2	Cm
	3	C ⁺
	4	C ^o
SEVENTHS	5	C7
	6	Cm7
	7	C ^Δ 7
	8	Cm ^Δ 7
SEVENTHS	9	C7 ^{aug}
	10	C7 ⁺
	11	C7 ^{b5}
	12	Cm7 ^{b5}
	13	Cdim7
	14	Cdim
	15	C ⁹
16	Cm ⁹	
17	C ^Δ 9	
NINTHS	18	C ^Δ 9
	19	Cm ^Δ 9
	20	C ⁹ +
	21	C ⁹ b5
ELEVENTHS	22	C ⁹ b5
	23	C ¹¹
	24	Cm ¹¹
	25	C ¹¹ b5
	25	C ¹¹ b9b5
THIRTEENTHS	26	C ¹³
	27	C ¹³ -9
	28	C ¹³ -9
	29	C ¹³ +9
	30	C ¹³ +9
	31	C ¹³ +11
	32	C ^Δ 13+11

[Explanations and text continue on page 234 after Table 17]

9. For explanation of chords 45-50 (descending bass), see p. 241.

Table 16 (cont'd): *Lead sheet chord shorthand chart for C (2)*

Table 17: *Full names of most lead sheet chords in Table 16.*

<i>chord</i>	<i>chord n^o</i>	<i>as spoken in English</i>
C ⁺ or C ^{aug}	3	C plus, C augmented, C aug [o:g]
C ^o	4	C diminished triad
C7 C9 C11 C13	5, 13, 22, 26	C seven C nine C eleven C thirteen
C ^Δ Cmaj(7) C ^Δ 9	7, 15	C major seven C major nine
C7 ^b 5 or C7-5	10	C seven flat five, C seven minus five
C7 ^{aug} , C7 ⁺	9	C seven aug[mented], C seven plus
C9 ⁺ (C9 ^{aug}) C ⁺ 9	19 18	C nine plus (C nine aug[mented]), C plus nine
C13+11 (C11+13)	31	C thirteen plus eleven (C eleven plus thirteen)
Cm7 Cm9 Cm11	6, 14, 23	C minor seven C minor nine C minor eleven
Cm ^{maj} or Cm ^Δ 9	8, 16	C minor major seven, C minor major nine
Cm7 ^b 5 or C ^o or Cm7-5,	11	C minor seven flat five, C half diminished, C minor seven minus five,
C ^{dim} or C ^{dim} 7	12	C dim[inished] [dim], C diminished seventh
C6 Cm6	33, 34	C six, C add six, C added sixth C minor six, C minor add[ed] sixth
C ^{sus} (4) C ^{sus} 9	37, 39	C sus (four), C four suspension, C suspended fourth; C sus nine
Cadd9 Cmadd9	35, 36	C add nine, C minor add nine
C/3 or C/e	41	C major first inversion, C (with) third in bass, C (with) e bass, C first inversion

[1] Table 16 (pp. 232-233) contains one chord per ‘bar’. If two chords appear in the same ‘bar’ it’s because they’re one and the same chord. For example, C⁺⁹ (n^o 99 in Figure 35; or chords 12 and 18 on page 232), can be written in radically different ways depending on tonal context.

[2] Certain notes must, for reasons explained later, be omitted from certain chords, for example the major third (e~~4~~) in the C¹¹ chord shown as n^o 98 in Figure 35. Such obligatory omissions are indicated by an elongated X through the note in question.

[3] Sometimes the piano part in Table 16 misses out notes that appear in the stack-of-thirds row with no ‘obligatory omission’ line through them (e.g. both chords in Figure 35).

Basic rationale of lead sheet chord shorthand

Lead sheet chord shorthand has an *entirely tertial basis*. Since this system of abbreviation evolved during the heyday of tertial harmony in popular music, its simplest symbols denote common triads built on the designated note (e.g. ‘C’ for a C major common triad). Moreover, characters placed after the triad name tend merely to qualify that tertial triad, either in terms of notes added to it or by denoting chromatic alteration of any degree within the chord except for the root and its third. Similarly, the odd-number integers seen most frequently after the triad symbol (7, 9, 11, 13) represent pitches stacked in thirds above the two thirds already contained within the triad (1-3, 3-5) on which a more complex chord is based (e.g. C⁹ containing b^b and d – flat seventh and major ninth – in addition to c-e-g). The shorthand system also assumes that root and bass note are the same. Developed in style-specific contexts, lead sheet chord shorthand allows for the concise representation of chords in many types of popular music, for example jazz standards, chanson, *Schlager* and many types of pop, rock and Country music. The system is, however, cumbersome and in need of radical reform when it comes to codifying inversions and to non-tertial harmony (see Chapter 10).

Symbol components

Lead sheet chord symbols (see Table 18, below) are built from the following components placed in the following order: [1] note name of the chord’s root, present in every symbol; [2] triad type, if not major; [3] type of seventh, if any; [4] ninths, elevenths and thirteenth, if any, with or without alteration; [5] altered fifth, if any; [6] added notes outside the tertial stack, or omitted notes and suspensions, if any; [7] inversions, if any. Since components [2] through [7] are only included when necessary, chord symbols range from very simple (e.g. C, Cm, C7) to quite complex (e.g. F#m6add9, Bb-13+9). Table 18 summarises the order of presentation for symbols most commonly used in connection with tertial chords containing neither added notes, nor suspensions nor inversions.

Table 18: *Normal order of components in lead-sheet chord shorthand*

1: root note name	A, B \flat , B, C, C \sharp /D \flat , D, D \sharp /E \flat , E, F, F \sharp /G \flat , G, G \sharp /A \flat				
chord/interval type	perfect	major	minor	augmented	diminished
2: <i>triad</i> type		[omit]	m (=min/mi)	aug <i>or</i> +(5)	^o [unusual]
3: type of <i>seventh</i>		maj(7) <i>or</i> Δ	7		dim(7) <i>or</i> o(7)
4a: <i>thirteenth</i>		13	-13		
b: <i>eleventh</i>	11			+11	
c: <i>ninth</i>		9	-9	+9	
5: <i>fifth</i>				+ <i>or</i> aug	-5 <i>or</i> \flat 5

Note name of the chord’s root

Note names may be in English, as in the top row of Table 18, or are written according to Germanic or Latin language conventions.¹⁰ English root note names are always in upper-case.

10. German note names are the same as in English except: [1] B \sharp is called *H*, [2] B \flat is called *B*, [3] F \sharp , C \sharp etc. are called *Fis*, *Cis*, etc., and [4] E \flat , A \flat , D \flat are called *Es*, *As* and *Des*. C D E F G A and B are called *do ré mi fa sol la si* in French (a Latin language), F \sharp is *fa \sharp* (*fa dièse*) and B \flat is *sib* (*si bémol*), etc.

Tertial triad type

No extra symbol is necessary for standard major triads: just ‘C’ on its own is always a C major common triad. The qualifier ‘MAJOR’ applies exclusively to sevenths, never to thirds (see p. 236). On the other hand, ‘MINOR’ (‘m’) applies to the third and to no other note in the chord. Chords built as or on a common minor triad must include the triad type qualifier ‘m’ (or ‘mi’ or ‘min’), always lower-case, immediately after the chord root’s note name. For example, ‘Cm’ means a C minor common triad, i.e. c-e \flat -g.¹¹

Augmented triads consist of two superimposed major thirds (e.g. c-e-g \sharp), diminished triads of two superimposed minor thirds (e.g. c-e \flat -g \flat). The adjectives *augmented* and *diminished* qualify in this case alteration of scale degree 5. Augmented fifths are usually indicated by a ‘+’, or by ‘aug’ (e.g. ‘C⁺’, or ‘C^{aug}’). While the diminished triad is uncommon on its own, the augmented triad (C⁺, B \flat ⁺, etc.) occurs quite frequently in popular music.

To avoid linguistic incongruities like ‘Amadd9’ in chord shorthand — there’s nothing mad about it — it’s preferable to write root name and triad type in normal typeface, subsequent symbols in a smaller typeface and/or as superscript, for example ‘Am^{maj7}’ or ‘Am^{add9}’.¹²

Type of seventh

Since, in the often jazz-related styles for which lead sheet symbols were originally developed, the minor (flat) seventh (e.g. b \flat in relation to C) is more common than the key-specific major seventh (e.g. b \natural in relation to C), and since the qualifier ‘minor’ is applied exclusively to the *third* in tertial triads, a common major triad with an added MINOR SEVENTH requires no other qualification than the numeral 7 (Table 16: 5): FLAT SEVEN IS DEFAULT SEVENTH in the same way as default triads feature major thirds. On the other hand, tertial chords containing a key-specific MAJOR SEVENTH need to be flagged with a maj or Δ (Table 16: 7). Since maj and Δ are reserved as QUALIFIERS OF THE SEVENTH and of no other scale degree, the ‘7’

11. For other minor triad symbols, see ‘Flat, sharp, plus and minus’ on page 242.

12. Free lead sheet shorthand font downloadable at tagg.org/zmisc/FontKeys.html.

may be omitted in conjunction with these symbols (e.g. Cmaj or C^Δ = Cmaj7). However, the simple '7' is always present to denote the default tetrad of the seventh whose seventh degree is always flat or minor, see Table 16: 5-12).

Seventh chords containing an AUGMENTED FIFTH indicate such alteration by 7⁺ or 7^{aug} (Table 16: 9). DIMINISHED FIFTHS in seventh chords containing a major third appear as 7⁻⁵ ('seven minus five') or 7^{b5} ('seven flat five', see Table 16: 10). Seventh chords containing minor third, diminished fifth and flat seventh — m7^{b5}, a very common chord in euroclassical and jazz-related styles—, are usually abbreviated m7^{b5} or m7⁻⁵, or sometimes just ø ('minor seven flat five' or 'half diminished', Table 16: 11). The dim chord constitutes a special case, containing both diminished seventh and fifth, and is most frequently indicated by dim placed straight after the root note name, sometimes by dim7 ('diminished seventh' or just dim; Table 16, chord no. 12).

Ninths, elevenths, thirteenths

Chords involving ninths, elevenths and thirteenths are assumed to include, at least theoretically, some kind of tertial triad and some kind of seventh (p.232: 13-32). Chords containing elevenths presuppose the presence of a ninth, and thirteenth chords the presence of an eleventh as well as a ninth, all in addition to a seventh and the major or minor triad of the root note. To save space, shorthand denoting all such chords is usually presented in descending order of intervals requiring qualification — thirteenths, elevenths, ninths, fifths — once the root note name, the minor triad marker (if necessary) and the major seventh symbol (if necessary) have been included (Table 16: 17-32). The only exception to this practice is the chord containing major thirteenth and augmented eleventh (13+11) which is sometimes referred to in reverse order as 11+13 (p.232: 31-32). Shorthand for chords of the thirteenth, eleventh and ninth include no mention of the eleventh, ninth or seventh below them, unless any of those degrees deviate from their default values (perfect eleventh, major ninth, minor seventh). For example, the '11' in 'C¹¹' assumes the presence of the default ninth and flat sev-

enth (d and bb), whereas the '9' in C⁺¹¹⁺⁹ is included on account of its alteration from d to d#/e♭.

Certain notes are often omitted from ninth, eleventh and thirteenth chords. While most of the omissions are preferential, one is mandatory: removing the major third from a 'major' eleven chord because of an internal minor-ninth dissonance created between the major third lower in the chord and the eleventh usually at the top, for example the e♭₃ against the f₄ in C¹¹ (see chord 98 in ex.35, p. 231, n^o 22 in Table 16, p. 232).¹³ Other omissions relate largely to register. For example, with an accompanimental register in the middle of the piano keyboard and with bass notes usually between one and two octaves lower, sounding the fifth in chords of the ninth and thirteenth can often sound 'muddy'. It is for this reason that fifths are omitted in chords 17, 18 and 26-31 on page 232.

Altered fifths

Although simple augmented and diminished triads are encoded + or aug and dim or ° respectively, the symbol for altered fifths (+ and -5 or b5) in chords of the seventh, ninth, eleventh and thirteenth is *always placed last* after all other relevant information (e.g. C7^{b5}, Cm7^{b5}, C7⁺, etc; see Table 16, chords 9-12, 19-21, page 232).

Additional symbols

Omitted notes

The more notes a chord theoretically contains, the more difficult it becomes to space those notes satisfactorily on the keyboard or guitar. As we just saw with the 'eleven chord', the principle of tertial stacking even leads to unacceptable dissonance that can prove impossible to resolve without removing a note from the stack. Such removal also applies to any thirteenth chord whose theoretical ter-

13. The issue is not in fact the minor ninth as such (one octave plus a semitone) because the minor nine chord (C⁻⁹, no. 17 on p.232) is itself defined by the same interval. It is rather a question of how the dissonance is spaced and whether it is produced in relation to the root or to another note in the chord. In the C⁻⁹ on page 232 there are two octaves and a semitone between the root note c₂ and its minor ninth d♭₄.

tial stack contains an unaltered eleventh: that note is always left out of thirteenth chords based on the major triad (p. 232, chords 26-30). Similarly, the perfect fifth is often omitted from thirteenth chords as well as from certain ninth chords.¹⁴ All these omissions constitute standard practice and need not be indicated in lead sheet chords.

One chord which was often understood to require indication of note omission was the ‘bare’ fifth, often used as rock power chord and previously noted (in E) as ‘E no 3’ or ‘E omit G#’. A much less clumsy way of indicating open fifths is used in metal contexts where a simple ‘5’ suffices, e.g. ‘E5’ for the dyad e₁-b₂, ‘C5’ for c and g, ‘F5’ for f and c, etc. (see chords 1 and 2 in Figure 36, p. 240).

Added ninths and sixths

Added chords are those consisting of a simple triad to which another single note has been added without inclusion of intervening odd-number degrees that result from tertial stacking. For example, add⁹ and madd⁹ chords are triads to which the ninth has been added without including an intermediate seventh (p. 233, chords 35-36). Similarly, the two sixth chords (p. 233, chords 33-34) are qualifiable as added because they both consist of a triad to which a major sixth has been added without any intervening sevenths, ninths or elevenths making them into chords of the thirteenth. It should be remembered that the ‘m’ in ‘m⁶’ refers to the *minor* third, not to the *sixth* which is always major (e.g. Cm⁶ = c-eb-g-a₂; p.233, chord 34). Unlike added ninths, added sixth chords are rarely indicated with the prefix ‘add’ before the ‘6’.

14. In fact, the more notes a chord has to include, the more difficult it becomes to space its constituent notes in a convincing way and the more likely it is that pianists will skip a note whose presence is not essential to the sonic identity of the chord. Guitarists are probably less affected by the problem: not only is it impossible to play all seven notes of a thirteenth chord using a six-stringed instrument; it can also be hard to convincingly accommodate all five or six notes in some ninth and eleventh chords. Besides, since both guitarists and pianists playing in the styles in which these sorts of chord occur – bebop jazz, for example – rely on the bass player for most root notes and fifths, problems of spacing and internal dissonance decrease.

Suspended fourths and ninths

Suspensions are chords that should be resolved into a subsequent tertial consonance. The most common suspensions in popular music, **sus4** and **sus9**, both resolve to common major or minor triads, the fourth of **sus4** to a third, the ninth of **sus9** to the octave (e.g. the *f* in **C^{sus4}** to the *e* of **C** or the *e^b* of **C_m**, the *d* in **C^{sus9}** to the *c* of **C** or **C_m** (resolutions marked with arrows by chords 37-40 on page 233). The absence of any numeral after **sus** assumes that the suspension is on the fourth. Although **add9** chords (p.233: 35-36) and **sus9s** (39-40) may be identical as individual chords, **sus9** should typically resolve in the manner just described, while **add9** need not.

Even more important than the distinction between **add** and **sus** is the use of chords that, taken out of context, may look or sound like **sus4**, **sus9** or **add9** but which in quartal harmony are nothing of the sort. Chords 3-6 in Figure 36 are basic triads in quartal harmony and should be designated as suggested below, not according to the norms of tertially based lead-sheet chord shorthand. For example, chord 5, below, is a ‘C four’ (**C⁴**, *not* **C^{sus4}**) and chord 6 an ‘F two’ (**F₂**, *not* **F^{sus9}** or **F^{add9}**). ‘**G⁴**’, ‘**C⁴**’, ‘**F⁵**’, ‘**C⁵**’ and other conventions of quartal harmony are all explained in Chapter 10.

Fig. 36. Six basic quartal dyads and triads with abbreviations



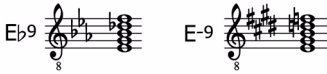
Inversions

Inversions of tertial chords are exemplified by chords 41-45 in Table 16 (p. 233). Every standard tertial chord contains a root note (‘1’), a third (‘3’) and a fifth (‘5’). If the *root note* is pitched *lowest* of those notes, like chord numbers 1-39 in Table 16, that chord is in **ROOT POSITION**. If the *third* is lowest, for example the *e[♯]* in a C major triad or the *e^b* in a C minor triad, the chord is said to be in **FIRST INVERSION** (e.g. chords 41-42 in Table 16: **C_{/3}** and **C_{m/3}**). If the *fifth* is lowest, the same chord is in **SECOND INVERSION**, like the *g[♯]* in chords

43-44: $C_{/5}$ and $Cm_{/5}$. Tertian seventh chords can be also be inverted on the *seventh*, in which case they are in THIRD INVERSION, for example chord 45 on page 233, a C^7 with b^b in the bass: $C_{/7}$ or $C^7_{/b^b}$.

In many types of popular music, inversions most often occur as either: [1] offbeat shuttle notes, usually the fifth, to the root note, for example the ‘pa’ in bass ‘oom-pa’ patterns; or [2] as part or whole of a pattern passing from one chord in root position to the next. Since these passing-note patterns, often involving a third or seventh, are created aurally, typically by the bass player, without reference to notation, no standard lead sheet codification exists for these practices. This lacuna in lead-sheet chord shorthand makes chord labelling difficult in euroclassical harmony contexts.

One way of indicating inversions is, as suggested above, to write the relevant bass note by interval number or note name following the rest of the chord’s symbols and a forward slash, for example $C^7_{/3}$ or $C^7_{/e}$, for a C seven chord with its third (e^{\natural}) in the bass. Inversions audible in pop recordings are often absent from published lead sheets and tend only to be indicated, if at all, when they occur on an important downbeat or its syncopated anticipation. The same goes for *chords that are held or repeated while bass notes change in conjunct motion*. For example, a bass line descending chromatically from Cm to A^b (chords 47-50 on page 233) would first pass through the chord labelled $Cm_{/\#7}$ or $Cm_{/b^{\natural}7}$. That indication may be accurate but the chord is unlikely to be called ‘C minor with a major seventh in the bass’ or ‘C minor over b natural’, much more likely to be thought of as a ‘another C minor’, because it’s simply part of the bass player’s job to take the music from Cm to A^b in an appropriate manner. In any case, you are unlikely to see | D $D_{/c^{\sharp}}$ | Bm $D_{/a}$ | G^{Δ} | as lead-sheet shorthand for the first five chords in Bach’s *Air* (1731), however accurate that may be. You’d more likely see just | D | Bm | G |. As explained in Chapter 11, musicians are expected to come up with the tonal details by ear and from experience.¹⁵

*Anomalies**Flat, sharp, plus and minus*Fig. 37. $E\flat^9$ and E^{-9} 

Sharp and flat signs (\sharp , \flat) are mainly reserved as accidentals qualifying the root note name. Figure 37 shows the ' \flat ' in ' $E\flat^9$ ' indicating that the root note e itself is flat ($E\flat$) and not its ninth ($f\sharp$ becoming $f\flat$). It is in this way possible to distinguish between an *E flat* nine chord, ($E\flat^9$: $e\flat$ - g - $b\flat$ - $d\flat$ - f), and an *E minus* nine chord (E^{-9} , i.e. E^7 with a flat ninth – e - $g\sharp$ - $[b]$ - d - $f\flat$). Otherwise the rule is that in any chord, *all altered degrees apart from 3 and 7* (pp.236-236) are indicated by '+' for a note raised by a semitone and by '-' or ' \flat ' for a note lowered by one semitone. $C^7\flat^5$ and C^7-5 are in other words the same chord. It should be noted that there are conflicting conventions concerning the use of these symbols. For example, the *Real Book* (see p. 498) uses minus signs instead of 'm' to denote minor triads, flat and sharp signs instead of '+' and '-' to indicate chromatic alteration.

Enharmonic spelling

Lead sheet chord shorthand tends to disregard the rules of enharmonic orthography.¹⁶ For example, although the \flat II→I cadence at the end of the *Girl from Ipanema* (Jobim, 1963) might appear as $A\flat^9\flat^5 \rightarrow G^{maj}7$ on a lead sheet in G, the same \flat II→I cadence would in $E\flat$ almost certainly be spelt $E^9\flat^5 \rightarrow E\flat^{maj}7$ rather than the enharmonically correct $F\flat^9\flat^5 \rightarrow E\flat^{\Delta}$. Similarly, distinction is rarely made between chords containing a falling minor tenth and those with a rising augmented ninth. The assumption seems to be that since both +9 and -10 refer to the same equal-tone pitch, the difference between them is immaterial. +9 ('plus nine') is much more com-

15. In fact, legal or illegal, on paper or the internet, publications of sheet music and of 'lyrics with guitar chords' are notorious for omitting chordal detail intrinsic to the sound of the song in question. For example, in the (legal) Warner sheet music version of Lionel Richie's *Hello* (1985) not a single A^{madd9} appears as either notes or among the 'guitar chords', even though that chord dominates the song's verses.

16. For more about *enharmonics* see p. 485, ff.

monly used than -10 ('minus ten'), even if the latter is more often enharmonically correct.

Non-tertial chords

Since non-tertial chords do not derive from stacked thirds, they are not translatable into lead sheet shorthand. Apart from open fifths, already mentioned, there are problems in encoding harmonies used in some types of jazz, as well as in some types of folk music and avant-garde rock.

The perverse habit of calling unsuspending quartal chords 'suspended' has already been mentioned (p. 240) and is raised again in the chapter on quartal harmony (p. 293).

Another anomaly is that musicians often conceptualise chords of the eleventh and thirteenth bitonally rather than in terms of stacked thirds, for example C^{13+11} as a D major triad on top of C7; or C^{11} as $Gm7$ or $Bb6$ with c in the bass. No satisfactory consensus exists as to how such chords might be more adequately encoded. One possible solution to part of the problem may be to refer to some of these chords in the way suggested in Table 36 (p. 240) and in the chapter on quartal harmony (p. 293, ff.).

Summary in 7 points

[1] CHORD means the simultaneous sounding of two or more differently named tones. DYADS contain two such tones, TRIADS three, TETRADS four and PENTADS five.

[2] The two most commonly used systems of chord designation are ROMAN NUMERALS and LEAD-SHEET CHORD SHORTHAND.

[3] ROMAN NUMERAL designation is RELATIVE in that it indicates the scale degree, in any key, on which a chord is based (e.g. a C major common triad is I in the key of C but $bIII$ in A). LEAD-SHEET CHORD SHORTHAND is ABSOLUTE (C can only be C).

[4] ROMAN-NUMERALS are mainly used to designate TERTIAL chords. LEAD-SHEET chord shorthand is ENTIRELY TERTIAL.

[5] There are four types of TERTIAL TRIAD: major, minor, augmented and diminished.

[6] Lead sheet chord symbols are built from the following components placed in the following order:

- note name of the chord's root, e.g. C;
- triad type, if not major, e.g. Cm, C⁺;
- type of seventh, if any, e.g. C7, C^Δ, Cm7, Cm^Δ7;
- ninths, elevenths and thirteenth, e.g. C⁻⁹, Cm^Δ9;
- altered fifth, if any, e.g. Cm7^b5;
- added notes outside the tertial stack, or omitted notes and suspensions, if any, e.g. Cm6, C7^{SUS}4;
- inversions, if any, e.g. C₃, C_e.

[7] LEAD-SHEET CHORD SHORTHAND *cannot* be usefully applied in its current state to quartal harmony.

8. ‘Classical’ harmony

Intro

More words have probably been written about harmony, more hours devoted to its teaching and learning than to any other aspect of tonality.¹ An impressive arsenal of terms has evolved over the last 200 years in efforts to put the chordal practices of the euroclassical and jazz canons into theoretical systems that are supposed to make sense to students who can then hopefully make informed choices about what they want to embrace or reject in their own music making. The sheer volume of that body of knowledge is daunting² and begs the question as to why so much of this book is apparently devoted to the same topic.

The main problem is that harmony is one of the most established subjects in seats of musical learning that aren’t exactly famed for serious interest in the everyday tonality of a popular majority whose musical fare is not necessarily compatible with what is normally taught under the heading ‘harmony’. The repertoire restriction resulting from that lack of interest is certainly understandable in conventional teaching situations because ‘everyday tonality’ involves a virtually boundless mass (and mess) of musics in a state of flux incompatible with a régime of ‘robust’ course planning and curriculum regulation. Under such conditions it’s much easier to stick to finished chapters of music history — the Baroque and its figured basses, Viennese classicism and its sonata form, bebop jazz and its tritone substitutions, etc. — than to flounder in the largely uncharted theoretical waters of a wide variety of popular musics.

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1. A web search for |harmony “music theory”| produced 30 million hits [140506].
 2. Careful judgement is needed when deciding what to include and exclude in an overview of everyday tonality. I have, for example, excluded all reference to Schenkerian theory which can be illuminating for understanding harmonic principles in a classical symphony or string quartet but which are unsatisfactory and counterproductive when dealing with songs that contain three or four chords and/or no unequivocal tonic.

My point here is that there’s *no* point in thinking about, say, *La Bamba* in Schenkerian terms, or about ‘perfect cadences’ in aeolian or mixolydian chord progressions, or about ‘suspensions’ in the quartal harmony of TV jingles or folk rock (not to mention Bartók). None of those phenomena of everyday tonality can be understood using the toolkit of conventional harmony courses and nothing else. And that’s why, in brief, Chapter 9, on non-classical tertial harmony, and Chapter 10, on quartal harmony, are necessary.

This chapter on ‘classical’ harmony is also necessary, even if there’s already so much about it ‘out there’ because (three reasons): [1] ‘Classical harmony’, in the sense explained shortly (p. 249, ff.), is a widely used tonal idiom in everyday tonality; [2] It’s a very particular phenomenon of particular interest and influence that needs to be appreciated as *a specific tonal idiom in relation to others*; [3] It’s difficult to explain the specifics of non-classical tertial harmony (Chapter 9) and quartal harmony (Chapter 10) without comparing them to ‘classical’ harmony.

After a short definition and history of the word ‘harmony’, this chapter continues with an explanation of the term ‘classical harmony’ (p. 249, ff.). That section also defines ‘tertial’ and sorts out conventional music theory’s confusion about triads and thirds. The importance of syntax, narrative, linear ‘function’, voice leading, the ionian mode, modulation and tonal directionality are then set out as central characteristics of the idiom (p. 252, ff.). Then comes a longer section underlining the importance of the key clock or circle of fifths and of cadences in creating a sense of tonal direction (p. 255, ff.). After a short account of the partial dissolution of classical harmony, the chapter’s last few pages (p. 267, ff.) are devoted to a discussion of classical harmony in popular music. As usual, the chapter ends with a brief summary of its main points.

History and definitions

HARMONY seems, at least in Western musical circles, to be understood in three ways. [1] In general it denotes certain aspects of tonal polyphony, in particular those relating to the simultaneous sounding of several tones to produce chords and chord sequences. [2] *Harmony* refers to the chordal and accompanimental rather than melodic or strictly contrapuntal aspects of music, as in statements like ‘the harmonies under that tune are very simple’ or ‘this melody is difficult to harmonise’. [3] It also denotes the theoretical systematisation of [1] and [2], as in the statement ‘we all studied harmony and counterpoint at university’.

From the Ancient Greek word *ἁρμονία*, meaning a joining, marriage or arrangement, *harmonía*, in both Greek and Latin, came to mean agreement, concord and, in music, whatever sounded good together. In medieval Europe *harmony* initially meant the simultaneous sounding of two notes only (dyads), in much the same way as a backing vocalist singing in parallel thirds with the main tune is said to be ‘singing harmonies’. European theorists of the Renaissance extended the notion of harmony to the simultaneous sounding of three notes, thus accommodating the ‘common triad’, with its third as well as fifth.³ Since then the teaching of harmony has largely concentrated on the chordal practices of music in the Central European tradition of the eighteenth and nineteenth centuries, i.e. on euroclassical music and with popular music styles conceived in that tonal tradition.⁴

More recently the notion of harmony has been popularly applied to any music that sounds in any way chordal to the modern Western ear, for example, the vocal polyphony of certain African and Eastern European traditions, or the polyphonic instrumental practices of some Central and South-East Asian music cultures, even though chords and Western harmony may be neither intended nor

3. See ‘Triads and tertial harmony’ on page 249; ‘Tertial triads’ on page 220, ff.;

4. See ‘Classical harmony’ on page 249, ff; ‘Classical harmony in popular music’ on page 267, ff.

heard by members of the musical community in question. Moreover, whereas popular English-language parlance may use the word *harmony* to describe things like a melody plus drone, or two voices singing in parallel homophony, conventional musicology tends to reserve the word for chordal practices relating to the euroclassical repertoire. However, since the tonal idioms of everyday life encompass a wider range of polyphonic practices than those conventionally covered by Western music scholarship, it is appropriate to qualify *any type of tonal polyphony* as harmony. This wider meaning of the term lets us consider a variety of harmonic practices and thus to treat harmonic idiom as one important set of traits distinguishing one sort of music from another.

One central problem facing anyone wanting to understand the variety of harmonic idioms heard on a daily basis is that some idioms are clearly codified in music teaching programmes and that others are not. Since most Western writing on harmony deals with only one or two of those idioms — notably classical harmony and jazz harmony —, cardinal problems arise when terms developed to denote specific features of central importance to those idioms are applied to other types of tonal polyphony in which those same features are absent or irrelevant. Reciprocally, those ‘other’ tonal idioms can exhibit important features that may be equally alien to the traditions on which the established codification of Western music theory is based. The trouble is that, for understandable reasons, most familiar Western terms denoting musical structure emanate from euroclassical and jazz academies, and that terms specific to other traditions are either unfamiliar in the West, or uncoded, or chaotic, or even non-existent.⁵

To tackle this problem, I’ll suggest some terms and models designed to redress the terminological imbalance just mentioned, but it’s best to begin with a theory of euroclassical harmony for the following four reasons. [1] It already has a codified body of theory

5. e.g. ‘phrygian dominant’ (irrelevant; p. 129); ‘Hijaz’ (unfamiliar; pp. 120-138); ‘Gypsy’ (chaotic; pp. 129, 135-138), hexatonic labels (unknown; p. 165, ff.).

and forms the harmonic basis of a substantial amount (but by no means all!) of ‘everyday tonality’. [2] It can serve as a familiar starting point for many music students. [3] Its unique tonal idiom has been globally influential and needs clarification allowing us to make viable comparisons with other idioms. [4] Its terminology needs discussion so that useful concepts can be retrieved and problematic notions discarded in a serious account of other tonalities.

Classical harmony

Before getting down to the nuts and bolts of actual harmony, two conceptual areas are in particular need of clarification: [1] CLASSICAL HARMONY, [2] TRIADS and TERTIAL HARMONY.

I’m using the expression CLASSICAL HARMONY in this book because it denotes the most common practices of tonal polyphony found in the globally influential body of euroclassical music of the eighteenth and nineteenth centuries. Now, such harmony is also variously referred to as ‘triadic’, ‘diatonic’, ‘functional’, ‘tonal’, etc., but these qualifiers are all misleading since they can each be applied to harmonic practices diverging significantly from those of the euroclassical repertoire, its immediate precursors and successors. For example, *all* harmony using three-note chords is by definition triadic. It’s also diatonic if, as is often the case, its tonal material can be derived from a heptatonic mode containing two scalar steps of a semitone and five of a whole tone. Moreover, all harmonic idioms are by definition tonal and none can ever be devoid of function. In short, although many popular music styles throughout the world may follow the basic harmonic principles of the euroclassical tradition, ‘classical harmony’ is probably the least erratic way of referring to those principles.⁶

Triads and tertial harmony

Due to the importance of harmonic narrative in euroclassical music, harmonic theory has been largely dominated by terms suited

6. Other classical musics (e.g. Tunisian nouba, Indian rāga) are not chordal.

to the description of that particular type of polyphonic dynamic.⁷ Similarly, terms applicable to any type of tonal polyphony in more than two parts/voices (e.g. ‘triad’) have become so fixated on phenomena peculiar to classical harmony and to its direct successors that they require redefinition when other harmonic idioms are discussed. Also, a handful of newer concepts have had to be included in the arsenal to denote phenomena for which harmonic theory previously had either an inadequate name or no name at all. One such term is *quartal harmony* (Chapter 10), so called because, from the viewpoint of euroclassical music theory, its most distinctive trait appears to be chords built on the stacking of fourths rather than of thirds. In fact the stacking of thirds seems to have needed no qualification as long as it was considered the norm from which all other practices were seen and heard to diverge; but such a view is untenable when discussing the variety of harmonic idioms outside the euroclassical music tradition and a general structural descriptor for harmony based on thirds becomes essential. Therefore, *if harmony based on stacked fourths is called QUARTAL, harmony characterised by the stacking of thirds will be called TERTIAL* (Fig. 38, p. 251).

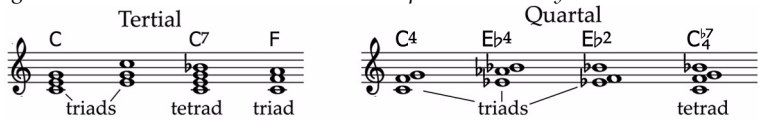
The historical legacy of European classical music theory is so strong in so many institutions of musical learning that such a common phenomenon as the triad, which also occurs in other harmonic idioms, is so named as if no triads occurred in, say, Appalachian banjo playing or in bimodal *son*.⁸ The rather obvious point is that if *dyad* denotes a chord consisting of two differently named tones, then *triad* means any chord containing three such notes, *tetrad* four, *pentad* five, and so on. However, as the expression *common triad* suggests, triads built on the superimposition of two adjoining thirds are so common in classical harmony that *triadic* has, in conventional Western music theory, come to confusingly qualify not chords containing three different notes — triads —

7. An example of incongruity arising from that domination is the use of ‘suspended fourth’ in reference to quartal harmony.

8. See, for example, Clarence Ashley (p. 335), Carlos Puebla (p. 438).

but chords built on the stacking of thirds. That is illogical, erratic and misleading. Therefore, when considering music in several harmonic idioms, including those associated with euroclassical tradition, it is *vital to distinguish between TRIAD and THIRD*, just as we distinguish between ‘dyad’ and ‘second’, or between ‘tetrad’ and ‘fourth’. That’s why *chords based on STACKED THIRDS*, be they triads, tetrads or pentads, *will be called TERTIAL*, and why TRIAD *will mean any chord, tertial or not, containing three differently named tones*.

Fig. 38. Triads and tetrads in tertial and quartal harmony



The tonal polyphony of euroclassical music is often regarded as having developed into a form which by around 1700 crystallised into an established set of practices that were codified after the event to become part of the ‘theory’ taught in seats of musical learning. Its establishment is associated with the transition from contrapuntal to more homophonic types of tonal polyphony in Central Europe, and with the adoption of the melody-accompaniment dualism as a basic compositional device. It’s a set of practices in which harmony is generally associated with instrumental or vocal accompaniment to a foreground melody, as is evident in expressions like ‘background harmony’, ‘backing vocals’, ‘underlying chords’, etc. Practically all euroclassical music uses harmonic practices which also form the basis of tonal polyphony in such common types of popular music as operetta, parlour song, music hall, waltzes, marches, hymns, community songs, national anthems, romantic ballads, *Schlager*, evergreens, jazz standards, swing, bebop, etc. This broad tradition of tertial harmony also pervades some styles of Country music and film music. Since this type of harmony, which, for reasons given on page 249, I’m calling *classical*, has exerted a strong global influence on everyday music making over the past two hundred years, its basic rationale will need some explanation.

Syntax, narrative, and linear ‘function’

Classical harmony is generally thought to encompass the sequential (horizontal, linear) as well as simultaneous (vertical) aspects of chords. It is in other words not just a matter of instantaneous sonority or of short, repeated chord sequences. On the contrary, one of its most salient features is the implication of tonal *direction* of notes within chords (Fig. 39, 40, p. 253), such horizontal linearity being instrumental in elemental processes of *musical narrative* (opening, continuation, change, return, closure, etc.) in the euro-classical repertoire. The importance of these syntactic and diatactical functions in the tradition led influential musicologists to qualify its harmony as ‘functional’ (*Funktionsharmonik*). Although ‘functional’ is a patent misnomer in that it erroneously implies that all other harmonic practices are devoid of function, its insistence on *syntactic function* underlines important differences of expression and narrative organisation between European classical harmony and other types of tonal polyphony. How does it work?

Voice leading, the ionian mode, modulation and directionality

In conventional European music theory a harmonic dissonance is in crude terms any chord that isn’t a common triad containing a root note, a major or minor third and a perfect fifth. In classical harmony, dissonances are usually prepared as suspensions (notes suspended or held over from a previous chord) and resolved on to consonances (e.g. $C^{sus4} \rightarrow C$ or $\rightarrow Cm$, as in Figure 39b), while closure is almost always effectuated by the *perfect cadence* $V \rightarrow I$ (e.g. $G^7 \rightarrow C$ in C). In these basic chord progressions the concept of *voice leading* is paramount in that the perfect fourth in relation to the keynote (e.g. the f of G^7 in C) usually descends to the third ($e \downarrow$ in C; Fig. 39) and the major seventh (e.g. the b \natural of the G or G^7 chord in C) usually ascends to the keynote ($b \uparrow \rightarrow c$; Fig. 39). This voice-leading behaviour is not arbitrary: it derives from the fact that the most popular array of notes within an octave during the rise and hegemony of the bourgeoisie in Europe was the ionian mode (the ‘major scale’, e.g. C to C on the white notes of the piano).

Fig. 39. *Leading notes and voice leading in C*

The *ionian* is the only heptatonic diatonic mode to feature at the same time: [1] major triads on all perfect intervals of the scale (tonic, fourth and fifth – I, IV, V – e.g. C, F and G in C major, see Table 19, p. 263); [2] a dominant seventh tetrad, containing a tritone, on the fifth degree (e.g. G7, containing $f\sharp$ and $b\flat$, still in C); [3] semitone intervals, one ascending and one descending, which adjoin two of the tonic tertial triad’s three constituent notes, i.e. leading note to tonic ($\Delta\hat{7}\nearrow\hat{8}$, or $b\flat\nearrow C$ in C) and subdominant to mediant ($\hat{4}\searrow\hat{3}$, or $f\searrow e$ in C). In simple terms, the *ionian* mode’s fourth ($\hat{4}$) can be heard as pulling down to the major third ($\Delta\hat{3}$) a semitone below, while its major seventh or leading note is so called because it is heard as leading up to the keynote one semitone above ($\Delta\hat{7}\nearrow\hat{8}$). This simple principle of voice leading endows the *ionian* mode with its unique qualities of tonal directionality. Unlike other modes, its two leading notes lead in two different directions to a consonance on a tonic major common triad.

Fig. 40. *Ionian mode: leading notes and directionality*

Although this *ionian*-mode directionality is that of the V→I cadence *anticlockwise* round the circle of fifths (e.g. G7→C, see p. 256, ff.), the *ionian* mode’s semitones can also go in the opposite direction because the third degree can rise as leading note to the fourth (e.g. e↗f in C, ex. 40a) while $\hat{1}$ (or $\hat{8}$) can descend to $\hat{7}$ (e.g. C↘b \flat , Fig. 40b), which also happens to be major third in a simple triad on V (G).⁹ In the first instance ($\hat{3}\nearrow\hat{4}$, Fig. 40a), harmonic direction goes

9. For explanation of roman numerals as chord shorthand, see p. 220, ff.

anticlockwise (flatwards) in that $\hat{3}$ ($e\flat$) in the tonic triad (C) acts as leading note to a triad on IV ($\hat{7}\hat{8}$ in F is $e\flat\flat f$; ex. 40c). In the final instance the tonic becomes a fourth descending to degree $\hat{3}$ of the chord on V ($\hat{4}\hat{3}$ in G is $c\flat b\flat$, ex. 40d).⁹ Clockwise direction round the circle of fifths (e.g. from C to G; see p. 256, ff.) is usually enhanced by raising the tonic’s fourth by one semitone (e.g. from f to $f\sharp$ in the D7 chord of ex. 40d), such alteration making for a clearer direction towards the dominant by introducing a second, rising semitone ($f\sharp\flat g$) to complement the falling semitone already mentioned ($c\flat b\flat$, ex. 40b, c). Raising the fourth by a semitone (e.g. f to $f\sharp$ in C) moves the tonic of the ionian mode to the dominant, from I to V (e.g. C→G), and constitutes a change of key or modulation so that what was V becomes a new I, especially if a *pivot chord* is included in the progression (the A minor chord marked \star in ex. 40d). Conversely, lowering the leading note by half a tone (e.g. from $b\flat$ to b as in the C7 chord of ex. 40c) will introduce a descending semitone ($b\flat\flat a\flat$) to underline the subdominantal direction of the semitone rising to the keynote of the new ionian mode (e.g. $e\flat\flat f$, ex. 40a, c). The introduction of accidentals providing ascending or descending leading notes for V-I cadences in other keys than the main tonic is an essential characteristic of classical ionian-mode harmony because such harmonic chromaticism is a precondition for the type of modulation without which the basic narrative of most euroclassical music would be unthinkable.

The notion of *narrative* linked to the modulatory potential of the ionian mode is important because it helps explain the overriding interest in ‘horizontal’ tonal development that euroclassical scholars have tended to show in the kind of *extensional* dynamic that characterises much of the relevant repertoire composed in the period between roughly 1730 and 1900.¹⁰ It is an interest that focusses on the extended development of ideas over time in a piece of music

10. *Extensional* and *intensional* are terms coined by Chester (1970). The period 1730 to 1900 covers work by composers like Haydn, Mozart, Beethoven and Brahms. *Extensional* and *intensional* are also discussed on p.356, ff.

(diataxis), rather than on the more ‘vertical’ or *intensional* dynamic of simultaneously sounding strands of music whose interest lies more in intricacies of timbre, articulation, voicing, as well as in registral, acoustic and metric or rhythmic placement in the extended present (synchrisis).¹¹

The key clock (circle of fifths)

The sort of harmonic directionality just described relies heavily on tonal relationships between a given keynote’s common triad (a.k.a. the *tonic triad*) – ‘I’ (‘one’) for short— and common triads constructed on scale degrees $\hat{4}$ and $\hat{5}$ – chords ‘IV’ and ‘V’ – of that same keynote’s major scale. In the key of C, for example, I means a C major triad while IV and V mean the major triads F and G respectively. As shown in Figure 41 (p.256), the keys of F (IV) and G major (V) are each one step away from the central key of C major (I): F is one step away anticlockwise – ‘flatwards’ – and G one step clockwise – ‘sharpwards’. The note **g** is located one fifth above or one fourth below **c** and the note **f** one fourth above or one fifth below **c**. In terms of classical harmony, the note **g** ($\hat{5}$ in C) is also called the *dominant* and the tertial tetrad on that note, **G7** (contains **g b d f**), is often referred to as the key of C’s *dominant seventh* chord (V7). Similarly, **f** ($\hat{4}$ in C major) is the same key’s *subdominant* note and a tertial triad based on that note – **F** (contains **f a c**) – is, still in terms of classical harmony, a subdominant triad (IV) in the key of C. The same relationships and terms apply for any of the twelve keys: **E \flat** is V or dominant and **D \flat** is IV or subdominant in **A \flat** (I); **B** is V or dominant and **A** is subdominant in the key of **E**, and so on.¹²

Figure 41 also shows that a minor key is linked to each major key – C major to A minor, E major to C \sharp minor, etc. The basic nature of this link relates to key signature.¹³ For example, neither C major nor A minor contain any sharps or flats in their shared key signa-

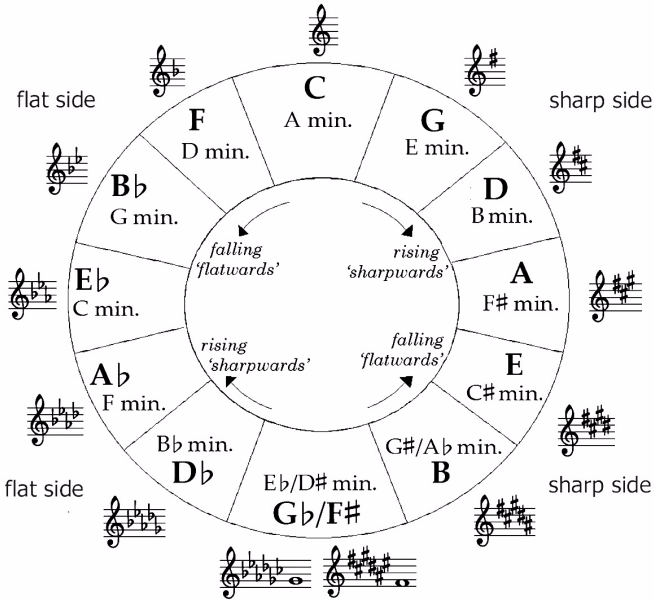
11. For explanation of the EXTENDED PRESENT see Glossary, p.488.

12. For explanation of roman-numeral chord shorthand, see p.220, ff.

13. *Key signature* means the number and position of sharps or flats needed to produce the ionian mode for a major key, aeolian for the relative minor.

ture, while E major and C# minor both take four sharps, Ab major and F minor four flats, and so on. The operative adjective in this pairing of one minor with one major key is *relative*, a word which in this context has a very specific meaning: if a piece in C major contains a section in A minor, that A minor section is said to be in the *relative minor* (relative to C, that is), and if a piece in F minor modulates to Ab major it is said to modulate to the *relative major*. Relative minor keys are placed three ‘hours’ earlier (flatwards, anticlockwise) on the key clock than the major key based on the same tonic (e.g. A major is at three o’clock but A minor at twelve) while relative major keys are situated three ‘hours’ later (sharpwards, clockwise) than their minor-key variant (e.g. F minor is at eight o’clock and F major at eleven).

Fig. 41. *The ‘key clock’ or circle of fifths*



The circle of fifths or key clock is a central concept of tonality in Western music theory. Its main functions are: [1] to visualise the system of keys and key signatures used in much music of the Western world; [2] to facilitate understanding of harmonic progressions

found in such music. The key clock is a tonal concept applied to harmony rather than to melody, not least because intervallic leaps of a fourth or fifth are more common in bass lines than in tunes. It is of particular use in the study of popular music, in most jazz idioms, as well as in other styles influenced by European traditions of tertial harmony. But why are fifths so central to questions of harmony and tonality?

It has been known since ancient times that an interval of twelve superimposed fifths is, with a minimal margin of error,¹⁴ equal to an interval of eight octaves, i.e. that the frequencies of pitches one fifth apart are separated by a factor of 12:8 or 3:2 ($\times 1.5$) when ascending and of 2:3 ($\times 0.67$) when descending. The concept also assumes that the interval of a fourth (4:3 or $\times 1.33$ up and 3:4 or $\times 0.75$ down) is complementary to that of the fifth within an octave, so that ascending a fourth and then descending an octave (e.g. $c_3 \nearrow f_3 \searrow f_2$) will land on the same pitch as just descending a fifth (e.g. $c_3 \searrow f_2$). Similarly, ascending a fifth and then descending an octave (e.g. $c_3 \nearrow g_3 \searrow g_2$) will end up on the same pitch as just descending a fourth (e.g. $c_3 \searrow g$). Hence, a series of alternately falling fifths and rising fourths, running *anticlockwise* round the complete circle of fifths visits every note in the twelve-tone chromatic scale within the range of a single octave (ex. 42, line 1). The same applies to a series of alternately rising fifths and falling fourths running clockwise except that you have to cover an eleventh before returning to C (Fig. 42, p. 258).

Although *clockwise* movement round the circle of fifths traces an arc of rising fifths or falling fourths, Figure 41 is never called a ‘circle of fourths’, probably because classical harmony’s overriding sense of direction towards closure relies on *anticlockwise* movement that virtually always culminates in a V-I *perfect cadence*. This statement may seem evident in practice to jazz and euroclassical musicians but that familiarity can cause problems when the V→I anticlockwise pull of classical harmony becomes so ingrained, so established and unquestioned, that the ability to correctly hear or

14. Margin of error: Pythagorean comma or 0.24% of one semitone per octave.

perform music based on other types of tonal polyphony can be seriously impaired. I’ll try to address that issue in the next chapter but it’s worth raising briefly here since the centrality of V-I cadences in classical harmony relates directly to the circle of fifths.¹⁵

Fig. 42. Circles c-c of (1) falling 5ths/rising 4ths; (2) rising 5ths/falling 4ths

falling fifths ↑ (rising 4ths)
 rising fifths ↓ (falling 4ths)

Cadential mini-excursion

Cadences are music’s most common type of episodic marker. In Chapter 5 (p. 189, ff.) we saw how different musical traditions signal *melodic* finality in different ways. This section deals with *harmonic* cadences in euroclassical and related styles.

There are four main cadence types in classical harmony, two of which take one step flatwards, the other two one step sharpwards round the key clock. Having repeatedly underlined the centrality of the flatwards V-I *perfect cadence* in classical harmony, I feel it needs no further introduction. That leaves the other three types to discuss. The two cadences which proceed clockwise are called the *half cadence* or *imperfect cadence* and the *plagal cadence*. The second anticlockwise type is usually called an *interrupted cadence*.

The *half cadence* is so called because it marks the harmonic change from I to V in extremely common harmonic schemes like I V V I (e.g. C G G C in C or A E E A in A over, say, four, eight or sixteen bars) in which V (the ‘dominant’) is obviously the halfway house, as illustrated in example 180.

15. For example, phrygian progressions are often heard and performed as if they were aeolian with a major third in the V chord (the classical ‘harmonic minor’); see next chapter, p.287. Jazz musicians tend to hear ii-V-I everywhere. This makes no sense in many tonal idioms: see, for example, section about Pink Floyd’s *Great Gig In The Sky*, pp. 378-380.

Ex. 180. *Halfimperfect cadence halfway*: ¡Y viva España (Vrethammar, 1973).


The musical score for Ex. 180 is in 4/4 time with a key signature of two sharps (F# and C#). It consists of two staves. The first staff shows a progression from I (A) to V (E) over an 8-bar period, with a 'half cadence' arrow pointing to the V chord. The second staff shows a progression from V (E) to I (A) over an 8-bar period, with a 'perfect cadence' arrow pointing to the I chord. The lyrics are: 'Så här nu låt-er min mu-sik: ¡Y Viv - a Esp - añ - a! Det här, ni, det är rom-ant - ik: ¡Y Viv - a Esp - añ - a!'.

A typical half cadence, like that in bars 3-4 of example 180, which proceeds clockwise from I to V is a *cadence* because it harmonically marks a resting point on a different chord to what came just before; and it is *half* because it marks that change halfway through a longer harmonic scheme, such as the eight-bar period of ex.180. It is an *imperfect* cadence because it has no finality in the tonal idiom it uses. By marking the end of a phrase or smaller part of a larger unit, at least half of which Western listeners know is still to come, it has the opposite effect of the perfect cadence V-I. Put simply, half or imperfect cadences (I-V) serve rather to open up harmonic processes and perfect cadences (V-I) to close them.¹⁶

Plagal cadences also run clockwise, but not from I to V: they take instead the single sharpwards step from IV to I. Since they end on the tonic, plagal cadences are associated with harmonic closure, as demonstrated by their use as the ‘Amen’ chord formula par excellence (e.g. D→A in A). That said, it is significant that medieval music theorists chose the Latin word for ‘oblique’ (*plagijs*, from Greek *πλάγιος* meaning sideways, askance, misleading) to distinguish certain modes, not chords, from their ‘authentic’ variants and it’s interesting to note how the same adjective connoting falsity came to qualify the chordal ‘Amen ending’ from IV to I (e.g. D→A). Plagal cadences may in other words be endings but European music theory clearly doesn’t consider them true, authentic, direct, complete, full, final or perfect. Those adjectives are of course reserved for the perfect cadence leading from V to I (e.g. E7→A).¹⁷

16. These observations are borne out by the French and Italian names for half cadence: *cadence suspendue* and *cadenza sospesa* literally mean that harmonic completion has been suspended, left hanging in the air.

Interrupted cadences do exactly what their name suggests: they interrupt a ‘normal’ V-I cadence by substituting I with a closely related chord, most frequently the common triad on degree 6 of the relevant key, $V \rightarrow vi$, for example $E7 \rightarrow F\#m$ in A, where $F\#m$ is relative minor; or, less commonly, $V \rightarrow bVI$ (e.g. $E7 \rightarrow F$ in A minor, where F is subdominant relative major). $V \rightarrow vi$ (or $\rightarrow VI$) is of course an excellent way of interrupting the inevitable because vi leads anti-clockwise round the circle of fifths to ii , which leads to V and, with the *final/full/perfect cadence*, back to I (in A: E to $F\#m$, then $F\#m \rightarrow Bm$ [or D] $\rightarrow E7 \rightarrow A$). It’s worth noting that the interrupted cadence is also called ‘deceptive’ (*trompeuse*), ‘avoided’ (*évitée*), a ‘false conclusion’ (*Trugschluss*) and a ‘trick’ (*inganno*).

If anything demonstrates the supposed normality of V-I closure in institutionally conventional notions of harmony it must surely be the distinction between qualifiers like, on the one hand, *half*, *incomplete*, *plagal/oblique*, *interrupted*, *deceptive* and *false* and, on the other, *perfect/full* (V-I). Yes, I’m making a plea here for harmonic cultural relativity; and, to state my case as clearly as possible in this mini-excursion, I’ve included example 181 as evidence that there need be nothing remotely interrupted, oblique, deceptive, false, unauthentic, incomplete, or imperfect about a final cadence landing on vi ($F\#$ minor), the relative minor triad of the song’s clear tonal centre (I is unmistakably A major). There’s even a *ritenuto* to underline finality: ♪ ♪. ♪ instead of the usual ♪ ♪ ♪ .¹⁸ To be blunt: classical cadence categories and assumptions about harmonic di-

17. Byzantine monks seem to have been the first to single out the supposedly derivative modes like the hypodorian and hypomixolydian *echoi*. Hucbald, in his *De Harmonica* (c.880), is apparently the first to have defined *plagalis* in reference to modes (Powers, 1995). Whatever the case, the notion of plagality has a very long history even if its usage and meaning have changed. In 2014, of course, very few people will link *plagal* with its etymological second-cousin *plagiarism* (both derive from *πλάγιος*) or with anything else askance, oblique, false or unauthentic.
18. *Um Um Um Um Um Um* was written by Curtis Mayfield and first recorded by Major Lance (1963). The verses are in A major as, indeed, is the first half of each chorus. The Lance original ends with a fade-out but the Fontana cover leaves not a shadow of doubt about the identity of the tune’s final chord.

rection may be fine for the musical-cultural practices on which such conceptualisation is based but it would be absurd to assume that those categories and concepts apply to *all* types of music circulating on an daily basis in the modern media.

Ex. 181. *Uninterrupted final cadence on vi/i: Um Um Um Um Um* (Wayne Fontana and the Mindbenders, 1964: end of final chorus).

The musical notation for Ex. 181 consists of two staves. The first staff is in treble clef, key signature of two sharps (F# and C#), and 4/4 time. It begins with a treble clef, a key signature of two sharps, and a 4/4 time signature. The melody is written in eighth notes and quarter notes. Above the notes are chord symbols: I, A, iv, ii, Bm, i, vi, F#m. Below the notes are the lyrics 'Um um um um um'. The second staff is in bass clef, key signature of two sharps, and 4/4 time. It begins with a bass clef, a key signature of two sharps, and a 4/4 time signature. The melody is written in eighth notes and quarter notes. Above the notes are chord symbols: I, A, iv, ii, Bm, i, vi, F#m. Below the notes are the lyrics 'Um um um um um'. The second staff includes a 'rit.' marking and ends with 'FINE'.

After that warning about harmonic cultural absolutism, it's safe to return to 'business as usual' with the key clock. It's also necessary because, as I've already mentioned, there's also plenty of classical harmony in the music we hear on a daily basis.

The key clock (reprise)

In the key clock diagram on page 256, keys and their signatures are arranged as the twelve hours of an analogue clock with C major and its relative A minor (no sharps and no flats) at twelve o'clock, and F#/G♭ major, with their relative D#/E♭ minor and with their six sharps or flats, appropriately at six. Moving clockwise, the number of sharps in each key signature increases (one for G major at one o'clock, two for D major at two, etc.) or the number of flats decreases (five for D♭ major at seven o'clock, four for A♭ major at eight, etc.). Since movement clockwise is by ascending fifths and since an increase in sharps or a decrease in flats implies upward movement, this tonal direction *sharpwards* (from I to V, e.g. C to G) can be referred to as *rising*, while anticlockwise tonal movement *flatwards* towards the subdominant (from V to I or from I to IV, e.g. from G to C or from C to F) can be referred to as *falling*.

*Circle-of-fifths progressions**Anticlockwise/flatwards*

Harmonic progressions round the key clock are common in many types of popular music (Table 19). Those running *anticlockwise* or *flatwards*, (‘falling’) are particularly common in styles using the tertial harmonic practices of jazz or euroclassical music. Two basic types of such progression exist (Fig. 43, p. 263): [1] *real* or *modulatory*; [2] *virtual* or *key-specific*. Both these types of anticlockwise progression involve the same final V→I cadence (e.g. G⁷→C) because all unaltered notes in the dominant seventh chord (V⁷, e.g. g b d f in G⁷) are contained in the major scale of the tonic (e.g. C major, containing c d e f g a b). However, as soon as an anticlockwise progression contains more than just V→I it will have to be either *real/modulatory*, e.g. VI⁷→II⁷→V⁷→I (A⁷→D⁷→G⁷→C in C, Fig. 43a), or *virtual/key-specific*, e.g. vi⁷→ii⁷→V⁷→I (Am⁷→Dm⁷→G⁷→C in C; Fig. 43b). Figure 43a shows a *real* circle of fifths because A⁷ (VI, the chord on the sixth degree) is the *real* dominant seventh of D (II, on the second degree) and D⁷ (II) the *real* dominant seventh of G (V). The progression can also be called *modulatory* because A⁷ and D⁷ both contain notes foreign to the destination key of C major (c[#] and f[#] respectively). On the other hand, the *virtual* circle-of-fifths progression (ex. 43b) can also be called *key-specific* because all notes in all chords belong to the same tonic key (e.g. C major). It can be called *virtual* because neither Am⁷ (vi⁷) nor Dm⁷ (ii⁷) are real dominant sevenths of subsequent chords in the progression.¹⁹

Table 19 (p. 263) shows that a certain predilection for real circles of fifths in US popular song from the 1910s and 1920s was superseded by preference for virtual variants in standards and evergreens of the thirties and forties. The virtual or key-specific circle-of-fifths is moreover a distinctive trait of the baroque style (Corelli, Vivaldi, etc.) and is also quite common in European popular song showing classical influences.

19. Chord shorthand is explained in the Chapter 7: roman numerals on p.220, ff., lead sheet chords on p.229, ff.

Fig. 43. (a) modulatory (‘real’) and (b) key-specific (‘virtual’) circle-of-fifths progressions in C (falling/anticlockwise)

(a) Real: A7 D7 G7 C
VI II V I

(b) Virtual: Am7 Dm7 G7 C
vi ii V I

Table 19. Examples of anticlockwise circle-of-fifth progressions in English-language popular song (Types: real, virtual, both [real and virtual])

Song	Type	Anti-clockwise (falling) chord progression
<i>Sweet Georgia Brown</i> (Pinkard 1925)	real	(B7) E7 E7 A7 A7 D7 D7 G (III)-VI-II-V-I in G
<i>The Charleston</i> (Mack, 1923)	real	[Bb] D7 G7 G7 C7 F7 Bb G7 C7 F7 III-VI-II-V-I in Bb
<i>Has Anybody Seen My Gal</i> (Henderson, 1925)	real	F A7 D7 D7 G7 C7 F D7 G7 C7 III-VI-II-V-I in F
<i>All The Things You Are</i> (Kern, 1939)	virtual	Fm7 Bbm7 Eb7 Ab ^Δ Db ^Δ • vi-ii-V-I-IV in Ab Cm7 Fm7 Bb7 Eb ^Δ Ab ^Δ • vi-ii-V-I-IV in Eb
<i>Blue Moon</i> (Rodgers, 1934)	virtual	♭ Eb Cm7 Fm7 Bb7 [♯] Eb (I)-vi-ii-V-I in Eb
<i>Jeepers Creepers</i> (Warren, 1938)	both	(a) Gm ⁹ C ⁹ F ^{Δ9} (b) Dm7 Gm7 C ⁹ F ⁶ Gm ⁹ C ⁹ (c) Am7 ^{b5} D ⁹ Gm7 C ⁹ F ⁶ (a) ii V I (b) vi ii V I ii V (c) iii VI ii V I, all in F
<i>Moonlight Serenade</i> (Miller, 1939)	both	Bm7 ^{b5} E-9 Am7 D-9 Gm7 C-9 F +iv-VII-iii-VI-ii-V-I in F
<i>Autumn Leaves</i> (Kosma, 1946)	virtual	Gm7 C7 F ^{Δ7} Bb ^{Δ7} E7 ^{b5} A7 Dm iv-VII-III-VI-ii-V-i in D min.
<i>Windmills of Your Mind</i> (Legrand 1968)	virtual	E7 Am D7 G ^{Δ7} C ^{Δ7} F ^{♯m7b5} B7 Em I-iv-VII-III-VI-ii-V-I in E min.
<i>Bluesette</i> (Thielemans, 1962)	virtual	[Bb] Am7 D7 Gm7 C7 F7 Bb7 Eb ii-iii-vi-ii-V-I-IV in Bb
<i>Yesterday</i> (Beatles, 1965a)	both	[F] Em7 A7 Dm Bb(Gm7) C7 F vii-III-VI-IV(ii)-V-I in F

Flatward key-clock progressions are, as shown in Table 19 and Figure 44 (p. 264), frequently constructed as chains of seventh chords (sometimes also ninths, elevenths or thirteenth). Figure 44 shows one way of playing such chains as key-specific circles in [1] C ma-

major, [2] D \flat major, [3] G \sharp minor — please add root note to each chord. To effectuate any complete key-specific circle of fifths, one step in the bass line has to be a diminished fifth. It’s between vii and IV in the major key, between ii and V in the harmonic minor, e.g. from F Δ 7 to Bm7 \flat 5 in C major or in A minor. Each of the remaining seven steps is by a falling perfect fifth or rising perfect fourth.²⁰

Fig. 44. *Seventh chords in key-specific (virtual) sequences flatward round key clock: (i) C major; (ii) D \flat major; (iii) G \sharp minor; root notes not shown*

(i) C major

(ii) D \flat major

(iii) G \sharp minor

Playing key-clock progressions like these demands a minimum of physical effort because: [1] stringed bass instruments are tuned in fourths, facilitating leaps of the fourth, fifth and octave; [2] fifths, fourths and octaves are easy to pitch on brass instruments playing a bass line; [3] the constituent notes of any two contiguous seventh chords in a key-clock progression are, with the exception of the root, either immediately adjacent or the same. This proximity of notes in consecutive chords makes matters easy for keyboard players and guitarists in terms of hand and finger positioning.

Clockwise/sharpwards: a provisional note

Clockwise (‘rising’) circle-of-fifths progressions occur quite often in pop and rock styles using certain types of non-ianian harmony, a matter explored more thoroughly in Chapter 13 (pp. 413-415, 426-432). For example, the mixolydian chord loop $\text{C}\flat\text{VII-IV-I}\curvearrowright$ runs clockwise, as do all progressions listed in Table 20.

20. Chord shorthand is explained in Chapter 7: roman numerals on p.220, ff., lead sheet chords on p.229, ff.

Table 20. Examples of clockwise circle-of-fifth progressions in English-language rock music

Artist: Song (year; location)	Progression
Kinks: <i>Dead End Street</i> (1966; verse)	C G Dm Am — III VII iv i in A minor
Rolling Stones: <i>Brown Sugar</i> (1971; end instrumental after hooks, ex. 182)	(D \flat)-A \flat E \flat -B \flat F-C (ex. 182182) (\flat II-) \flat VI \flat III- \flat VII IV-I in C
Rolling Stones: <i>Jumping Jack Flash</i> (1969a; at ‘It’s alright’.)	D A E B — \flat III \flat VII IV I in B
Jimi Hendrix: <i>Hey Joe</i> (1967a)	C G D A E — \flat VI \flat III \flat VII IV I in E
Irene Cara: <i>Flashdance</i> (1983; verse start)	B \flat F Cm Gm — \flat III \flat VII iv i in G minor

Ex. 182. Rolling Stones: *Brown Sugar* (1971). Clockwise circle-of-fifths progression through plagal ornamentation of aeolian cadence \flat VI- \flat VII-I.

Basic chords A \flat B \flat C
 plagalised triads A \flat D \flat A \flat E \flat B \flat F C F C

guitar
 bass (root) | \flat VI (\flat II- \flat VI) (\flat III- \flat VII) \flat VII I (IV-I)

We will return later to these sharpward circle-of-fifths progressions in rock music. Here we’ll just finish this basic account of classical harmony and of its uses in everyday music.

Partial dissolution of classical harmony

Historians of euroclassical music tend to agree that the harmonic idiom of influential composers in the latter part of the nineteenth century became increasingly chromatic. Wagner’s constant modulations in the prelude to *Tristan and Isolde* (1859) and their link with notions of the ‘incessant projection of... longing without satisfaction and without end’ are often cited as an early example of that trend (Newman, 1949). The same discourse about narrative in the euroclassical repertoire continues with the idea that, starting around 1910, exponents of twelve-tone composition like Schönberg no longer considered central tonal reference points (‘home keys’) as a valid principle for writing new tonal music. This meta-

narrative about dodecaphonic music contributed to a widening of the gap between popular and classical styles of music in the West. Jazz harmony also underwent a process of chromaticisation in the 1940s with bebop’s increasing use of chords containing two tritones, the rising augmented fourth ($\sharp 4$) or falling flat fifth ($\flat 5$) providing yet another leading note to tertial harmony’s ascending major seventh and descending fourth.²¹

There were, however, other euroclassical reactions to late Romantic chromaticism, tendencies that offered more listener-friendly solutions to the problem. Some of these alternatives are discussed under the heading ‘Euroclassical thirdlessness’ in Chapter 10. Debussy, for example, often used chords as sonorities in themselves without the constituent notes of each chord requiring voice leading into those of the next one, while music influenced by neo-classicism (e.g. Stravinsky, Hindemith) and by involvement in traditional music outside Central Europe (e.g. Bartók) led to harmonic idioms that abandoned the leading-note fixation of classical tertiality in favour of chords based on the fourth and fifth. Similar developments occurred later in some types of post-bop jazz, as well as in certain types of rock. In short, even though twelve-tone techniques were sometimes used for mystery or horror scenarios in film, it was the non-dodecaphonic alternatives to classical harmony, crumbling under the weight of its ongoing modulations and busily chromatic chord changes, that were to exert a strong influence on several types of postwar popular music.²²

21. See, for example, the $7^{\flat}5$ and $9^{\flat}5$ chords in Table 17, p. 233, ff.

22. See pp. 315-323 for alternatives offered by Debussy, Bartók, Stravinsky, Hindemith and Copland. For quartal harmony in jazz and rock, see pp. 323-334. See also p. 138, ff. for Bartók and ‘folk’ modes.

Classical harmony in popular music

Main characteristics

Tertial harmony of the type used in operetta, parlour song, marches, national anthems, musicals, in traditional church hymns (chorales), etc. largely follows euroclassical voice-leading norms: flat sevenths descend, sharp sevenths rise, voices may move in parallel thirds or sixths but not in parallel octaves or fifths. Dominantal modulation (changing key one step clockwise round the circle of fifths), V-I cadences and inversions of tertial triads and seventh chords are other common features in these types of popular music.

Ex. 183. Mendelssohn (1845): Oh! For the Wings of a Dove.

The musical score for 'Oh! For the Wings of a Dove' is presented in two staves. The top staff is the vocal line in treble clef, and the bottom staff is the piano accompaniment in bass clef. The key signature is one flat (E-flat major), and the time signature is 4/4. The vocal line features a melodic line with triplets and a final cadence. The piano accompaniment provides harmonic support with chords labeled I, V, and I in the first system, and F7/c and Bb in the second system. Arrows in the piano part indicate voice-leading: 'in Bb -> V' and 'in Eb -> II'.

Examples 183 (f) and 184 (p. 268), taken from two highly popular Victorian parlour songs, start by establishing the home key (tonic, I) by means of an ionian shuttle ($I \leftrightarrow V$, bars 1-2 $E\flat \leftrightarrow B\flat$ in ex. 183; bars 1-4 $F \leftrightarrow C$ in ex. 184). They then both modulate to the dominant. Mendelssohn (ex. 183) does so directly, using an F^7 in second inversion ($F^7/5$ in bar 4), while *Love's Sweet Song* (ex. 184, p. 268) sets up a circle-of-fifths progression using the A^7 chord (III) in bar 5 that of course proceeds to Dm (vi) in bar 6. That D minor chord then acts as pivot (it's both vi in F and ii in C) and produces the solid $ii \rightarrow V \rightarrow I$ cadence in C (bars 7-8).

Note also the frequency of dominant seventh chords containing the ionian mode's two leading notes a tritone apart ($\hat{4}, \hat{A}\hat{7}$) and how the major third in those chords ($\hat{A}\hat{7}$) ascends as leading note to the next chord's tonic, while the flat seventh ($\hat{4}$) descends to the next chord's major third (see leading-note arrows in examples 183-184).

Ex. 184. James L Molloy: *Love’s Old Sweet Song* (1882)

F C_g C F A7
p Just a song at twi - light when the lights are low And the flick - ring
 I V V I III
 (in C: VI-ii)

6 Dm G_b C F C_g
 shad - ows soft - ly come and go; *mf* Tho' the heart be wear - y
 (in F): → vi → II → V → I V
 (in C): ii → V → I

The traits just mentioned form the harmonic core of a global idiom of popular music which flourished during the nineteenth and first half of the twentieth century. Those traits can be found in popular tunes like *Adeste Fideles*, *La cucaracha*, *The Blue Danube*, *Milord*, *Where Have All the Flowers Gone?* and countless others.²³

Traits like [1] ionian-mode voice leading via the dominant seventh's minor seventh and major third, [2] dominantal modulation, [3] falling V-I directionality, [4] frequent chordal inversion have in fact become so indicative of euroclassical music that they can be inserted as *genre synecdoches* in a context of non-classical harmony (e.g. pop and rock) to connote HIGH ART rather than LOW-BROW ENTERTAINMENT, DEEP FEELINGS and the TRANSCENDENT rather than the SUPERFICIAL and EPHEMERAL (examples 185-187).

23. *Blue Danube Waltz*: J. Strauss (1867); *Milord*: Piaf (1959); *Where Have All The Flowers Gone?*: Seeger (1961). Among the 'countless others' are: *Le déserteur* (Vian), *Giài phông miền nam* (Huynh), *Jingle Bells* (Pierpoint), *L'hirondelle du faubourg* (Bénech/Dumont), the *Internationale* (Degeyter), *Liberty Bell* (Sousa), *Light Cavalry* (Suppé), the *Marseillaise* (Rouget De Lisle), *Onward Christian Soldiers* (Sullivan), *Sous le ciel de Paris* (Giraud), *The Star-Spangled Banner* (Smith, J.S.), *We Shall Overcome* (Baez), *When The Saints* (Barber, C.), *Workers of the World Awaken!* (Hill, J), plus numerous others, e.g. *Cielito Lindo*, *Happy Birthday*, *God Save The Queen*, most national anthems, etc.

Ex. 185. *Subdominant second inversion as second chord: outline keyboard arpeggiation.* (a) J S Bach: *Prelude in C major from Wohltemperiertes Klavier, I* (1722); (b) Elton John: *Your Song* (1970, transposed to C)²⁴

Chord symbols: C, F(6)/5, G(7)

(a)

(b)

Ex. 186. *Inversions through descending bass in major key:* (a) J S Bach: *Air from Orchestral Suite in D Major* (1731); (b) Procol Harum: *A Whiter Shade of Pale* (1967, transposed from C); (c) Morricone: ‘*Gabriel’s Oboe*’ (1986); (d) *bass line common to all.*

Chord symbols: D, D#7, Bm, Bm/b7, G

(a)

(b)

(c)

(d)

Ex. 187. *Altered supertonic seventh chord in third inversion:* (a) Mozart: *Ave verum corpus*, K618 (1791); (b) Procol Harum: *Homburg* (1967b); (c) Abba: *Waterloo* (1974b)

Chord symbols: D, E7/7

(a)

(b)

(c)

Together with dance styles like bossa nova, jazz has relied heavily on a sense of harmonic direction similar to that of the European classical tradition. Long and sometimes complex chord sequences, an increasing amount of chromaticism, and the use of modulation are all key factors in many types of jazz. The popularity of the thirty-two bar standard as basis for improvisation bears witness to

24. For connotations of ‘Ave Maria chords’ see Tagg & Clarida (2003:173-180).

the essential role of harmonic narrative in jazz. Put simply, no standard jazz performance will work if musicians do not know or cannot follow the chord changes.

Fig. 45. Possible renditions in C of VI-II-V-I sequence in main tertial idioms of jazz harmony

VI-II-V-I
jazz variants

(a) trad. jazz
(b) swing
 b1: ninths
 b2: chromatic
(c) bebop
 c1: with $b5s$
 c2: tritone substitution $b5s$

Figure 45 displays four musical examples (a, b1, b2, c1, c2) illustrating the VI-II-V-I sequence in C major, showing different jazz idioms and their chord progressions. Each example is presented in a grand staff (treble and bass clefs).

- (a) trad. jazz: A7, D7, G7, C
- (b1) swing: Am9, Dm9, G9, CA9
- (b2) swing chromatic: C#dim, Fm7b5, G+9+5, CA9add6
- (c1) bebop with $b5s$: A13b5, D+9b5, G-9b5, CA9add6
- (c2) bebop tritone substitution $b5s$: Eb+9b5, Ab13b5, Db9b5, C13+11

Jazz harmony can be divided into four main historical idioms: [1] *trad jazz*; [2] the *swing* era; [3] *bebop*; [4] *post-bop*. Except for [4], jazz harmony tends to follow the basic rules of euroclassical music: flat sevenths fall, sharp sevenths rise, accidentals are used for chromatic effect or for modulation, chord progressions are mostly falling, flatward (V-I), anticlockwise round the circle of fifths. *Trad jazz* harmony tends to use real circle-of-fifths progressions, adding sixths or sevenths to basic triads. *Swing* era harmony tends to favour virtual circle-of-fifths progressions with sixths, sevenths and ninths added to basic triads. *Bebop* harmony adds chords of the eleventh and thirteenth. It also uses the flat fifth as an extra leading note ($b\hat{5}\searrow\hat{4}$)²⁵ allowing for considerable chromatic alteration, most notably through *tritone substitution* (Fig. 45c). Basic differences between the four idioms are simplified in Figure 45 which shows varying treatment of the $\hookleftarrow VI-II-V-I \hookrightarrow$ vamp sequence.

25. For primarily melodic $b\hat{5}$ in jazz and rock, see pp. 162-163.

Summary in 6 points

The main characteristics of classical harmony, as found in hymns, national anthems and many types of popular song, as well as in most forms of jazz, can be summarised as follows.

[1] Chords are constructed by stacking superimposed thirds (tertial chord structure).

[2] Default mode is ionian, the only mode in which a tertial tetrad on any degree of the relevant heptatonic scale contains two leading notes in relation to the tonic triad (I); in the ionian mode that tetrad falls on scale degree 5 (V⁷) and is called a dominant seventh.

[3] Voice-leading (how individual notes in one chord link to individual notes in the following one) is important: flat sevenths descend, sharp sevenths rise, voices may move in parallel thirds or sixths but never in parallel octaves or fifths.

[4] Inversions of tertial triads and tetrads are quite common, as are conjunct bass lines.

[5] Initial outward harmonic movement (harmonic departure) tends to go sharpwards (clockwise) but the majority of chord changes proceed flatward (anticlockwise) round the key clock, ending with a V-I cadence ([vii→] iii→] vi→] ii or IV→] V→I) (harmonic return).

[6] Only the V-I cadence is considered full, complete or perfect; classical harmony's three other cadence types are called [1] 'half' or 'imperfect', [2] 'plagal' (= 'oblique') and [3] 'interrupted'/'false'/'deceptive'.

As already stated, there's still plenty of this type of harmony in what citizens of the Western world hear on a daily basis. But that everyday music also contains, as I've also suggested, plenty of harmony that works differently. Those differences are the subject of the next two chapters.

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9. *Non-classical tertial harmony*

Non-classical tertial: intro

The next two chapters deal with two types of non-classical harmony: [1] NON-CLASSICAL TERTIAL (this chapter) and [2] QUARTAL (Chapter 10). When trying to unravel how these types of harmony work it is in general counterproductive, if not downright misleading, to think in terms of interrupted and imperfect cadences, of dominants and subdominants, of $\Delta\hat{7}$ leading notes, of grand harmonic narrative, flatward directionality and the unstoppable current of euroclassical and jazz tonality sweeping us all to our inevitable date with a final V-I ‘perfect’ cadence. Even the routine task of identifying keynotes and root notes can be a futile exercise when dealing with music that seems to have either more than one or none in particular. To be blunt: it’s pointless trying to force the conceptual grid of conventional harmony lessons wholesale on to music that conventional harmony experts have between them spent countless lifetimes avoiding or trivialising.

Some of the issues just raised are examined more closely in Chapters 12, 13 and 14, while Chapter 11 (‘One-chord changes’) confronts assumptions about harmonic impoverishment in non-classical styles by arguing that single chords usually consist of at least two. However, before addressing those issues, it’s wise to be equipped with some basic concepts that can be of use when confronting all the everyday music that does not conform to the rules of classical harmony.

Preliminaries

Non-classical harmony is often called *modal*, but that is, as I’ve repeatedly argued, a misnomer because what makes classical harmony unique is its particular use of a particular *mode* — the ionian. So, by ‘NON-CLASSICAL TERTIAL HARMONY’ I mean the way chords are used in tertial music that follows the tonal vocabulary of the modes discussed in Chapters 3 and 4 — the church modes, Hijaz,

pentatonic, hexatonic, etc. — but does not in general abide by the rules of classical harmony in terms of voice leading, modulation, cadences, harmonic narrative, etc. As already inferred, this chapter deals with the overridingly *tertial* aspects of non-classical harmony. *Quartal* harmony is discussed in Chapter 10 (p. 293, ff.).

Locrian harmony is not included here because its tertial tonic triad is diminished rather than, as in all the other cases, either major or minor, a fact that makes it harmonically unusable in music including drones or held notes at the fifth, or in music where power chords are the order of the day, as in various styles of metal.¹ That's why this first part of the chapter focuses on tertial harmony in the six remaining 'church' modes: ionian, dorian, phrygian, lydian, mixolydian and aeolian (see Table 21, p. 276).² Of those six modes the ionian is sometimes regarded as 'non-modal' because it has the same tonal vocabulary as the European heptatonic major scale, the result being that only the dorian, phrygian, lydian, mixolydian and aeolian modes are considered 'modal'. I strongly contest this special status granted to the ionian. The fact that it has been, as we already saw (p. 252, ff.), a particularly interesting, influential and familiar tonal vocabulary, both in Europe and globally, doesn't mean that it isn't just one mode among the others any more than I can kid myself, as an elderly white European male, that the demographic 'elderly white European males' isn't just one demographic group among all the others, no matter how interesting I may want to think I am or how familiar I am to myself. But there are other, less ideological and more prosaic, reasons for treating the ionian as just one mode among others.

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1. The lead guitarist may be soloing in the locrian mode ($\hat{1} \flat\hat{2} \flat\hat{3} \hat{4} \flat\hat{5} \flat\hat{6} \flat\hat{7}$) but no power chord is possible on $\hat{1}$ (there can be no I⁵) unless the tonic's $\flat\hat{5}$ is raised to $\hat{5}$ so that I^o becomes I⁵, in which case the harmony is no longer locrian. This chapter focusses on tertial, not quartal/quintal, harmony, and not on melody either. For tertial aspects of power chords, see pp. 280-284.
 2. Pentatonic and hexatonic modes containing a perfect fifth, including Hijaz, are part of this account because the tertial triads on their scale degrees follow the same basic principles as those of the six church modes just listed.

Ionian mode and barré

Fig. 46. I-IV-V-IV-I in D ionian:

(a) classical chorale harmony; (b) with barré chords on G and A.

Although sequences of common triads in the ionian mode form the essence of tonal polyphony in many postwar popular music styles, such harmonic practice — for example, in Latin American urban styles like *cumbia* or *son*, in urban African musics like high life and *kwela*, as well as in most pop, rock and R&B— cannot be qualified as classical for two prosaic reasons. Firstly, such music rarely conforms to euroclassical conventions of voice leading because most barré chord progressions involve a sequence of parallel fifths and octaves (Fig. 46b), forbidden in classical harmony (Fig. 46a), for example between the triads on IV and V of the ionian *La Bamba* loop (♮I-IV-V♮, as in Figure 46b with its parallel octaves and fifths between G and A). Similarly, bottleneck guitar techniques rely entirely on chords strung together in parallel motion. Secondly, it is clear that such loops, consisting rarely of more than four different chords, function in a radically different way to progressions in the idiom of classical harmony, not least because tertial loops of this type contain little or no chromaticism, nor do they modulate, nor contribute in themselves to the construction of musical narrative. Although such CHORD LOOPS (see Chapters 13 and 14) often vary from one section of a song to another, their main function is to provide a fitting tonal dimension to underlying patterns of rhythm, metre and periodicity. Their function is not to provide long-term harmonic direction but to generate an immediate or continuous sense of ongoing tonal movement and to act as tonally appropriate accompanimental motor. They are, so to speak, the tonal aspect of groove.

Major triads in non-classical tertial harmony

Characteristic differences in non-classical tertial harmony derive to a large extent from the unique tonal relationship between the keynote and the major triads intrinsic to each mode. Table 21 (↓) shows that each mode contains three major triads (C, F, G on the white notes of the piano). It also shows that the minor modes (dorian, phrygian, aeolian) all have a major triad on the flat third degree (♭III), that the phrygian is alone with a major triad on the flat supertonic (♭II), that a major triad on the unaltered supertonic (II) is unique to the lydian mode, that the mixolydian is the only major mode with a major triad on the flat seventh (♭VII), that the dorian is the only minor mode with a major triad on the fourth (IV), etc.

Table 21. *Major triad positions in unaltered ‘church’ modes*

	I	♭II	II	♭III	IV	V	♭VI	♭VII
ionian	✓				✓	✓		
dorian				✓	✓			✓
phrygian		✓		✓			✓	
lydian	✓		✓			✓		
mixolydian	✓				✓			✓
aeolian				✓			✓	✓

The basic principles of tertial harmony in any of the ‘church’ modes (including the ionian) can be simply grasped using only the white notes of a piano keyboard instrument. Playing the major triads of F, G and C, as well as the relevant tonic triad (if it is not already based on f, g or c), while at the same time holding down the keynote of the relevant mode in the bass (C for ionian, d for dorian, e for phrygian and so on) will produce familiar but distinctive patterns of harmony for each mode. This procedure can then be transposed to any of the octave’s black or white notes.

Permanent Picardy third

One of the most common alterations in non-classical tertial harmony is to raise the third of tonic triads in minor modes (dorian, phrygian, aeolian) from ♭ $\hat{3}$ to $\hat{3}$. Such alteration can be understood

in terms of a *tierce de Picardie* used constantly throughout a piece of music as substitute for the tonic minor triad, not just as alteration of the final chord. Major triad substitution was a common feature of Elizabethan music (ex. 188, 190; see also *Farnaby's Dreame*, Dowland's *King of Denmark's Galliard*, etc.).

Ex. 188. *Farnaby*: Loth to Depart (c.1610):
aeolian harmonies
with major tonic
triad (I iv bIII iv
[bVI bVII])³

Permanent Picardy thirds aren't just an arcane anomaly found in music of the late Renaissance. They're also a common harmonic feature in a wide range of tonal idioms, most probably because the fourth harmonic (5f) of a note like the d_3 (147 Hz) in the left hand of example 188 is pitched two octaves and a major third higher. The fourth harmonic of Farnaby's d_3 is in other words at $f\#_5$ (740 Hz), just one octave above the $f\#_4$ (370 Hz) in the keyboard player's right hand.⁴ The first natural harmonic of the minor third ($b\hat{3}$), on the other hand, is, if it's ever audible, very weak and much higher at 19f, three octaves and a minor third above its fundamental. Of course, that doesn't mean that minor thirds are melodically 'inharmonic' but it does have accompanimental repercussions, especially if drones are in evidence, or if the music does not need to follow equal-tone temperament, or if accompanying instruments are rich in overtones. In such cases a major tertial triad can sound cleaner, brighter, and acoustically more stable, etc. than its minor counterpart.

-
3. D is permanent Picardy third in this D-aeolian extract (d e f# g a b# c d).
 4. Hz figures are according to the equal-tone temperament table (fig. 9) on page 69). Hence the discrepancy between $5 \times 147 = 735$ Hz and the 740 Hz given for $f\#_5$. 7f is actually 14c 'out of tune' anyhow and 5 Hz in that register makes very little difference (the nearest tone, $f\#_5$, is 698 Hz, 40 Hz lower).

Major third substitution in the tonic triad is widespread in much blues and in some Country music where minor or blues thirds are sung or played to the accompaniment of major triads (ex. 189), or when barré techniques are used to progress between I, \flat III and IV, as in the dorian-mode riff of *Green Onions* (ex.263, p. 365) or *Smoke On The Water* (Deep Purple, 1972; ex. 232, p. 325). Dorian harmonies are in other words suited to the accompaniment of minor pentatonic melody ($\hat{1} \flat\hat{3} \hat{4} \hat{5} \flat\hat{7}$) because, with alteration of the tonic, major triads occur on four of five pitches (I \flat III IV \flat VII). With the fifth degree triad also altered in the same way, major triads exist on all five steps in the la-pentatonic mode (I \flat III IV V \flat VII) but the harmonic mode remains dorian because it's the only mode featuring the major triads \flat III and IV (Fig. 47, p. 280).

Ex. 189. Darling Corey (Watson 1963): major tonic triad for minor mode tune

D major throughout

Wake up, wake up, Dar-ling Cor-ey. What makes you sleep so sound. Them

high-way rob-bers are a - coming, gon-na tear your still house down.

The fifth degree triad of minor modes was also often altered to major in European polyphonic music during the ascendancy of the ionian mode (and the bourgeoisie), typically to introduce V-I cadences containing dominant sevenths and their double leading notes. Example 190 (bars 1-2) shows a dorian (I IV \flat III) and (bars 4-5) a mixolydian progression (I IV \flat VII), each followed by the standard V7-I cadence of classical harmony.

As just noted, alteration of \flat to V (changing the triad on $\hat{5}$ from minor to major) also occurs in blues-related styles, especially when barré, slide or bottleneck techniques are used on guitar. In these cases such alteration relates to tuning and playing practices, not to any predilection for the ionian mode or for perfect cadences, as is evident from the absence of V-I changes (B-E) in example 191 whose guitar strings are tuned to an open E major chord (E B E G# B E). Note how major triads follow the melodic contour in parallel motion at the octave or fifth.

Ex. 190. Weelkes: Hark, All Ye Lovely Saints (c.1610)

The image shows two systems of musical notation for piano accompaniment. The first system is labeled 'Dorian' and the second 'Mixolydian'. Both systems show chord progressions in 4/4 time with figured bass notation below the notes.

Dorian System:
 Treble clef: I, \flat III, ii, V
 Bass clef: G, Am, B \flat , Am $_3$, D7, Gm $_5$, Dsus4, D

Mixolydian System:
 Treble clef: I, IV, \flat VII, IV, V, I
 Bass clef: G, C, F, C, D, G $_5$, Dsus, D, G

Ex. 191. Slide guitar chords (open tuning E) for Vigilante Man (Guthrie), adapted from Cooder (1971)

The image shows a musical score for a melody line with lyrics and guitar chords. The chords are E, B, A, G, E, A, G, A, B, G, E in the first line and A, G, A, G, E, B, A, G, E in the second line.

Tell me why does a vi - gi - lan - te man, why, oh why does a vig - i - lan - te man
 car - ry that sawn off shot-gun in his hand? Would he shoot his broth-er and sister down?

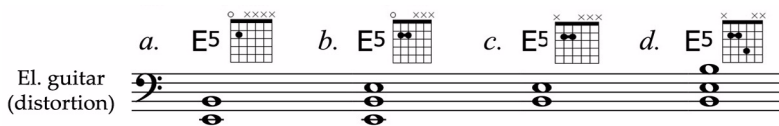
The logic of this harmonic practice is simple. Figure 47 shows how placing a tertial major triad on each degree of an anhemitonic la-pentatonic blues scale⁵ produces the chords I \flat III IV V \flat VII – D F G A C in D (Fig. 47), E G A B D in E (ex. 191), etc. These observations are pertinent not only to blues with open-chord tuning or bottleneck accompaniment on guitar but also to the power chords of blues-influenced rock in the heavy metal repertoire.

5. The la-pentatonic blues mode is presented on pages 161-163.

Power chord excursion

Power chords are dyads played on an electric guitar treated with distortion. The dyad's two notes are played a perfect fifth or fourth apart on adjacent strings, as shown in Figure 47.⁶

Fig. 47. Typical shapes for playing an E⁵ power chord (Lilja, 2009: 104)



Power chord shorthand consists of the root note name and a superscripted '5' to indicate that the fifth but no third is also played. All four chords in Figure 47 are E⁵ ('E five') because only two differently named notes are sounded — e and its fifth, b. Similarly, the A⁵ in Figure 48 (p. 281) designates a power-chord consisting of a₂ (110 Hz, open A string) and its fifth, e₃ (165 Hz, D string, 2nd fret). Although power chords are played as dyads, they produce a large number of harmonics that make them sound richly textured. One of those harmonics is the major third ($\Delta^{\hat{3}}$), heard at five times the frequency of the root note, as with the c[#] indicated as '5f' at 550 Hz in the root harmonics listed in Figure 48 above the A⁵ power chord. Indeed: 'I hear the third in distortion', said Pete Townshend.⁷

I also found the 'major-third aspect' of power chords quite striking, not least when teaching keyboard harmony in the 1970s, long before the advent of polyphonic synths and multi-track sampling. I had to suggest ways of accompanying rock tracks on the (acoustic) piano. My attempts to approximate the sound of power chords on the instrument were doomed to fail but it all sounded slightly less absurd if weak major thirds (*mp*, the small notes in ex. 192) were added to the top of the main riff notes (*ff*).

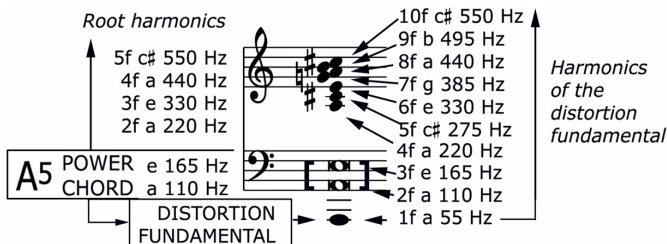
6. Dyad: chord consisting of two *differently named* tones (see definitions, p. 219).
7. Pete Townshend, songwriter, guitarist and lead figure in The Who, quoted by Lilja (2009: 131). The major third is fifth in the harmonic series (5f), two octaves plus a third (-14¢) above the fundamental (Fig. 7, p. 62). 5f is easy to hear in feedback, e.g. at 3:42 in ZZ Top's *Gimme All Your Lovin'* (1983).

Ex. 192. *Rolling Stones* (1971): *Bitch* (start, approximation for acoustic piano).



One lesson I learnt from this strange exercise was that the presence of a major third in the upper register is at the same time a timbral and tonal issue. The power chord's $\hat{A}3$ is obviously timbral because 5f is a partial; but it's just as clearly tonal because it's an audible part of a sound consisting of partials that unequivocally confirm a very strong and stable root tone, as shown in Figure 48.⁸

Fig. 48. Power chord harmonics for A^5 (a_2 110 Hz, e_3 165 Hz)



Playing A^5 as a power chord does not only produce the root harmonics shown on the left in Figure 48 because a_2 and e_3 together also generate a DISTORTION FUNDAMENTAL at 55 Hz (a_1), one octave below the a_2 root. That a_1 is a real difference tone, a measurable acoustic phenomenon rather than a combination tone created inside the listener's head. Interacting with the two notes of the power chord and its root harmonics, the DISTORTION FUNDAMENTAL produces its own harmonic series which, apart from a 'natural' $b\hat{7}$ ($7f = \downarrow g_4$) and $\hat{9}$ ($9f = \downarrow b_4$), two major thirds ($5f = c\#_4$, $10f = c\#_5$) and two fifths ($3f = e_3$, $6f = e_4$), also includes three octaves ($2f, 4f, 8f, = a_2 a_3 a_4$). Lilja (2009: 113) summarises these findings as follows.⁹

8. Figure 48 is a drastic simplification of Lilja (2009: 104-114, esp. p. 113), in its turn based on research conducted at Helsinki University of Technology's Department of Signal Processing and Acoustics (see Penttinen et al., 2009).

‘[T]he distortion fundamental may be regarded as a chord root, rather than the chord root that is actually played. Furthermore, all the higher partials belong to the same harmonic series, which is not the case with, for example, the minor triad. This is why the power chord is... regarded as the most consonant chord structure.’

The power chord is in other words made tonally stable and consonant by the harmonic series consisting of the partials defining it.¹⁰ This acoustic rootedness makes the power chord a useful tool in heavy metal, industrial and grunge music because it allows for the unequivocal statement of substantial ‘tonal elsewhere’s in relation to the tonic (I⁵). The \flat II⁵ of the phrygian examples cited earlier (pp. 124-126) illustrate this phenomenon clearly, as do the tritone of example 193 and the locrian shuttle I⁵↔ \flat V⁵ in *Symptom Of The Universe* (Black Sabbath, 1975).¹¹ After all, you can’t get much further away from the tonic (I⁵) on the key clock than to \flat II, five steps flatward, and there is no more distant position on the circle of fifths than \flat V/ \sharp IV, a full six steps away.

Ex. 193. *Black Sabbath*: Black Sabbath (1969): tritone riff



Of course, as illustrated in example 194, you don’t have to move so far round the key clock from I⁵ to experience the impact of tonal solidity offered by each power chord. For example, the chorus of Nirvana’s *Lithium* (ex. 194) takes four key-clock steps sharpward from I (D⁵) to III (F \sharp ⁵) and flatward to \flat VI (B \flat ⁵); then VI (B⁵) is

9. Lilja (2009: 114) also adds an important Pete Townshend quote to his summary. ‘None of the shapes [chords] I play with loud distortion have a 3rd, because you hear the 3rd in the distortion’... ‘[I]f you played the 3rd, you’re going to get a note which is 4th [5f] up from that. That sound I can’t stand is people playing a complete C chord with fuzz. They’re actually ending up with something like a C¹³’ (cited in Resnicoff, 1989: 80).
10. The harmonic frequencies are integral multiples of the distortion fundamental (Fig. 48, p. 281). See Fig. 7 (p. 62) for explanations of the harmonic series.
11. For \flat II⁵, see examples 44-48, pp. 124-126 (Ermálak, Iron Maiden, Rainbow, Metallica). *Symptom Of The Universe* is quoted by Lilja (2009: 171).

three steps away, \flat VII (C⁵) is two, while IV (G⁵) and V (A⁵) are both just one step from I. The chorus to *Smells Like Teen Spirit* (ex. 195), with F⁵ as I, is similar, moving three and four key-clock steps from I (F⁵) to \flat III (A \flat ⁵) and \flat VI (D \flat ⁵) respectively.

Ex. 194. Nirvana: *Lithium* (1991: chorus, 00:37-00:54)

Ex. 195. Nirvana: *Smells Like Teen Spirit* (1991: chorus)

These two Nirvana songs use power chords chromatically to produce an important but often overlooked ingredient in the expression of the visceral alienation frequently ascribed to the band's music.¹² In most blues-based rock, however, power chord sequences rarely stray further from the tonic than \flat VI⁵. In fact they tend mainly to be based on the notes of the la-pentatonic (blues) mode, i.e. I⁵, \flat III⁵, IV⁵, V⁵ and \flat VII⁵ (see Fig. 49, p. 284) plus the additional aeolian \flat VI⁵. Typical of this tonal idiom would be such

12. Googling |nirvana express alienation anger| generated >7 million hits [140724]; e.g. 'Nirvana used extreme changes of... volume to express anger and alienation: a quiet, tuneful verse switched into a ferocious, distorted chorus' (Jon Savage in *Encyclopedia Britannica* ■britannica.com/EBchecked/topic/415919/Nirvana [140724]). The dynamic between the sharpward and flatward changes in *Lithium* (F⁵-B⁵ then [G⁵-] B \flat ⁵ C⁵) is particularly striking; so is the internal d \flat -c in example 195's D \flat ⁵-F⁵ that moves in parallel fifths with the anguished \flat 3[♭]-2[♭] (a \flat -g) motif in the vocals. For \flat 3[♭]-2[♭] and anguish, see pp. 106-112.

chord sequences as the **A A C C D F A A** (I \flat III IV \flat VI I) of Alice Cooper's *Under My Wheels* (1971), or the **A \times 8 C \times 4 D D E E** (I \flat III IV V) and **A G D D** (I \flat VII IV) of AC/DC's *Shoot To Thrill* (1980).¹³ We are in other words back at the point, illustrated in Figure 47 (p. 280) and which led to this power-chord excursion, about Picardy thirds in minor-mode tertial harmony, except that it should now be clear how $\Delta\hat{3}$ (at 5f and 10f) has little or nothing to do with 'the major key' or with the major thirds of euroclassical harmony. The $\Delta\hat{3}$ acts rather as an acoustic stabilising factor in the statement of individual chords that depend neither on suspension-resolution, nor on V-I harmonic movement, nor on leading-note directionality to establish them as valid points of harmonic difference. For example, the **c#** at 5f in the **A⁵** chord of Figure 49 neither 'comes from' nor 'leads' anywhere in particular. Its function is simply to make the chord richer and more rooted.

Fig. 49. Blues-pentatonic power chords (♯|♯|♯) in A, including distortion fundamental (● 1f) and partials 2f, 3f, 4f and 5f (●, $\hat{3}$)

The figure shows five power chords in the key of A major on a treble clef staff. Above each chord are its Roman numeral and chord name: I (A⁵), \flat III (C⁵), IV (D⁵), V (E⁵), and \flat VII (G⁵). The notes for each chord are: I (A⁵): A2, C3, E3, A3, C4; \flat III (C⁵): C2, E2, G2, C3, E3; IV (D⁵): D2, F2, A2, D3, F3; V (E⁵): E2, G2, B2, E3, G3; \flat VII (G⁵): G2, B2, D3, G3, B3. A legend at the bottom left indicates that a solid black circle represents the distortion fundamental (1f) and a solid black circle with a hat represents the 3rd partial (3f).

Back to 'acoustic' tertiality

The observations made earlier about 'majorising' tertial triads on scale degrees $\hat{1}$ and $\hat{5}$ and the short exposé of power chords in blues-based rock demand that Table 21 (p. 276) be updated as shown in Table 22 (p. 285). Returning to the world of acoustic tertiality, the data in Table 22 can be summarised in eight points.

13. I \flat III IV \flat VI I is heard throughout the Alice Cooper track. I \flat III IV and V are heard during the verse and I \flat VII IV during the chorus of AC/DC's *Shoot To Thrill*. See also the la-pentatonic I \flat III IV... of *Smoke On The Water* (Deep Purple, ex. 94, p. 163) or of any 'rock-dorian' loop listed in Table 38 (p. 442). See also examples 81 (p. 156); 189 and 191-192 (pp. 278-281). See pp. 161-163 for discussion and illustration of the blues la-pentatonic mode.

Table 22. *Tertial triad types for scale degrees in the six church modes*

scale degree - ↓ mode ↓	î	2̂	3̂	4̂	5̂	6̂	7̂
ionian	I	ii	iii	IV	V	vi	vii°
dorian	i or I	ii	bIII	IV	v or V	vi°	bVII
phrygian	i or I	bII	bIII	iv	v° or V	bVI	bvii
lydian	I	II	iii	+vii°	V	vi	vii
mixolydian	I	ii	iii°	IV	v	vi	bVII
aeolian	i or I	ii°	bIII	iv	v or V	bVI	bVII

[1] Minor modes (those containing $b\hat{3}$, i.e. dorian, phrygian, aeolian) can have a tertial major triad on the tonic (I can replace i). Dorian and aeolian tertial harmony modes can also have a major triad on $\hat{5}$ (V can replace v; see p. 286 for unaltered triads).

[2] Each mode contains one diminished tertial triad. These are greyed out in the table because they are used so rarely.¹⁴

[3] Ionian tertial harmony is alone in featuring major triads on scale degrees 4 and 5 — both IV and V. Typical ionian chord sequences are I-IV-V; IV-V-I; ii-V-I and V-IV-I.

[4] Dorian tertial harmony is alone in containing major triads on $b\hat{3}$ and $\hat{4}$ — both $bIII$ and IV. Typical dorian chord sequences are I/ $bIII$ -IV and IV- $bIII$ -I/i.

[5] Phrygian tertial harmony is alone with major triads on both $b\hat{2}$ and $b\hat{3}$, as well as with a minor triad on $b\hat{7}$ (bII , $bIII$ and $bvii$). Typical phrygian chord sequences are [iv-] $bIII$ - bII -I (Hijaz), $bIII$ - bII -i ('true' phrygian); $bvii$ - bII -I/i and bII - $bvii$ -I/i.¹⁵

[6] Only lydian tertial harmony has major triads on $\hat{2}$ and $\hat{5}$ (II, V). A typical lydian chord loop runs I-II-V.

[7] Mixolydian tertial harmony is alone with major triads on scale degrees 4 and $b7$ (IV and $bVII$). Typical mixolydian chord se-

14. These diminished triads are almost never heard unless they are part of a half-diminished tetrad, e.g. aeolian ii^{7b5} , ionian vii^{7b5} .

15. See 'Hijaz and phrygian', pp. 120-138.

quences are I- \flat VII-IV, \flat VII-IV-I and I- \flat VII-V (the ‘cowboy half cadence’, see p. 290, ff.).

[8] Aeolian tertial harmony is alone with its major triads on $\hat{b}6$ and $\hat{b}7$ (both \flat VI and \flat VII). Common aeolian chord sequences are: [1] \flat VI- \flat VII-I/*i* (the *aeolian cadence*); [2] $i \leftrightarrow \flat$ VI (the *aeolian shuttle*); [3] $i-\flat$ VII- \flat VI-V (*aeolian half cadence*, often confused with the phrygian full cadence $iv-\flat$ III- \flat II-I/*i*); [4] $\zeta i-iv-V \supset$ (the *minor La Bamba* or *Che Guevara* loop).¹⁶

In short, the distinction between major and minor tonic triads is often irrelevant to the identification of harmony in terms of the church modes (including the ionian). That’s because the location of major triads on *other* scale degrees than $\hat{1}$ (I) is unique to each mode. *Only* the ionian features both IV and V, *only* the dorian includes both \flat III and IV, *only* the mixolydian contains both IV and \flat VII, *only* the aeolian has both \flat VI and \flat VII, etc.

Unaltered non-ionian tertial harmony

One type of minor-mode tertial harmony consistently majorises the tonic triad (I) and/or the triad on $\hat{5}$ (V); the other does not. For example, both types of tertial dorian harmony feature major triads on \flat III and IV: [1] the blues-based type discussed above and [2] the ‘folk’ type whose triads on $\hat{1}$ and $\hat{5}$ are much more rarely subjected to ‘majorisation’. The second type is illustrated in example 196. Its chords are Dm (*i*), F (\flat III), G (IV) and C (\flat VII).

Ex. 196. Poor Murdered Woman (*Eng. trad., arr. Hutchings; Albion Country Band, 1971*): *dorian tune with dorian tertial triads*

16. I call $\zeta i-iv-V \supset$ the ‘Che Guevara loop’ because of its constant presence in the Carlos Puebla song about Che —*Hasta siempre* (1965; ex. 289, p. 438).

Table 23 shows the major triads, including, where applicable, the altered tonic (in square brackets), of the church modes. It also presents each mode's major triads as they would occur in C and in E, along with references to examples of popular music in which each relevant mode-based tertial harmony can be heard.

Table 23. *Examples of major triads in non-classical tertial harmony*¹⁷

mode	relative positions	on white notes	with E as tonic	examples
ionian	I IV V	C F G	E A B	<ul style="list-style-type: none"> • <i>La bamba</i> (Valens, 1958) [C-F-G in C]; • <i>Twist and Shout</i> [D-G-A in D] • <i>Guantanamera</i> [F-B\flat-C in F] (Sandpipers, 1966); • <i>Pata Pata</i> [F-B\flat-F-C] (Makeba, 1967).
dorian (type 1)	[I] \flat III IV \flat VII	[D] F G C	[E] G A D	<ul style="list-style-type: none"> • <i>Green Onions</i> (Booker T, 1962) [F-A\flat-B\flat] • <i>The Girl Sang The Blues</i> (Everly Brothers, 1963) [E-G-A] • <i>Smoke on the Water</i> (Deep Purple, 1972) [E-G-A in E]; ex. 190-191;
dorian (type 2)	i \flat III IV \flat VII	Dm F G C	Em G A D	<ul style="list-style-type: none"> • <i>Greensleeves</i> (Eng. trad; first line); • <i>Poor Murdered Woman</i> (ex. 184); • <i>Scarborough Fair</i> (Simon & Garfunkel, 1968) [Em-D-Em-G-A-Em] (ex. 5, p. 100)
lydian	I II V	F G C	E F \sharp B	<ul style="list-style-type: none"> • <i>Eden</i> (Hooverphonic) [C-D-Em-G] • <i>Terminal Frost</i> (Pink Floyd) [D-E\flat7]
phrygian	[I] \flat II \flat III \flat VII	[E] F C G	[E] F C G	<ul style="list-style-type: none"> • <i>Che Guevara</i> (Puebla, 1965) [ex. 198]; • <i>Malagueña</i> (Sabicas) [Am-G-F-E] [ex. 197] • <i>Τρεις η ώρα νυχτα</i> (Alexiou, 1976) [ex. 199]
mixo-lydian	I IV \flat VII	G C F	E A D	<ul style="list-style-type: none"> • <i>Sweet Home Alabama</i> (ex.284, p. 430); • <i>Hey Jude</i> [G-F-C-G]; • <i>The Magnificent Seven</i> (ex.203b, p.291) See also pp.421-432.
aeolian	[I] \flat III \flat VI \flat VII	[A] CF G	[E] G C D	<ul style="list-style-type: none"> • <i>All Along the Watchtower</i> [Am-G-F-G] • <i>Flashdance</i> [G-F-E\flat-F in G]. • Cadences in <i>Lady Madonna</i> [F-G-A]; • <i>PS I Love You</i> [B\flat-C-D]; <i>SOS</i> [D\flat-E\flat-F] • <i>Brown Sugar</i> [A\flat-B\flat-C] (ex. 182, p. 265).

17. Chord shorthand is explained in Chapter 7: roman numerals at p.220, ff., lead sheet chords at p.229, ff.

The tertial harmony of each mode is often related to the frequency with which it is assumed by members of one music culture to be used in types of music made by others. Hence, dorian harmony is often associated with certain blues-based styles (ex. 191) and with rural popular music from various regions (ex. 196), while phrygian chord changes are often regarded, at least by non-Hispanics, as distinctive of Hispanic popular music styles (ex. 197, 198).¹⁸ As we saw in Chapter 3, tertial phrygian harmony is also used extensively in popular music from Greece (ex.199), Turkey, the Balkans and the Arab world.¹⁸

Phrygian tertial harmony

It's easy for untrained ears to confuse the intrinsically phrygian cadence $\flat\text{II}$ or $\flat\text{vii-I}$ with the aeolian-harmonic minor half cadence $\flat\text{VI}$ or iv-V to the extent that even dedicated students of flamenco can apparently feel obliged to finish a *malagueña* ostinato similar to that suggested in example 197 on a chord of A minor instead of E major. To set the record straight, Sabicas uses a phrygian tonic to end his *malagueña* performances, as does Carlos Puebla to end his ode to Che Guevara (ex.198), and as do Haris Alexiou's musicians with the phrygian songs on her 1976 album (ex.199). In concrete terms, $\text{C}\flat\text{Am G F E}\flat$ in *Hit The Road Jack* (Charles, 1961) is in A aeolian ($\text{C}\flat\text{i-}\flat\text{VII-}\flat\text{VI-V}\flat$) but the *malagueña* $\text{C}\flat\text{Am G F E}\flat$ is in E phrygian ($\text{C}\flat\text{iv-}\flat\text{III-}\flat\text{II-I}\flat$).¹⁹

Ex. 197. *Phrygian harmony: popular malagueña figure*

Ex. 198. *Phrygian harmony: Carlos Puebla: Hasta siempre.*²⁰

18. See also examples 39-55, pp. 122-131.

19. The identification of keynotes in chord loops is discussed on p.426, ff.

Lydian melodies also occur in the Balkans and numerous ‘sharp fours’ can for example be found in Bartók’s arrangements of Romanian melodies for the piano (pp. 134-145). However, lydian melody is infinitely rarer in English-language popular musics and lydian *harmony* is almost totally absent. True, there may be a fair number of departures from I to II but these often proceed to IV, a definite no-no for lydian harmony.²² In fact, apart from the Scandinavian folk rock recording just cited, I only discovered two tracks, one alternative electronica and the other prog rock, containing unequivocal lydian harmonies: Belgian band Hooverphonic’s *Eden* (1999) with its C D Em G (I II iii V) and Pink Floyd version two’s *Terminal Frost* (1987) with its D↔E₇ shuttle. Even the C↔D in the verses of R.E.M.’s *Man On The Moon* (1992) leads into a chorus so resoundingly in G that after hearing it just once the shuttle sounds much more like a IV↔V in G than a I↔II in C.²³

Mixolydian

Ex. 201. The Lamentation of Hugh Reynolds (*Irish trad: start*): tertial harmonisation of this mixolydian tune requires I, IV and bVII (D, G and C)

My name it is Hugh Reynolds. I come from honest par - ents. Near Cavan I was
lov - ing of a maid, one Cath - er - ine Mc - Cabe, my life has been bet -
born as you may plain - ly see. By dear maid to me.

Mixolydian harmony is probably as common in English-language popular music as lydian is rare. The mixolydian is the only mode with major triads on I, bVII and IV. It is often linked with British and Irish or Anglo-American folk music (ex. 201-202), with some forms of rock and Country, with rural popular song from Brazil’s

22. e.g. *Eight Days A Week* (Beatles, 1964c); *Homburg* (Procol Harum, 1967b).

23. I spent a whole day searching on line for lydian harmony in pop and rock. The Hooverphonic and Pink Floyd examples were mentioned in the Wikipedia entry *Lydian mode* among a host of others in which I could discern a few lydian traits in melodic lines but no real lydian harmonies.

northeastern states, as well as in music for Western adventures (ex. 203). One particular trait of mixolydian harmony, the ‘cowboy half cadence’, from \flat VII to an altered major triad on V, is familiar enough to have become an object of both pastiche (ex. 205) and parody (ex. 206). We return in more detail to mixolydian harmony in Chapter 14.

Ex. 202. Rounding The Horn (*Eng. trad. end*): tertial harmonisation of this mixolydian tune requires I, IV and \flat VII (D, G and C)

We were wait - ing there for ord - - ers to send us far from home. Our
ord - ers came for Ri - o and thence a - round Cape Horn.

Ex. 203. *Mixolydian shuttle*: Tiomkin: *Duel in the Sun* (1947)

$J=80$
trpts.
brass,
timp. 8va, 15a I

D G D G C G D

Ex. 204. ; *Mixolydian shuttle*: Mancini: *Cade’s County* (1971)

$J=144$
Eb Db

Ex. 205. *Cowboy half cadences*: (a) *The Shadows*: *Dakota* (1963)

Mixolydian shuttle cowboy half cadence
C Bb G C
rh. gtr. I harmonica sim.

Ex. 206. *Cowboy half cadences*: (b) *Brooks/Morris*: *Blazing Saddles* (1974)

8 Eb Ab Eb Db Bb Eb Ab Eb Ab Eb

He rode a blazing saddle, he wore a flaming star, His job to of-fer battle to bad men near and far.

Aeolian tertial harmony

Aeolian harmony seems to have acquired two main functions in pop and rock music: [1] connoting the ominous, fateful or implacable (Björnberg 1995); [2] substituting standard IV-I or V-I cadences with the more colourful \flat VI- \flat VII-I aeolian cadence, easily

performed as barré chords on guitar. We'll revisit aeolian harmony in greater detail on pages 386-388 in Chapter 12.

Summary in 5 points

[1] Non-classical tertial harmony uses the same basic triads as classical harmony but applies them according to different rules and in different functions.

[2] Apart from a common triad on the tonic, the most important and characteristic chords for each mode are, if played on only the white notes of a piano keyboard, the major triads on F and G. These major chords are positioned differently in each mode: IV and V for the ionian, \flat III and IV for the dorian, \flat III and \flat II for the phrygian, II and V for the lydian, IV and \flat VII for the mixolydian, \flat VI and \flat VII for the aeolian.

[3] The three 'major' modes are ionian, lydian and mixolydian. The others – dorian, phrygian and aeolian – are 'minor' modes.

[4] Harmony in the 'minor' modes often (not always) features an altered tonic triad with a permanent Picardy third – I consistently replaces i. Triads on the fifth are also frequently 'majorised' – v may be replaced by V.

[5] Non-classical tertial harmony is investigated in greater detail in Chapter 14 – 'Chord loops & bimodality'. Quartal harmony is the subject of the next chapter.

10. Quartal harmony

Theory

No ‘sus’, no ‘add’, no ‘omit’

Fig. 50. Six common quartal chords containing c and f



If you're familiar with lead-sheet chord shorthand (pp. 220-233) and formed in the ii-V-I mould of the ionian-tertial tradition, you might be inclined to label the six chords in Figure 50 in the following sort of terms: [1] 'Csus4 over g' or 'G7sus'; [2] 'Fadd9 omit3'; [3] 'Fsus9'; [4] 'Fsus4'; [5] 'Fsus4 sus9'; [6] 'C11'. Chord 6 is certainly an eleven chord, but the other labels – the 'sus-s', 'adds' and 'omits' – aren't just clumsy: they're also *wrong* in a quartal harmony context. That's because *if there's nothing suspended, added or omitted about a chord, it's perverse to designate it as if there were*. As with the other misnomers discussed earlier,¹ it's also misleading to label features of quartal harmony in terms irrelevant to the idiom. A secondary aim of this chapter is therefore to suggest a neater and less erratic way of denoting the most common quartal chords. The primary aim, however, is to put forward a basic rationale for the workings of quartal harmony. That involves investigating aspects of tonality which seldom see the light of day in conventional harmony courses, problematising notions like 'root' and 'inversion', and exploring the border regions between tertial and quartal tonality. That discussion is important because, as will become clear from the music discussed later, quartal harmony is heard in a wide range of repertoires, from vernacular chorality in rural Russia to post-bebop jazz, from Appalachian banjo tunings to impressionism, from Bartók to TV news themes, and from folk rock to corporate jingles and audio signals on digital devices.

1. Two examples: [1] undominantal phrygian and lydian 'dominants' (pp. 129, 132-133, 139-145); [2] the uninterrupted 'interrupted' cadence (pp. 260-261).

Basic concepts

Chord shorthand

To save space in what follows I need first to set out a few basic terms and symbols as six chords explained in six points.

Fig. 51. *Six basic quartal dyads and triads with abbreviations*



[1] Chords 1 and 2 in Figure 51 are open-fifth dyads. Following the abbreviation conventions of heavy metal power chords, C⁵ ('C five') and F⁵ ('F five') replace cumbersome and unnecessary periphrases like 'C no 3' and 'F omit A' for such common sounds.

[2] Chords 5 and 6 are also common quartal sounds. C⁴ ('C four') replaces 'Csus4'; F² ('F two') replaces 'Fsus9' and 'Fadd9'. '4' and '2' used in this way assume the simultaneous presence of a fifth.

[3] Chords 3–6 are all triads and all inversions of the notes *g*, *c* and *f*. They can be designated in different ways depending on context (see 'Quartal triads and the tonical neighbourhood', p. 295, ff.).

[4] Chord 3 is a three-note quartal stack (4[♯]) rising from *g* (G^{4♯}, 'a G four stack', *g-c-f*), chord 4 a three-note quintal stack (5[♯]) rising from *f* (F^{5♯}, 'an F five stack', *f-c-g*).

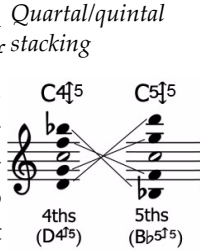
[5] The symbols 4[♯] and 5[♯] (chords 3 and 4) designate stacks emanating from a given *central* note, e.g. 'C4[♯]' for the triad *g-c-f* or for the pentad *d-g-c-f-bb* (see §6).

[6] If necessary, the number of notes in a quartal or quintal stack can be signalled by a superscripted numeral following the chord abbreviation, for example 'C4⁵' for the pentad *d-g-c-f-bb* (designation tone in central position). The same principle applies to 'rising' stack symbols, for example 'D4⁵' for the quartal pentad *d-g-c-f-bb*, 'Bb⁵' for the quintally voiced stack rising from *bb* – *bb-f-c-g-d*. If the number of notes in such chords is self-evident, or if the chord is a triad (e.g. G⁴ = *d-g-c*), the additional numeral need not be given.

Quartal and quintal

Quartal harmony is so called because it's based *not* on stacked thirds (tertial) but on the *stacking of fourths*, or of their octave complement, *fifths* (Fig. 52). 'QUARTAL', not 'quintal', is used as *generic label* for such harmony for the same reason that 'tertial harmony' (stacked thirds) is preferable to 'sexal harmony' (sixths, the octave complement of thirds). If falling through a pile of stacked sixths passes notes with the same names in the same order as climbing a stack of thirds (e.g. $c_5 \setminus e_4 \setminus g_3 \setminus b_2$ and $c_4 \setminus e_4 \setminus g_4 \setminus b_4$) then falling fifths and rising fourths behave similarly (e.g. $d_4 \setminus g_3 \setminus c_3 \setminus f_2 \setminus b_1$ and $d_4 \setminus g_4 \setminus c_5 \setminus f_5 \setminus b_5$). Thirds and fourths are simply more convenient stacking units than sixths and fifths because they take less vertical space. That said, while QUARTAL is a convenient general qualifier, quartal chords have different *voicings*. Those voicings can be QUARTAL (stacked fourths, e.g. $g-c-f = G^4$ or $g-c-f = C^4$), or QUINTAL (stacked fifths, e.g. $f-c-g = F^5$ or $f-c-g = C^5$). Both types of voicing can be inverted into SECUNDAL patterns (e.g. $c-f-g = C^4$, $f-g-c = F^2$). Another initial point to clarify is that, just as tertial harmony sometimes sounds quartal (e.g. sus^4 , sus^9 , chords of the eleventh), quartal tetrads and pentads can often sound tertial (e.g. $a-c-d-g$, $c-d-f-g$; see p. 302, ff.)

Fig. 52.



Quartal triads and the tonical neighbourhood

A triad consisting of $\hat{1}$, $\hat{3}$ and $\hat{5}$ is tertial because there's a third between each of its notes (e.g. $c-e$ and $e-g$ in C , as in Figure 53, p. 296). If that is so, a quartal triad ought to contain $\hat{1}$, $\hat{4}$ and $b\hat{7}$ because there's a fourth between $\hat{1}$ and $\hat{4}$ and another between $\hat{4}$ and $b\hat{7}$. Indeed, a chord consisting of c , f and $b\flat$ ($\hat{1}$, $\hat{4}$ and $b\hat{7}$, C^4 in Fig. 53) is a common sort of quartal triad, but it's not necessarily based on c . It could just as easily derive from either of the two other notes in the chord. If C^4 (a 'C four stack', $c-f-b\flat$) is inverted to $f-b\flat-c$, the second quartal triad in Figure 53 (p. 296), it's more likely to be heard as F^4 ('F four', $\hat{1}-\hat{4}-\hat{5}$) than as an inversion of C^4 . The same

goes for inversions on $b\hat{7}$: $b\flat$ -c-f is most likely heard as a $B\flat 2$ chord ('B-flat two', $\hat{1}-\hat{2}-\hat{5}$). That's quite different to how inversions work in tertial triads: the second chord in Figure 53 may look like ' $\hat{1}-b\hat{3}-b\hat{6}$ ' on e but it's normally heard as a C major triad in first inversion, i.e. with the third as bass note, not as a sort of E minor chord with a minor sixth and no fifth. The same goes for the third tertial triad ($\hat{1}-\hat{4}-\Delta\hat{6}$) in Figure 53. Although the figured bass designation of the chord may be $V\frac{4}{4}$ in C, it's more common to think of it as a C major triad in second inversion, i.e. with the fifth (g) as bass note.²

Fig. 53. Three tertial and three quartal triads in inversion

TERTIAL TRIADS			QUARTAL TRIADS		
C	$C_{/3}$	$C_{/5}$	C^4	F^4	$B\flat 2$
1-#3-5 1-#3-5	1-b3-b6 #3-5-1	1-4-#6 5-1-#3	1-4-b7 1-4-b7	1-4-5 4-b7-1	1-2-5 b7-1-4

An obvious question arises from the previous paragraph. Why can the same simple quartal triad have a different 'root' when its notes are inverted while tertial common triads have the same root note, no matter how they're inverted? Or, more pertinently, why *do* tertial common triads have the same root note when inverted. It all has to do with the intervallic asymmetry of tertial common triads and their tertial directionality as opposed to quartal *key-clock neighbourhoods*. Those two points – intervallic asymmetry v. symmetry and directionality v. neighbourhood – require some explanation.

A simply stacked *tertial* common triad like $c-e\flat-g$ ($\hat{1}-\Delta\hat{3}-\hat{5}$ in C) consists of a minor third (e-g) superimposed on a major third (c-e). In first inversion the triad consists of a perfect fourth (g-c) on top of a minor third (e-g) and, in second inversion, of a major third (c-g) over a perfect fourth (g-c). If the lowest note in these intervallically asymmetrical common triads is also sounded at the octave (c-e-g-c, e-g-c-e, g-c-e-g) the root note is heard in a unique position, situated either a major third below or a perfect fourth above its nearest pitch neighbour. In a quartal triad stack (4 or 4), however, all

2. Baroque figured bass uses '6' to denote a first inversion ($\hat{3}$ in the bass, e.g. 'iii6') and ' $\frac{6}{4}$ ' to indicate a second inversion ($\hat{5}$ in the bass, e.g. ' $V\frac{6}{4}$ ').

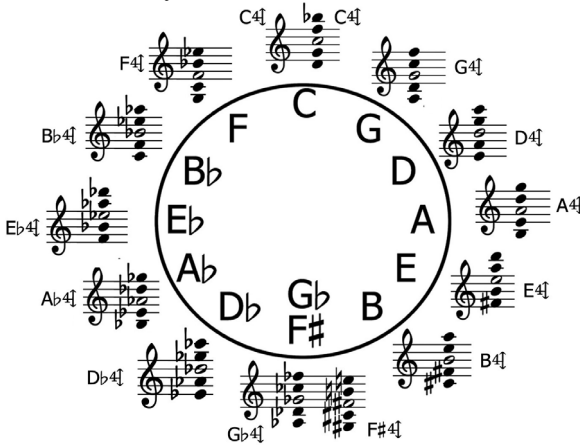
three notes are intervallically equidistant: it's a perfect fourth from **g** to **c** and from **c** to **f** and there is no pitch hierarchy between the three notes. That's because when the stack **g-c-f** is inverted to **c-f-g** or **f-g-c** there's simply no intervallic factor letting us identify any one of the three notes as root. Consequently, **g-c-f** ($\hat{1}-\hat{4}-\hat{b}\hat{7}$) can be heard as **G⁴** (stacked quartal triad on **g**), **c-f-g** as **C⁴** ($\hat{1}-\hat{4}-\hat{5}$ rather than $\hat{4}-\hat{b}\hat{7}-\hat{1}$), and **f-g-c** as **F²** ($\hat{1}-\hat{2}-\hat{5}$ rather than $\hat{b}\hat{7}-\hat{1}-\hat{4}$). Another important difference between tertial and quartal triads is caused by the presence or absence of a major third.

In a tertial common triad the third is at a considerable distance round the key clock (circle of fifths) from its root note. The **e^b** in a C minor triad is three steps flatward (\mathcal{U}) and, more importantly, the **eⁿ** in a C major triad four steps sharpward (\mathcal{U}). No such tonical distance exists in quartal triads whose constituent notes are tonical next-door neighbours (Fig. 54, p. 298). The note **f**, for example, is only one step away from **c** and **b^b**, the other two notes in a **c-f-b^b** quartal triad. In other words, quartal chords contain notes close to each other on the key clock. That proximity creates a central area of tonal reference that is wider and more fluid than the precise tonic orientation of conventional tertial harmony. So what?

Figure 54 (p. 298) represents the famous 'key clock' (circle of fifths) with a pentad of piled fourths ($\mathcal{4}\mathcal{5}$) next to each 'key'. The top pile, **C⁴**, shows the note **c** in the middle of a quartal pentad containing, in ascending order, **d, g, c, f** and **b^b**. The lower two notes in that same stack (**g, d**) are equivalent to the two 'keys' situated directly clockwise (\mathcal{U} , sharpwards) from **C** (**G** and **D**), while the upper two notes (**f, b^b**) correspond to the two 'keys' nearest anticlockwise (\mathcal{U} , flatward) from **C** (**F** and **B^b**).³ The quartal stack at each hour of the clock works in the same way. The central note in each stack corresponds to a given tonical hour, the top two notes to the two hours nearest before it (\mathcal{U}) and the bottom two to the first two hours after (\mathcal{U}). For example, the **E** quartal stack (**E⁴**) at 4 o'clock has its **f[#]** at 6 o'clock, its **bⁿ** at 5, its **aⁿ** at 3 and its **dⁿ** at 2 o'clock.

3. See the acoustic ratios of fourths (4:3) and fifths (3:2), pp. 255, ff.

Fig. 54. *Quartal stack key clock*



If notes in each of the pentads of Figure 54 are arranged in ascending scalar order, they build the sort of anhemitonic pentatonic modes covered in Chapter 4.⁴ For example, the quartal stack at 12 o’clock (C⁴) contains d g c f b \flat . Re-arranged in ascending order of pitch with c as $\hat{1}$, those notes become c d f g b \flat , i.e. $\hat{1} \hat{2} \hat{4} \hat{5} \hat{b}\hat{7}$, or ré-pentatonic in C. Ré-pentatonic scales can be generated in the same way from all twelve quartal stacks in Figure 54 — e f \sharp a b d \sharp for the quartal E stack (E⁴), a \flat b \flat d \flat e \flat g \flat for ré-pentatonic A \flat , and so on.

Figure 55 (p. 299) shows three quartal pentad stacks containing the note c, the five anhemitonic pentatonic modes derived from re-arranging each stack’s five notes in scalar sequence, and each stack’s core triad (its three middle notes). Each of the three pentads has c in a different position: [1] CENTRAL —in the middle of the stack; [2] FLATWARD —where f was before, next to top of the stack; [3] SHARPWARD —next lowest, where g was in the central stack. The core triads for c in those three positions are: [1] C⁴ (central), [2] C² (flatward) and [3] C⁴ (sharpward). Core triads and pentatonic modes are key factors of quartal harmony.

4. If you’re unfamiliar with terms like *ré-pentatonic*, why not bookmark Figure 23 (p. 154) and the section on hexatonic melody (p. 165, ff.)?

Fig. 55. *C quartal pentad stacks, pentatonic modes and core triads*

Figure 55 illustrates three examples of C quartal pentad stacks and their associated pentatonic modes and core triads:

- 1 CENTRAL:** Shows a C quartal pentad stack (C4, G4, D4, A4, E4) and the Ré-pentatonic mode in C (C4, D4, E4, G4, Bb4). The core triad is C4 (C4, E4, G4). Pentatonic modes listed: D: Mi-pentatonic, F: Sol-pentatonic, G: La-pentatonic, Bb: Doh-pentatonic.
- 2 Flatward:** Shows a G quartal pentad stack (G4, C4, F4, Bb4, E4) and the Sol-pentatonic mode in C (C4, D4, E4, G4, A4). The core triad is C2 (C4, E4, G4). Pentatonic modes listed: D: La-pentatonic, F: Doh-pentatonic, G: Ré-pentatonic, A: Mi-pentatonic.
- 3 Sharpward:** Shows an F quartal pentad stack (F4, C4, G4, D4, Ab4) and the La-pentatonic mode in C (C4, D4, E4, G4, Bb4). The core triad is F4 (F4, Ab4, C4). Pentatonic modes listed: Eb: Doh-pentatonic, F: Ré-pentatonic, G: Mi-pentatonic, Bb: Sol-pentatonic.

The anhemitonic scale resulting from the C quartal stack with c in central position (C4) is, as Figure 55 (1) shows, the thirdless ré-pentatonic mode (in C: c d f g bb = $\hat{1} \hat{2} \hat{4} \hat{5} \hat{b}\hat{7}$).⁵ The same quartal stack also contains the notes of the thirdless sol-pentatonic mode in F (f g bb c d = $\hat{1} \hat{2} \hat{4} \hat{5} \hat{A}\hat{6}$), as well as those of the minor- or la-pentatonic mode in G (g bb c d f = $\hat{1} \hat{b}\hat{3} \hat{4} \hat{5} \hat{b}\hat{7}$).⁵ Since G and F are on either side of C in the key clock and since both g and f are in the quartal stack C4⁵ (g bb c d f), changing bass note between c, f and g makes little difference to the sound of a quartal triad based on those three notes in any inversion or with any voicing. You can hear a chord of G, C or F and still be in the same area of tonal reference compatible with the three different pentatonic modes just mentioned. It's a KEY-CLOCK NEIGHBOURHOOD spanning three positions on the circle of fifths (Fig. 56, p. 300). By allowing chords to shift almost imperceptibly one step clockwise or anticlockwise, the principle of key-clock neighbourhood is very different to the goal-oriented directionality of conventional tertial harmony with its leading notes ($\hat{A}\hat{7}\leftrightarrow\hat{8}$ / $\hat{A}\hat{3}\leftrightarrow\hat{4}$) and clear cadences ($V\leftrightarrow I$ / $I\leftrightarrow IV$).⁶

5. See p. 156, ff. for transcriptions of ré-pentatonic tunes, p. 172, ff. for examples of quartal or ré-hexatonic melody, p. 155, ff. for la-pentatonic, p. 158, ff. for blues-pentatonic and p. 170, ff. for minor hexatonic.

The difference between quartal harmony's overlapping tonal neighbourhoods (Fig. 56) and tertial harmony's precise keys is clearest if you play triads round the circle of fifths in both idioms (Fig. 57). Six important observations (see below) can be made about the differences between tertial and quartal movement round the key clock.

Fig. 56. *Quartal neighbourhoods*

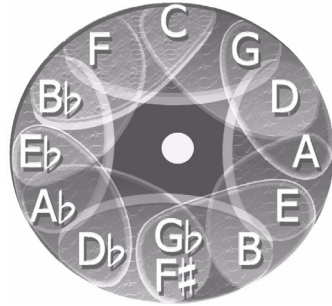


Fig. 57. *Tertial (1) and quartal (2) triads flatwards round key clock*

[1] *Tertial progression*
 C F B \flat E \flat A \flat D \flat G \flat
 f ----- a \flat ----- = g \sharp
 c ----- e \flat ----- g \flat =f \sharp
 g b \flat ----- d \flat =c \sharp -----

[2] *Quartal progression*
 F \sharp B E A D G C
 b ----- d ----- f
 f \sharp ----- a ----- c
 c \sharp e ----- g -----

[1] While each *tertial* progression (1) involves holding one and changing two of the triad's constituent notes, proportions are inverse for each *quartal* progression (2): two notes are held over and only one is changed. For example, in the first *tertial* change, e and g move to f and a while c is held over. In the first *quartal* change, on the other hand, only g changes (to b \flat) while both c and f are held.

[2] One of the note changes in the movement of *tertial* triads round the circle of fifths involves a semitone, e.g. from e to f, a minimal pitch distance but all of *five* steps away on the key clock: it's *not* in

6. See 'Syntax, narrative, and linear 'function'', p. 252, ff.

the tonical neighbourhood. Those two factors give $\Delta\hat{3}$ its strong leading-note directionality towards $\hat{4}$ (equivalent to $\Delta\hat{7}/\hat{8}=\hat{1}$ in the target triad).⁶ In *quartal* triad progressions, however, the single replacement note is only *three* steps away at the minor third (e.g. **g** replaced by **bb** in the first quartal change in Figure 57).

[3] The minor third is important because quartal harmony has to shift tonical neighbourhood by three key-clock steps (90° , 3 ‘hours’, e.g. C-Eb) to sound like a substantial ‘new key’. Moreover, the minor third is the logical addition to an already existing quartal triad; for example c-f-bb ($C^{4\sharp}$) becoming c-f-bb-eb ($C^{4\sharp}$ or $C_{\flat 3}$).

[4] All notes in a *tertial* triad have disappeared just *two* steps later round the key clock. Each *quartal* triad note lasts for *three* ‘hours’.

[5] If quartal triads contain, as they do by definition, notes related to each other by a fourth and/or fifth, then notions of V or $\hat{5}$ as ‘dominant’ and IV or $\hat{4}$ as ‘subdominant’ are meaningless. ‘Major’ and ‘minor’ keys, as well as ‘perfect’, ‘plagal’, ‘interrupted’ and ‘half’ cadences are also largely pointless except in the grey areas between quartal and tertial harmony (p. 302, ff.).

[6] Observations 1-5 apply also to sharpwards movement (clockwise) round the circle of fifths, as shown for quartal triads in the second line (b) of Figure 58 (p. 302).

Figure 58 (p. 302) shows progressions of quartal triads round the circle of fifths, both anticlockwise (1) and clockwise (2). The lower part (2) of the figure also shows how individual notes are held over three successive chords and underlines the overlapping fluidity of tonical neighbourhoods visualised in Figure 56.

The upper part (1) of Figure 58 includes three rows of chord symbols, each detailing the type of quartal triad built on each of every chord’s three notes. For example, the first chord, notated as the triad stack $G^{4\sharp}$ (g-c-f, **g** in sharpward position) is invertible to the core triad C^4 (c-f-g, **c** in central position) and to F^2 (f-g-c, **f** in the g-c-f stack’s flatward position). F^4 (f-bb-c) becomes core triad in the second chord and moves to sharpward position as $F^{4\sharp}$ (f-bb-eb) for the third chord where Bb^4 (bb-eb-f) is the core triad. All notes fol-

low this three-step pattern from flatward via core triad to sharpward position. The pattern is reversed for clockwise movement: $_4^{\flat} \rightarrow _4 \rightarrow _2$. For example, the quartal triad on *g* in the first chord of the lower line is $G^{\flat 4}$, G^4 (core triad) in the second, G^2 in the third.

Fig. 58. *Quartal triad progressions and tonical neighbourhoods*

(1) *Quartal triad progression flatward around the key clock*

F ₂	F ₄	F ₄ [♯]	A _{b2}	A _{b4}	A _{b4} [♯] = G _{♯4} [♯]
C ₄	C ₄ [♯]	E _{b2}	E _{b4}	E _{b4} [♯]	G _{b2} = F _{♯2}
G ₄ [♯]	B _{b2}	B _{b4}	B _{b4} [♯]	D _{b2}	D _{b4} = C _{♯4}

B ₂	B ₄	B ₄ [♯]	D ₂	D ₄	D ₄ [♯]	F ₂
F _{♯4}	F _{♯4} [♯]	A ₂	A ₄	A ₄ [♯]	C ₂	C ₄
C _{♯4} [♯]	E ₂	E ₄	E ₄ [♯]	G ₂	G ₄	G ₄ [♯]

(2) *Quartal triad progression sharpward around the key clock*

g ----- e ----- f# ----- c# -----
 c ----- a ----- f# -----
 f ----- d ----- b -----

-- [c#/db] ----- bb ----- g
 -- [f#/gb] ----- eb ----- c
 g#/ab ----- f -----

It should also be noted that each of the three rows above the upper line in Figure 58 contains four sections, each separated by a gap of a minor third: [1] F-A_b/G_♯-B-D, [2] C-E_b-G_b/F_♯-A and [3] B_b-D_b/C_♯-E-G. That MINOR THIRD/DIMINISHED SEVENTH pattern can be a useful mnemonic when considering changes of key-clock neighbourhood in quartal harmony.

Crossing neighbourhood borders

Having explained basic differences of tonal function (in the normal sense of the word!) between tertial and quartal triads, it's time to venture out from the comfort zone of $_4^{\flat}$, $_4$ and $_2$ by increasing the number of notes in the quartal stack and by introducing notes

outside the core triad's immediate key-clock neighbourhood. It's a process that investigates a no man's land between quartal and tertial harmony, and it's easiest to explain using Figure 59 (p. 304) in which the simple quartal triads $C4^\sharp$, C^4 , C^2 are heard together with each of the Western octave's twelve tones. We can start by eliminating the three chords on the right in each system of Figure 59 because they all contain a dissonant minor ninth (or augmented octave). That still leaves nine others to consider.

The basic triad and its two inversions in each of the three systems in Figure 59 (p. 304) follow the explanations given earlier. In the top system (1), $C4^\sharp$ in the quartal stack c-f-b \flat ($C4^\sharp$, c sharpward) is inverted as F^4 and Bb^2 . In the middle line (2), C^4 in the stack g-c-f ($G4^\sharp$, c central) is inverted to $G4^\sharp$ and F^2 . In the bottom line (3), C^2 in the stack d-g-c ($D4^\flat$, c flatward) inverts to G^4 and $D4^\flat$. The first bass note to be added on the flat side in each line of Figure 59 produces a $\frac{9}{8}$ chord containing an internal minor third — e \flat -c in $Eb\frac{9}{8}$ (line 1), b \flat -g in $Bb\frac{9}{8}$ (2), f-d in $F\frac{9}{8}$ (3).

The first new bass note on the sharp side produces a stacked quartal tetrad 4^4 or its inversion $\frac{7}{3}$ ('seven flat three')— $G4^4$ in system 1, $D\frac{7}{3}$ in 2, and $A\frac{7}{3}$ in 3. These additions modify the sound of quartal chords quite noticeably. While the internal intervals of quartal *triads* were fourths, fifths, seconds and minor sevenths ($\hat{4}$, $\hat{5}$, $\hat{2}$ (or $\hat{9}$), $b\hat{7}$, e.g. f, g, d, b \flat in relation to c as $\hat{1}$), a *major sixth* now appears in the *tetrads* created by the addition of bass notes on the flat side ($Eb\frac{9}{8}$, $Bb\frac{9}{8}$, $F\frac{9}{8}$) and a *minor third* on the sharp side — g-b \flat in $G4^4$, d-f in $D\frac{7}{3}$, a-c in $A\frac{7}{3}$. Of course, the major sixth and the minor third are three steps equidistant, clockwise and anticlockwise, from the central point of origin on the key clock: it's a major sixth from c to a or from e \flat to c and a minor third from a to c or from c to e \flat (Fig. 56, p. 300). It's another 'minor-third sign' that the quartal harmony may be going elsewhere. Still, up to this 'minor-third' point — with the chord type $\frac{9}{8}$ flatwards and $\frac{7}{3}$ sharpwards at the fluid border of quartal key-clock neighbourhoods — the chords remain largely quartal in character. However, as you venture further afield from the quartal core triad the picture becomes less clear.

Fig. 59. Quartal triads above twelve different bass notes

Sharpward (g c f bb eb)
 C4
 [1] basic triad F4 Bb2 Eb9 | Δ3 Δ3x2 Δ3x3 | G4[♯] C4[♯]/₂ D4^{♯5} | b9 diss.

Central (d g c f bb)
 C4
 [2] basic triad F2 Bb₆⁹ | Δ3 Δ3x2 Δ3x3 | G4[♯] D_{b3}⁷ C^{4/a}/_{A4^{♯5}} | b9 diss.

Flatward (a d g c f)
 C2
 [3] basic triad F₉⁹ | Δ3 Δ3x2 Δ3x3 | G4 D4[♯] A_{b3}⁷ C^{2/e♯}/_{E4^{♯5}} | b9 diss.

Legend Δ3 Δ3x2 Δ3x3 = 1, 2, 3 major thirds in the chord • complementary 4th/5th
 - U - bass notes flatward of C - U - bass notes sharpward of C
 ★ simple inversion of basic triad b9 diss. dissonance caused by minor ninth

Another step flatwards in the bass introduces a major third (‘Δ3’ in all three lines of Figure 59). Focussing on line 2, although the first chord marked ‘Δ3’ is still quartal (Eb^{4♯5} = g-c-f-bb-eb inverted as the quintal stack Eb^{5♯15} = eb-db-f-c-g), it is quite jazzy as Eb^{6add9}. The following chord, with ab as bass note, may theoretically be a revoicing of the quintal stack Ab^{5♯16} (ab-eb-bb-f-c-g) but its two major thirds (‘Δ3x2’: ab-c, eb-g) make it sound even jazzier and thoroughly tertial as Ab^{9add6}. The triple major-third chord on db (‘Δ3x3’) could also be jazz as Db^{♯13b5} but as a simple C⁴ or F² over a db bass it could just as well be part of a quartally arranged phrygian cadence in C (ex. 207a), which in its turn resembles the Andalusian cadence (ex. 207b) cited by Fernández (2004: 100). Neither of the two has the function of a ‘major thirteen flat five’ (Db^{♯maj13b5}).

Ex. 207. (a) *Notional quartal-style phrygian ending*; (b) *Andalusian cadence*

How to label the chords in example 207a is another matter. Since the harmonic context is clearly quartal, I would suggest $C^4_{f/}$, $C^4_{e/b}$, $C^4_{d/b}$, and C^2 as least inappropriate. That's certainly how I was hearing the chords when I played them, but my aural opinion is unlikely to be everyone's and I guess that a common consensus will emerge in due course about such issues. In the meantime I would suggest the following.

1. Use quartal labels for the most obviously quartal chords (Fig. 60). There are only nine of them: $_5$ ('five'), $_4$ ('four'), $_2$ ('two'), $_4^{\uparrow}$ ('four stacked'), $_5^{\uparrow}$ ('five stacked'), $_4^{\downarrow}$ ('four two'), $_7^{\downarrow}$ ('seven four'), $_7^{\flat}$ ('seven flat three', the same notes as a stacked quartal tetrad $_4^{\uparrow 4}$), and $_9$ ('nine six').

Fig. 60. *Nine basic quartal chords*

2. If bass notes change under a simple quartal triad or tetrad, especially if any of those notes are outside the current tonal neighbourhood, or if they're more complex than $_9$ or $_7^{\downarrow}$, indicate the relevant quartal triad plus the bass note in subscript, e.g. ' $C^4_{d/b}$ ' for the penultimate chord in example 207a.
3. Consider the tonal idiom of the passage in which the chord occurs. Put simply, if it's a suspension on the fourth that resolves down to the third it's 'sus 4', if not it's just '4'.

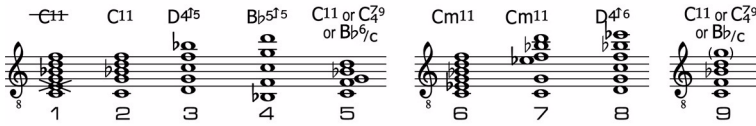
Context of tonal idiom is particularly important when dealing with chords of the eleventh, as will become clear next.

Quartal histories and examples

Elevens, the USA and corporate modernity

Elevens are a bit of an anomaly in tertial harmony because 11 minus 7 equals 4. That's a cryptic way of saying that an eleventh is located one octave and a *fourth* above the root note, as shown in Figure 61 which sets out five variants of the 'straight' or 'thirdless' ELEVEN CHORD (2–5 and 9) and three of the MINOR ELEVEN CHORD (6–8).

Fig. 61. *Eleventh chords*



Chord 1 in Figure 61 shows the tertial stacking of a C¹¹ chord. It's almost never played like that due to the minor ninth between the major third (e) and the eleventh (f). $\Delta\hat{3}$ is dropped and the notes are arranged as Gm⁷ or B \flat ⁶ over C (chords 2, 5). Losing $\Delta\hat{3}$ but keeping $\hat{4}$ gives it quite a quartal flavour in that it can be inverted to five-note quartal or quintal stacks (3 and 4 – D^{4#5} and B \flat ^{5#5}), as well as to more common sonorities like chord 5. The fifth can also be omitted from an eleven chord, as indicated by the brackets around g in chord n^o 9, because, as explained below, its most common function is to merge a 'IV' chord in upper parts with a 'V' in the bass: hence B \flat /c or Gm⁷/c as alternative shorthand for C¹¹.

Unlike the thirdless eleven chord (Fig. 61, 1), *minor eleven can* be played as a tertial stack (Fig. 61, 6). It can also, *like* the 'straight' eleven, be inverted into a stack of fourths (chord 8, D^{4#6}) or fifths (E \flat ^{5#6}).⁷ Chord 7 in Figure 61 is a viable voicing of a full Cm¹¹ but some notes (usually the fifth or ninth) are often dropped from this six-note fistful. As soon as b $\hat{3}$ is omitted, as in chord 9, there's nothing major or minor about the chord: it's an eleven chord plain and simple. With no $\hat{3}$ but *with* $\hat{2}$, $\hat{4}$, b $\hat{7}$ and an optional $\hat{5}$, it's 'quite quartal'. That said, there's not much point in thinking of the re-

7. The quintal stack containing the same notes Cm¹¹ is E \flat ^{5#} – e \flat b \flat f c g d.

peated $A\flat^{11}$ chord in example 208 ($a\flat-b\flat-d\flat-e\flat-g\flat$) as a quartal pentad stacked on $b\flat$ or as a five-note quintal stack on $g\flat$, even if Dvořák's $A\flat^{11}$ contains exactly the same notes ($B\flat^{4\flat 5} = b\flat-e\flat-a\flat-d\flat-g\flat$).

Ex. 208. Dvořák (1893): *New World Symphony, II (largo)*; 'gospel' cadence

A $V \rightarrow I$ cadence like $A\flat^{11} \rightarrow D\flat$ is highly irregular in euroclassical music but it was how Dvořák solved the problem of harmonising his famous doh-pentatonic tune and its 'missing' $\Delta\hat{7}$ for a concert-hall audience in 1893.⁸ In tertial terms, the solution was to treat the upper parts, including the melody, as the 'subdominantal' ingredient (involving $\hat{2}$, $\hat{4}$ and $\hat{6}$) in a plagal cadence ($IV-I$) while assigning the bass part its usual role as V in a $V-I$ 'perfect' cadence.⁹ This superimposition of $IV-I$ and $V-I$ formulae to produce cadences using the 'dominant' eleventh ($V^{11} \rightarrow I$) was also the solution favoured by Dvořák's pupil, copyist and friend, African-American composer Harry T Burleigh, whose arrangements of mainly pentatonic spiritual melodies are widely sung to this day and an established part of a particularly US-American tonal idiom.

Ex. 209. Deep River (US. trad., arr. Harry T Burleigh, 1916): gospel cadence

8. Famous? The tune was used in a UK TV commercial for Hovis bread in the early 1990s (© 25 Commercial Classics: *The Best Thing Since Sliced Bread*, 1994).
9. For explanation of euroclassical cadences, see p. 258, ff. The upper parts in ex. 208 can be heard as marking a progression from 'something other than the tonic' (the plagal $\hat{2}-\hat{4}-\hat{6}$ sphere) to a tonic major triad ($\hat{1}-\hat{3}-\hat{5}$).

The eleven chord was used so often in arrangements of spirituals that it became a style indicator of gospel music. One of its clearest instances is the F¹¹ in the last bar of example 210.

Ex. 210. Joe Zawinul, Cannonball Adderley (1963): *Mercy, Mercy, Mercy*

‘Eleven’ is so common in the positive doh-pentatonic sphere of upbeat soul and gospel that citing its occurrences seems almost superfluous. Still, just to give an idea of its popularity, examples 211 and 212, from a famous Motown hit, are included to illustrate two slightly different uses of the eleven chord in the same song.

Ex. 211. Martha and the Vandellas (1964): *Dancing In The Street; intro.*

Ex. 212. Lead-in to return of main riff in ex. 211

The official sheet music for *Dancing In The Street* tells you to use F⁷, not the F¹¹ actually played by the Motown musicians who oscillate between F¹¹ and a straight, seventhless F triad.¹⁰ It’s a mixolydian shuttle (E^b/_F ↔ F) and one of those ‘one-chord changes’ that publishers of popular sheet music expect musicians to supply automatically.¹⁰ Example 212 cites the same song’s other, ‘dominantal’, use of the eleven chord (like examples 208-210), as it ushers in a return to the initial mixolydian ‘eleven riff’ on F (ex. 211).

10. The sheet music is actually in E and guitarists are instructed to play E⁷. See Chapter 11 on ‘One-chord changes’; see also ‘Subtonic shuttles’ in Chapter 12 (I ↔ ^bVII, p. 389, ff.).

The only thing that's quartal about the elevenths just cited (ex. 208-212) is that they include a fourth ($4+7=11$), no third, and that they are not suspensions. Dominant use of a quartal chord is also found in traditional music from the Appalachians (ex. 213).

Ex. 213. *Doc Watson et al. (1963): Amazing Grace; doh-pentatonic V-I in F.*

S
T
B
8

Was blind but now I see.

Example 213 contains two thirdless chords: the final open-fifth dyad F^5 (f-c) and the penultimate $C^{5\uparrow}$ (c-g-d) inverted to a sparse C^2 (c-d-g). In tertial terms, the three last chords ought to be have been $V_4^6 \rightarrow V \rightarrow I$ ($F_{/5} \rightarrow C \rightarrow F$). The chord on 'now' fits that pattern but the last two ('I see') don't. The open-fifth dyad, F^5 , is chosen not just because it's the preferred final sonority in this type of vernacular harmony but also because the line of the middle voice descends more easily from d to c than from d to a. But why is the middle voice on d in the penultimate chord (on 'now') in the first place? Shouldn't it be e to create a 'normal' $C \rightarrow F$ ($\Delta \hat{7} \hat{8} = \hat{1}$) cadence? No, because the tune being harmonised in this tradition, *Amazing Grace* (ex. 78, p. 155), is doh-pentatonic and because a melodic final cadence in the octave's upper tetrachord involves pentatonic motion from $\Delta \hat{6}$ to either $\hat{5}$ or $\hat{1}$. The mode they're in just doesn't include $\Delta \hat{7}$.¹¹ That's what creates the $C^{5\uparrow}$ (c-g-d inverted to c-d-g), the sort of stripped-down 'eleven sound', of the penultimate chord in example 213. It seems in other words that 'poor white folk' came up with a similar solution to that of Dvořák and Burleigh when trying to merge doh-pentatonic tonality with a V-I cadence. This particularly US-American type of quartal tonality, was treated in a different way — melodically and harmonically, rarely as dominant elevenths — by Copland, as shown in example 214 (p. 310), whose melodic lines (left) contain the same notes as the chords at the end (right) of each line.

11. Interestingly enough, the only e heard in the same recording is at 'me', under the tune's high c, half way through the hymn (ex. 78, p. 155, bar 7).

Ex. 214. Copland: (a) *Fanfare for the Common Man*¹² (1942; opening);
 (b) *Appalachian Spring* (1944; 8 bars after '13').

Such sounds also abound in Copland's scores for films like *Of Mice and Men* (1939a), *The City* (1939b) and *Our Town* (1940).¹³ But Copland didn't only put the common triad of the nearest *flatward* key on top of a given bass note (e.g. Eb over an f in Bb to produce F11, or as with chords 1, 3 and 5 in ex. 215, p. 311); he also often did the same with the common triad of a neighbouring *sharpward* key, as with chords 4-6 in example 215. This second type of chord certainly contains an internal major third (g-b, d-f#, eb-g) but there's no third in the chord as a whole, no Δ³ in chords 4-6 (no e in n^o 4, no b in n^o 5, no c in n^o 6). The internal major third is Δ⁷ in relation to the bass but not as its 'leading note', because the bass note can have no 'dominant' function, it can be no 'V', if it's the '8=1' to which the Δ⁷ is supposed to 'lead'. So, even if chords 4, 5 and 6 in example 215 look or even sound tertial, they don't work like the major thirds and sevenths of euroclassical tertial harmony. They're simply alternative sonorities in the tonical neighbourhood.

Copland's use of 'IV-over-V' (chords 1-3) and 'V-over-I' (chords 4-6 in example 215) has been highly influential in Hollywood.

12. *Fanfare for the Common Man* was later used as title music for the Apollo-Soyuz broadcasts (© BBC Space Themes, 1978) and in a General Motors commercial (© 25 Commercial Classics, 1994).
13. The tracks 'New England Countryside', 'Barley Wagons', 'Grover's Corners' and 'Threshing Machines' on © Copland: *Music for Movies* (2010) are all quite quartal, 'Threshing Machines' (from *Of Mice and Men*) particularly so. Among other composers to use quartal harmony in Hollywood's heyday were Rózsa (e.g. *The Jungle Book*, 1942; *Quo Vadis*, 1950), Leonard Bernstein (e.g. *On the Waterfront*, 1954), Elmer Bernstein (e.g. *The Carpetbaggers*, 1964).

These sounds turn up frequently in scores written to this day¹⁴ and have become a part of mainstream media culture, as suggested by the occurrence of both chords \exists and \ominus in the first four bars of the *Hill Street Blues* theme (ex. 215b).¹⁵

Ex. 215. (a) ‘Copland chords’; (b) Mike Post (1980): *Hill St. Blues* (opening)

(a)

1 2 3 4 5 6

(b)

loco Eb Eb/ab Eb/bb Ab^A Gm⁷ Fm⁷ Bb¹¹

\ominus \exists

Returning to more overtly quartal harmony in media productions from the last few decades, I'll restrict the rest of this account to just a few examples heard many times by millions of people. For instance, the original theme for the TV series *Kojak* (ex. 216, p. 312) was broadcast in over seventy countries to more than 100 million viewers.¹⁶ Out of its total running time of fifty seconds, forty-two, including the twelve in example 216, are entirely quartal and contain no dominant elevenths. Its tonal idiom follows the principles of quartal harmony explained on pages 295-305. It even ‘changes key’ by shifting a minor third from C up to Eb (bar 20) and back (bar 22). It also uses three common variants of quartal chord: Cm¹¹ or C⁴⁴ (bar 18-19, c-f-bb-eb), Eb⁷₄ (bar 20-21, eb-ab-bb-db) and C² (bar 22-24, c-g-d/c-d-g).

14. The same sounds abound in the work of Roy Harris, e.g. at c. 12:00 in *Symphony n° 3* (1938) or during the first five minutes of *Symphony n° 7* (1952). Thanks to Bob Clarida for drawing my attention to this connection.

15. The night before I wrote that sentence [140329], I caught the last part of a TV rerun of *Beverly Hills Cop III*. Nile Rodgers used at least one eleven chord as ‘tail’ chord, e.g. just before Foley opens the door to his hotel room in L.A.

16. For viewing statistics, see Tagg (2000a: 125, fnt. 271).

Ex. 216. Goldenberg (1973): *Kojak* (main theme, bars 18-24)

© Duchess Music Corp., 1973.

From complete transcription in Tagg (2000: 140-142)

This version was used for the first season of *Kojak*. It was replaced by a tertial version for season 3.

♩=132 (cor)

Horns a4

Moog sequencer

Piano reduction

(ww. etc.) trb., etc.

brass, strings, etc.

bs., timp., tuba, etc.

ww. 8v loco

19

22

ff

ww. 8v loco

bs., etc.

C2 (or C2)

If over 100 million heard the *Kojak* theme, I shudder to think how many ears the Db⁴ of example 217 has reached how many times.

Ex. 217. Walter Werzowa (1993): *Intel Inside jingle*¹⁷

marimba/kalimba/xylo sound

reverb

The same sort of quartal sounds are often used together with teleprinter rhythms for news and current affairs broadcasts, for instance as logo for WINS, a news radio station in New York, or as signature for *The McLaughlin Group*, an opinionated public affairs discussion programme on US network TV (ex. 218).¹⁸

Ex. 218. *The McLaughlin Group* (public affairs TV; c. 1986)

The musical score for Ex. 218 is written in 4/4 time with a key signature of three sharps (F#, C#, G#). It consists of four staves:

- Staff 1 (vlns.):** Violins. Starts with a rest, then plays a melodic line: G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), D5 (half).
- Staff 2 (cor.):** Cor Anglais. Starts with a rest, then plays a melodic line: G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), D5 (half).
- Staff 3 (synth.):** Synthetizer. Plays a rhythmic pattern of eighth notes in quartal harmony: G4-A4, B4-C5, D5-E5, F5-G5, A5-B5, C6-D6, E6-F6, G6-A6, B6-C7, D7-E7, F7-G7, A7-B7, C8-D8, E8-F8, G8-A8, B8-C9, D9-E9, F9-G9, A9-B9, C10-D10, E10-F11, G11-A11, B11-C12, D12-E12, F12-G13, A12-B13, C13-D14, E14-F15, G15-A15, B15-C16, D16-E16, F16-G17, A16-B17, C17-D18, E18-F19, G19-A19, B19-C20, D20-E21, F21-G22, A21-B22, C22-D23, E23-F24, G24-A24, B24-C25, D25-E26, F26-G27, A26-B27, C27-D28, E28-F29, G29-A29, B29-C30, D30-E31, F31-G32, A32-B33, C33-D34, E34-F35, G35-A35, B35-C36, D36-E37, F37-G38, A37-B38, C38-D39, E39-F40, G40-A40, B40-C41, D41-E42, F42-G43, A42-B43, C43-D44, E44-F45, G45-A45, B45-C46, D46-E47, F47-G48, A47-B48, C48-D49, E49-F50, G50-A50, B50-C51, D51-E52, F52-G53, A52-B53, C53-D54, E54-F55, G55-A55, B55-C56, D56-E57, F57-G58, A57-B58, C58-D59, E59-F60, G60-A60, B60-C61, D61-E62, F62-G63, A62-B63, C63-D64, E64-F65, G65-A65, B65-C66, D66-E67, F67-G68, A67-B68, C68-D69, E69-F70, G70-A70, B70-C71, D71-E72, F72-G73, A72-B73, C73-D74, E74-F75, G75-A75, B75-C76, D76-E77, F77-G78, A77-B78, C78-D79, E79-F80, G80-A80, B80-C81, D81-E82, F82-G83, A82-B83, C83-D84, E84-F85, G85-A85, B85-C86, D86-E87, F87-G88, A87-B88, C88-D89, E89-F90, G90-A90, B90-C91, D91-E92, F92-G93, A92-B93, C93-D94, E94-F95, G95-A95, B95-C96, D96-E97, F97-G98, A97-B98, C98-D99, E99-F100, G100-A100, B100-C101, D101-E102, F102-G103, A102-B103, C103-D104, E104-F105, G105-A105, B105-C106, D106-E107, F107-G108, A107-B108, C108-D109, E109-F110, G110-A110, B110-C111, D111-E112, F112-G113, A112-B113, C113-D114, E114-F115, G115-A115, B115-C116, D116-E117, F117-G118, A117-B118, C118-D119, E119-F120, G120-A120, B120-C121, D121-E122, F122-G123, A122-B123, C123-D124, E124-F125, G125-A125, B125-C126, D126-E127, F127-G128, A127-B128, C128-D129, E129-F130, G130-A130, B130-C131, D131-E132, F132-G133, A132-B133, C133-D134, E134-F135, G135-A135, B135-C136, D136-E137, F137-G138, A137-B138, C138-D139, E139-F140, G140-A140, B140-C141, D141-E142, 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F792-G793, A792-B793, C793-D794, E794-F795, G795-A795, B795-C796, D796-E797, F797-G798, A797-B798, C798-D799, E799-F800, G800-A800, B800-C801, D801-E802, F802-G803, A802-B803, C803-D804, E804-F805, G805-A805, B805-C806, D806-E807, F807-G808, A807-B808, C808-D809, E809-F810, G810-A810, B810-C811, D811-E812, F812-G813, A812-B813, C813-D814, E814-F815, G815-A815, B815-C816, D816-E817, F817-G818, A817-B818, C818-D819, E819-F820, G820-A820, B820-C821, D821-E822, F822-G823, A822-B823, C823-D824, E824-F825, G825-A825, B825-C826, D826-E827, F827-G828, A827-B828, C828-D829, E829-F830, G830-A830, B830-C831, D831-E832, F832-G833, A832-B833, C833-D834, E834-F835, G835-A835, B835-C836, D836-E837, F837-G838, A837-B838, C838-D839, E839-F840, G840-A840, B840-C841, D841-E842, F842-G843, A842-B843, C843-D844, E844-F845, G845-A845, B845-C846, D846-E847, F847-G848, A847-B848, C848-D849, E849-F850, G850-A850, B850-C851, D851-E852, F852-G853, A852-B853, C853-D854, E854-F855, G855-A855, B855-C856, D856-E857, F857-G858, A857-B858, C858-D859, E859-F860, G860-A860, B860-C861, D861-E862, F862-G863, A862-B863, C863-D864, E864-F865, G865-A865, B865-C866, D866-E867, F867-G868, A867-B868, C868-D869, E869-F870, G870-A870, B870-C871, D871-E872, F872-G873, A872-B873, C873-D874, E874-F875, G875-A875, B875-C876, D876-E877, F877-G878, A877-B878, C878-D879, E879-F880, G880-A880, B880-C881, D881-E882, F882-G883, A882-B883, C883-D884, E884-F885, G885-A885, B885-C886, D886-E887, F887-G888, A887-B888, C888-D889, E889-F890, G890-A890, B890-C891, D891-E892, F892-G893, A892-B893, C893-D894, E894-F895, G895-A895, B895-C896, D896-E897, F897-G898, A897-B898, C898-D899, E899-F900, G900-A900, B900-C901, D901-E902, F902-G903, A902-B903, C903-D904, E904-F905, G905-A905, B905-C906, D906-E907, F907-G908, A907-B908, C908-D909, E909-F910, G910-A910, B910-C911, D911-E912, F912-G913, A912-B913, C913-D914, E914-F915, G915-A915, B915-C916, D916-E917, F917-G918, A917-B918, C918-D919, E919-F920, G920-A920, B920-C921, D921-E922, F922-G923, A922-B923, C923-D924, E924-F925, G925-A925, B925-C926, D926-E927, F927-G928, A927-B928, C928-D929, E929-F930, G930-A930, B930-C931, D931-E932, F932-G933, A932-B933, C933-D934, E934-F935, G935-A935, B935-C936, D936-E937, F937-G938, A937-B938, C938-D939, E939-F940, G940-A940, B940-C941, D941-E942, F942-G943, A942-B943, C943-D944, E944-F945, G945-A945, B945-C946, D946-E947, F947-G948, A947-B948, C948-D949, E949-F950, G950-A950, B950-C951, D951-E952, F952-G953, A952-B953, C953-D954, E954-F955, G

Table 24. *Quartal tracks on the album Aspire and Achieve (2013)*

Composer	Title	Description
John Chilton	Determination	Expansive, aspirational and purposeful, rising to the challenge - optimistic and positive
Jon Chilton	Research Zone	An inspiring, modernist and futuristic science and technology soundscape
Steven A. Johnson	Work & Motion	A busy modernist and futuristic technology theme - positivity and productivity
Sebastian Morawietz	Constant Flow	Exploration and discovery, an upbeat and positive electro theme.

Hoping to discover why the composers had found quartal harmony so appropriate to corporate aspiration, I phoned Media-Tracks.²¹ The man answering my call told me the composers weren't there, but assured me 'they wouldn't know why even if you asked them. They just know that's how it sounds', he said. I needed to go no further because someone whose income depends on the licensing of music designed to carry specific connotations was able to confirm as self-evident – 'they know that's how it sounds' – the connection between quartal harmony and optimistic achievement, success, productivity, modernity and a positive, up-to-date sense of corporate aspiration.

We're talking here about a semiotic web that should come as no surprise, given the extent to which fourths and fifths feature in audio signals that users of digital devices have been hearing for a couple of decades. Those fourths and fifths, typically assigned to marimba-like samples resembling that heard in the ubiquitous Intel jingle (ex. 217, p. 312),²² or to other synthesised timbres, are triggered to alert users of state-of-the art electronic devices that a message has arrived, that battery power is low, that a download has finished, that a fatal error has occurred, etc.²³ Did the TECHNOLOGICAL MODERNITY aspect of those sounds come from their use in modern technology, or did modern technology use those sounds

21. The phone call (Huddersfield to Blackburn) took place at 16:10, 2014-03-22.

22. See discussion of 'corporate sound' in the Intel Inside analysis video (Tagg, 2010) and in the *Sportsnight* analysis in Tagg & Clarida (2003: 475-512).

because they already seemed to signal technological optimism and positive modernity? There's no room here to investigate that *etymophony*, but it's more likely that a connection already existed between quartal harmony and positive modernity before the global spread of home computers.²⁴ It may have come from Copland-influenced film music (see examples 214-218), or from its use by other twentieth-century composers (examples 223-230), or from its use by certain post-bop jazz artists (examples 231-234). Whatever the case, it can seem paradoxical that tonal polyphony associated today with positive modernity was once linked with negative or nostalgic notions of archaic backwardness.

Euroclassical thirdlessness

In European Baroque and classical music, open-fifth drones were often used as a genre synecdoche²⁵ connoting the simplicity of rural life. One example is the pastoral symphony from Handel's *Messiah* (1741), another the opening to the Pastoral Symphony itself (Beethoven, 1808). The same sort of rural drone is given dissonant treatment by Schubert in *Winterreise* to accompany words conjuring up a stark vision of the ragged hurdy-gurdy player in an ice-bound, poverty-stricken village on a winter's day (ex. 219, p. 316).²⁶

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23. 4th/5th signals in Windows XP included Critical Battery Alarm, Shutdown, Startup, Print Complete, Popup Blocked, Device Connected/Disconnected, iTunes Download Complete, Error and Exclamation.
 24. Maybe they're a legacy of the sort of US-American twentieth-century optimism from pre-McCarthy, pre-Vietnam times when the sounds of Copland's 'common man' (including *Billy the Kid* on the open plain, *Appalachian Spring*) and the hopes of the Civil Rights movement (doh-pentatonicism and eleven chords) still had some psycho-social mileage, when 'the future' could still be imagined as US-American, etc. These possible connections are much too complicated to be investigated in this book. It's worth noting that a contemporary review in the *New Yorker* praised Copland's film music for its 'clangy' and 'jocular' moments, but also for its 'pensive quality' and 'optimism'.
 25. *Genre synecdoche*: see Glossary, p. 489.

Ex. 219. Schubert (1827): *Der Leiermann* (opening piano accomp.)

Less stark but just as archaic are the connotations of Mussorgsky's musical vision of 'The Old Castle' (ex. 220).

Ex. 220. Mussorgsky (1874): 'The Old Castle' (*Pictures at an Exhibition*)

One notable difference between Mussorgsky's thirdless harmony and, on the other hand, the Baroque and classical uses of rustic drones in Central Europe is the relative strength and proximity of vernacular tonal traditions in Russia. Apart from the recurrent unisons or octaves characteristic of three-part popular song in rural Russia, example 221 features several quartal sonorities, including secundal voicings and stacked quartal triads.²⁷

Ex. 221. Vernacular Russian vocal harmony, cited by Calvacoressi (1946: 186)

'The fons et origo of Mussorgsky's new idiom... is to be found in Russia's folk song... [It] carries us into a harmonic world... unaccountable in terms of Western music and often disconcerting to the Western ear... but affording a wealth of raw materials to a

26. During tertial harmony's global hegemony (c.1650 - c.1950), open fifths were regarded as archaic or primitive. Following a sort of ALL FOREIGNERS SOUND ALIKE principle, Hollywood stereotypes for almost any place or time felt to be distant enough from that of the US film industry's mostly Central-European conservatory-trained composers were provided with thirdless polyphony. Ancient Egypt, Greece and Rome, medieval Europe, the Chinese, the Arabs and Native Americans were often harmonically indistinguishable.
27. Stacked quartal triads: A⁴, E⁴ in ex. 221a; D⁴, G⁴ in ex. 221b. Secundal sonority: B^b2 in ex. 221b. See also *Folk Music of the USSR* (n.d.).

composer endowed with the right kind of ear and imagination’ (Calvacoressi, 1946: 186).

Mussorgsky’s ‘folk’-influenced idiom is viewed here in terms of tonal innovation and novelty, even though the composer’s ‘*fons et origo*’ had, from the Central European V→I perspective, long been associated with rusticity and olden times. Samson (1995: 1-2, 9-15) also presents the harmonic idiom used by some nineteenth-century Russian composers as a sign of modernity and innovation.²⁸ Mellers (1962: 856) does likewise, illustrating the point with two extracts from Borodin tone poems (ex. 222).

Ex. 222. *Borodin*: (a) *The Sleeping Princess* (1867) (E♭⁹₄, etc.)

(b) *Song of the Dark Forest* (1868) (F#⁵, G², A², etc.)

Russians like Mussorgsky and Borodin were followed later by composers of the Spanish school (e.g. De Falla, ex. 223a), but non-ionian tertial harmony was for some time the most common approach to the problem of harmonising music outside with the euroclassical idiom (e.g. Dvořák, Grieg, Vaughan Williams). However, the attitude of euroclassically trained musicians to traditions outside the canon did change during the nineteenth century.

Whereas Czech-German symphonist Carl Stamitz had in 1798 deemed Irish tunes incapable of bearing any harmony (Hamm 1979: 50), Hughes, in the preface to his arrangements of *Irish Country Songs* (1909: v), expressed the need for a radical and unacademic approach when dealing with such material, championing the work of ‘M. Claude Debussy’ who, he wrote, had set the trend ‘to break the bonds of this old slave-driver’ [euroclassical tonality] ‘and return to the freedom of primitive scales’.²⁹ Hughes’s accom-

28. ‘[I]n the nineteenth century Russian composers had developed unorthodox harmonic techniques which preserve tonality as an organizing principle while modifying significantly the classical tonality of Western European traditions’.

29. See also p. 144, esp. footnote 110.

paniment to *She Moved Through the Fair* (ex. 14, p. 103), set in Eb mixolydian, resolves its chains of open fifths and tertial triads on to a final quartal chord (ex. 223b, with Ab⁴ as an inverted Eb⁴).

Ex. 223. (a) *De Falla: Farruca* from *El sombrero de tres picos* (1919); (b) *Irish Trad., arr. Hughes: She Moved Through The Fair (final chords)*

Ex. 224. *Debussy (1910): 'La cathédrale engloutie'* (Préludes, 1910)

Debussy is one of the first twentieth-century composers in Western Europe to use quartal harmony. Although whole sections of his *La cathédrale engloutie* – also as arranged by John Carpenter and Alan Howarth in *Escape from New York* (1981) – move in layered parallel fifths (ex. 224), Debussy's use of thirdless harmony is generally limited to short passages providing contrasting harmonic colour to other sonorities, such as the whole-tone scale and tertial chords of the sixth, seventh and ninth. Example 225 shows the first three bars of one such brief quartal passage.

Ex. 225. *Debussy: 'Sarabande'* (Pour le piano, 1901): *quartal passage* (4th)

Stravinsky, on the other hand, produces quite extensive passages of quartal harmony in both *The Rite of Spring* (1913) and *Petrushka* (1911). The extract cited as example 226 (p. 319) is of particular in-

terest, not just because its busily textured D_2^4 chord (d-e-g-a) in the upper register closely resembles the violin and Moog parts of the sixty years younger *Kojak* theme (ex. 216, p. 312), but also because both the *Petrushka* extract and the *Kojak* theme are linked to the same sort of positive, sparkling brightness and bustle.³⁰

Ex. 226. Stravinsky (1911): *Petrushka* (opening bars)

But it is Bartók and Hindemith who are probably most often cited as classical exponents of quartal harmony. Bartók seems to use it in three different ways: [1] as a *drone-based device* — see examples 13 (p. 102), 58 (p. 139) and 60 (p. 140); [2] as a *quartal stack in parallel motion* to give a particular sonority to a melodic motif; [3] as *voiced harmony involving change of tonical neighbourhood*. Since drone-based quartal harmony is discussed in more detail later (p. 344, ff.), I'll start with [2], the quartal stack in parallel motion. It's not the most common Bartókian quartal device but it's used to great effect in the ominous build-up cited as example 227 (p. 320).³¹ It's also used by Morricone for a scene of considerable tension in *The Mission* (ex. 228, p. 320).

30. See Tagg (2000a: 158-180, 212-215). The stage directions to the Stravinsky extract include: 'rejoicings', 'a sunny winter's day', 'a crowd of people moving about', etc. The *Kojak* museme connotations include 'busy', 'positive bustle', 'vibrant, shimmering and luminous'.

Ex. 227. Bartók (1939): *Divertimento for Strings, II*: bars 38–41 (parallel quartal triads [4^1] doubled or tripled in octaves)

Ex. 228. Morricone (1986): 'Penance' from *The Mission* (at 0:29:23, *ff*; ten-note quartal stacks [4^1_{10}])³²

Example 229 (p. 321) illustrates Bartók's use of *voice-led quartal harmony*. The extract's tonal reference point is its first chord, $C\#4^1_4$, and its two central notes, $\#f$ and b . That chord recurs on the first beat of eight of the eleven bars in the example and accounts for half of its total duration. It's offset by change to sonorities at varying distances from the tonical neighbourhood it establishes and to which it repeatedly returns. First, by shifting the upper parts up and the lower parts down a fourth in bar 1, the original stack's two central

31. 'The Divertimento's heart of darkness... is a creeping, macabre march that builds to a frenzy of trilled chords' (programme notes by Joseph Horowitz, 2004-02-05); boosey.com/pages/cr/catalogue/cat_detail.asp?musicid=7629; see ensemblxxi.org/bartok.htm and bso.org/images/program_notes/bartok_Divertimento.pdf [all 071011] for more evidence of the music's ominous character.
32. Transcription by Simon Bertrand, Montréal. This music occurs when the imprisoned Rodrigo (Robert De Niro) bursts out in anger at Father Gabriel (Jeremy Irons). The quartal stacks follow the film's four-note main theme.

notes are dropped while the outer two (c# and e) are retained. It's not a big tonal step to that unconventionally voiced 'A^Δ' (A^{maj}/g#) because g#, c#, e and a are all part of the same six-note quartal stack g#-c#-f#-b-e-a.

Ex. 229. Bartók (1917): *String Quartet 2, III (lento)*

However, none of the four 'home' notes (c# f# b e) are in the *second* 'other' chord (bar 2, a#-d#-d#-g# = b^b-e^b-d-g): this time the upper two and the lower two parts have moved in contrary motion by a *minor third* to create a sort of 'Eb^Δ/5', an unequivocal tonal 'elsewhere' to C#4⁴. Bar 3's B4⁴, just two steps away on the key clock, returns to C#4⁴ chromatically via an inverted C#4⁴ (c-f-b^b-e^b as a#-d#-c#-f#). From there, the viola and cello parts take three steps (and a minor third) to regain the tonal home neighbourhood (a#→c#, d#→f#) while the two violins take five key-clock steps (and a descending semitone) to return (c→b, f→e) to the tonal reference tetrad (c# f# b e). Such change involving voice leading by small pitch steps from a tonical neighbourhood at least three 'hours' away on the key clock constitutes a typical cadence in quartal harmony *à la* Bartók. An even clearer quartal cadence occurs in bars 7-8 where an inverted D4⁴ (d g c f as d e# c g) returns to the original C#4⁴. By moving in this sort of way from one tonical neighbourhood to another by at least three steps on the key clock (the 'minor third rule'), Bartók creates a sense of movement, direction and contrast in quartal harmony.³³

A similar kind of quartal sound is heard in example 230a. Its main harmonies are on beats 1 and 3 of each bar and are reduced to basic dyads or triads in example 230b. From the initial tonical neighbourhood of C (bar 1), Hindemith makes one two-step move sharpward (\cup^2) to D^4_4 (a-d-[g]-c) on bar 2's beat 1 and another to E^4 on beat 3, a sonority that shares no notes in common with the initial C neighbourhood. That E^4 is followed by a radical shift of five key-clock steps sharpward (\cup^5) to bar 3's $D^{\sharp 4}_4$ (d^{\sharp} -a \sharp -g \sharp -c \sharp) which contains both the g \sharp and d \sharp of the phrase's target chord. To make the overall progression from neighbourhoods around C, D and E to the final G \sharp^5 more directed, Hindemith inserts a C \sharp^4 ⁵ chord (c \sharp -f \sharp -[b]-e-a, also interpretable as an F \sharp^4 ⁴ or A6₅), as penultimate sonority. It works cadentially because, as in the preceding Bartók example, it shares no notes in common with the final target chord.

Ex. 230. Hindemith (1934): (a) *Mathis der Mahler*, 'Grablegung', bars 1-4;
(b) chordal reduction; key-clock movement sharpward \cup , flatward \cup .

(a) $\text{♩} = 54$ *Sehr langsam*

(b) C⁵ C⁴ \cup^2 D⁴₄ \cup^2 E⁴ \cup^5 D^{♯4}₄ \cup^5 E⁴ \cup^4 G^{♯5}

This use of chromaticism to give quartal harmony a sense of direction can also be found sometimes in certain types of post-bebop jazz.

33. This type of harmonic motion, voiced in fifths, can be heard in the second movement of Bartók's Piano Concerto n° 2 (see Tagg, 2000a: 389-390).

Quartal jazz

Fig. 62. Google search for ‘quartal harmony’ 2014-04-17: most of first 100 hits link to jazz tutorials.

quartal harmony			
Web	News	Videos	Images
About 161,000 results (0.39 seconds)			

Quartal harmony was a little slower to enter the world of jazz but, judging from the number of online tutorial sites devoted to the topic (Fig. 62), it has become an integral part of the jazz academy curriculum. The 1959 Miles Davis album *Kind of Blue* (ex. 231), a project in which pianist Bill Evans played a pivotal role, is often seen as the turning point when the tertial-dominant constraints and the constantly busy II-V-I changes of bebop were dumped in favour of quartal sounds that let improvising soloists focus on timbre and phrasing, as well as on melodic shape and narrative.³⁴

Ex. 231. Miles Davis: ‘So What?’ (*Kind of Blue*, 1959): chorus bars 1-19

The SO WHATS in *So What* (ex. 231) are plagal transscansions³⁵ resembling gospel-style OH YEAHS or AMENS. They’re the horn chords in bars 1, 3, 5 and 7 that respond to the bass’s preceding

34. ‘I think [we’re moving] away from the conventional string of chords and a return to emphasis on melodic rather than harmonic variations. There will be fewer chords but infinite possibilities as to what to do with them’ (Davis interviewed by Nat Hentoff (1959)). Thanks to Bill Kinghorn (Leeds) for useful insights about Bill Evans over the phone in May 2014.
35. TRANSSCANION: see Glossary (p. 503).

'calls', and are very similar to the OH YEAHS in *Moanin'* (ex. 91, p. 162, bars 2, 4, 6, 8).³⁶ In both tunes the 'response' is a plagal dorian move from IV to i: *Moanin'* goes from B \flat to Fm, *So What* from a 'sort of' G (major) to the same 'sort of' Dm. That 'sort of' in *So What* is important and can be understood in at least three ways: [1] as two inverted nine-six chords G $\overset{\circ}{9}$ →F $\overset{\circ}{9}$; [2] as two minor eleven chords Em¹¹→Dm¹¹; [3] as a IV→i gospel OH YEAH response — G $\overset{\circ}{9}$ →Dm¹¹. This third designation takes the bass root and tonic (D) into consideration and may be style-historically more appropriate but it gives no sense of the parallel motion between the two OH YEAH/SO WHAT chords. That parallel motion is important because, between them, the two chords state all notes of the dorian mode supplying the tonal vocabulary of the melodic improvisations that follow. Moreover, the chords share two important quartal traits. [1] Both contain $\hat{1}$, $\hat{4}$ and $\hat{5}$ (d g a) — D⁴, the core quartal chord in central position (see p. 304) — while $\hat{2}$, $\hat{b}\hat{3}$, $\hat{6}$ and $\hat{b}\hat{7}$ (e f a c), more distant from the centre of the piece's tonical neighbourhood (D), occur in only either one or the other of the two chords. [2] The two chords are voiced as quartal tetrad stacks (e-a-d-g and d-g-c-f), each with a major third added on top (b and a). It's these features that warrant the music's qualification as quartal.³⁷ Another quartal feature in *So What* is the 'trucker's gear change' (Glossary, p. 503) from D to E \flat — five key-clock steps — to change quartal key for the bridge in a 32-bar chorus whose first sixteen bars are on D, the middle eight on E \flat and the final eight back on D.

Among jazz musicians to follow Davis and Evans into quartal territory were guitarists like Kenny Burrell (e.g. 1963) and Barney Kessel (e.g. 1971). Now, while they may often have used quartal voicing, their harmonic *idiom* was rarely quartal because those voicings functioned as conventional bebop chords of the ninth, elev-

36. *Moanin'* (Timmons, 1958 — one year before *Kind of Blue*) started as an underground BACK TO FUNK BASICS track which became so popular that it 'knocked the Beatles off the top of the charts in 1965' (thebluemonument.com [140414]).

37. They are also at the basis of the misnomer 'modal jazz', as if the particularities of the ionian *mode* were not a prerequisite for the development of tertial harmony and its leading notes, including those of bebop (pp. 92, ff., 266).

enth, thirteenth, etc. This distinction between *voicing* and *idiom* is essential to the understanding of quartal harmony and applies just as much to pianists as to guitarists.

Ex. 232. *Blues in F: piano left hand and bass; quartal voicing, not harmony.*³⁸

The upper staff of example 232 shows (*sva bassa*) the sort of triad voicings an average bop pianist's left hand might produce for a twelve-bar blues in F. The lower staff shows the root note for each chord plus standard tritone substitution notes in bars 4 and 8-10. It all looks very quartal, and as a keyboard player I certainly recognise those familiar shapes in my left hand; but they don't work as quartal *harmony*. That's because only F_9^9 consists of superimposed perfect fourths spanning a *minor seventh* (a-d-g). All the other triads produce, with their roots, chords of the thirteenth or augmented ninth, and their left-hand triads span *not a minor but a major seventh*, since each of them combines a perfect fourth with an *augmented* fourth. These asymmetric quartal voicings contain tritones and major thirds redolent of euroclassical leading notes, especially in bars 8-11 which place us squarely in the territory of II-V-I bebop directionality, an idiom incompatible with the relative fluidity of quartal harmony's tonical neighbourhoods.³⁹

38. N.B. The enharmonic misspelling is intentional in bars 4, 8 and 10 to make the notation *look* as much as possible like stacked quartal triads.

39. In a similar way, Scriabin's 'mystic chord', written $c\ f\#\ b\ e\#\ a\#\ d\#\$, may *look* like a quartal stack but it contains 2 tritones (c-f#, b \flat -e \sharp) and 3 major thirds/tenths (c-e, f#-a# [=bb], bb-d). I consequently *hear* it as a tertial $F\#\text{-}13^{+9}/b_5$.

Not even the F_9^9 in example 232 (p. 325) is strictly speaking quartal in its harmonic context because the chord has a root note (f) situated three key clock steps away from the central position (D^4) of the quartal triad (A^4) in the pianist's left hand. It doesn't state a tonical neighbourhood like the C^4 in the Hindemith extract, or like Bartók's recurrent $C\#^4$ (p. 322), or Stravinsky's D_2^4 (p. 319), or the *Kojak* theme's Cm^{11} and C^2 (p. 312).⁴⁰ The F_9^9 in example 232 is really a tertial tonic major triad, complete with $\hat{A}3$ (a $\hat{1}$) — an oddity in quartal harmony —, and including both $\hat{A}6$ (d $\hat{1}$) and \hat{G} (g) to give it a modern quartal *flavour* rather than function.⁴¹ However, the sort of quartal voicing used by Chick Corea (e.g. *Gemini*, 1968),⁴² Freddie Hubbard and Herbie Hancock (ex. 233, p. 327) and, most notably, by McCoy Tyner (1967, ex. 234) can go beyond 'just sounding modern'.⁴³ When using quartal chords, these artists often come closer to the tonal idiom explained in the theory section of this chapter and as illustrated in examples 226-230 and 236-239.

None of the chords in the Freddie Hubbard example on page 327 contain leading notes, tritones or major thirds in relation to the bass. Instead the loop oscillates between two tonical neighbourhoods. One of those can be reduced to the quartal stack a-d-g-c-f. It consists of the initial D^4 preceded by the anticipated downbeat A^4 at the end of bar 2. The opposite pole is the stack f-b \flat -e \flat -a \flat -d \flat , voiced e \flat -b \flat -d \flat -f-a \flat (Eb 11), five steps flatward from a-d-g-c-f to

40. cf. King Crimson's $C\#^4$, Joni Mitchell's Ab^4 , or Ashley's A^4 (pp. 330-335).
41. Besides, neither fourth on either side of the root note (b \flat or c in relation to f) is in the F_9^9 chord. 'Chord voicings with fourth intervals in them have a modern, open sound' is an on-screen slogan in *Jazz Piano Harmony: Five Essential Quartal Chord Voicings* (by Assaf) at [vii waWrX_lUvXk \[140417\]](#); see also [fntt 43](#). The MODERN, OPEN characteristics Assaf mentions connect with the POSITIVE MODERN TECHNOLOGY connotations discussed earlier (pp. 312-315).
42. For *Gemini* transcription, see [vii BOjWkff9ajo \[140414\]](#). See also *In Conversation with Chick Corea*: 'What is it about Bartók that jazz players like?' (Spurling, nd).
43. Here are six more jazz tutorials devoted to quartal chords: [1] *McCoy Style Quartal Modal Improvisation* [vii mvB1P7_aGZA](#); [2] *Jazz Piano Lesson #23: McCoy Tyner Pentatonics* [vii M66jmp4F818](#); [3] *Learning McCoy Tyner Comping Technique* [vii vdMDKOyVZHw](#); [4] *McCoy Tyner Style Tutorial* [vii dljQUxs88rU](#); [5] *Chord by fourths and pentatonic jazz improvisation* [vii pjQfGx7-NHY](#) [all 140414]; [6] [vii](#) *Quartal Voicings: Multi-Purpose 4th Forms for Jazz and Fusion Chording* [140419].

which it's linked via an intermediate $C4^{\sharp}$. The E_b^{11} pole links back to the tonical neighbourhood of A^4 and D^4 via the two scalar passing chords F^{11} and G^{11} . This chord loop's shuttling between distant tonical neighbourhoods via intermediate sonorities gives the riff a circular harmonic motion.⁴⁴

Ex. 233. *Freddie Hubbard (trp.), Herbie Hancock (piano): riff and chord loop from Red Clay (1970), repeated 1:21-2:26, 10:20-11:40; cited in Ingelf (1974)*

If anyone can be said to epitomise quartal jazz it must surely be pianist McCoy Tyner. In 1962, he and his trio recorded an album whose title makes a pun of that stylistic trait — *Reaching Fourth*.⁴⁵ It's a trait that's also omnipresent in example 234.

Ex. 234. *McCoy Tyner (1967) 'Blues On The Corner' (solo extract)*⁴⁶

44. Lennie White's drumming and Hubbard's phrasing are essential to the effectiveness of the *Red Clay* groove. It's worth noting that Hancock does not improvise over the chord loop but launches into a bebop harmonic idiom.
45. For online tutorials devoted to Tyneresque fourths, see footnote 43 (p. 326).
46. Adapted from George Colligan's transcription, bars 80-83, posted 110506 jazztruth.blogspot.co.uk/2011/05/mccoy-tyners-solo-on-blues-on-corner.html [140324].

Examples 232 and 234 both show quartal *voicings* of left-hand chords for a standard twelve-bar blues, but that is where any likeness between them ends. Apart from the fact that there's only room here to cite six bars of Tyner's playing and that *Blues On The Corner* is in B♭, not F, the most important harmonic difference is that Tyner's left-hand triads are, in this extract, all fully quartal, each consisting of one perfect fourth on top of another — b♭-e♭-a♭ (B♭⁴, bar 1, B♭ in sharpward position), f-b♭-e♭ (B♭⁴, bars 2-4, B♭ in central position, inverted to look like F⁴) and e♭-a♭-d♭ (E♭⁴, bars 5-6).⁴⁷ Another difference between examples 232 and 234 is that Tyner's triads are all rooted on the notes he marks with sturdy open fifths in the bass on anticipated downbeats to bars 1, 3 and 5. There are no chordal tritones, no major thirds or sevenths, nothing remotely ionian, tertial or dominantal in the extract. And the two left-hand triad stacks marked with asterisks in bars 3 and 4 are simply the two poles in a centric⁴⁸ pitch decoration in parallel motion around the main quartal triad (B♭⁴) — B♭⁴ ↗ C♭⁴ ↘ B♭⁴ ↖ A♭⁴ ↗ B♭⁴. That gesture helps avoid harmonic stasis on the repeated B♭ tonic and prefigures change to E♭ (IV) in bar 5 of the twelve-bar blues. Finally, Tyner's right hand keeps to the B♭ la-pentatonic blues mode (descends b⁷ 5^b/b⁵ 4^b b³ 1^b = a♭ f/f♭ e♭ d♭ b♭) in accordance with observations made earlier about quartal stacks and the pentatonic modes whose constituent pitches those chords contain.⁴⁹

Quartal rock

Quartal harmony in rock is sometimes identified with prog and fusion styles. The problem with that view is that, although artists like John McLaughlin and Chick Corea provide a fair number of quartal *voicings* on the celebrated fusion album *Bitches Brew* (Miles Davis, 1970), it would, I think, be misleading to qualify 1970s fusion music as a haven of quartal *harmony*. I went through numer-

47. Basic quartal chord designations are explained on pages 298-302.

48. Centric melodic profiles (exx. 121-122, p. 184) involve neighbouring pitches on either side of a central tone around which the other tones seem to orbit.

49. For links between quartal chords and pentatonic modes, see pp. 298-302, esp. Fig. 55 (p. 299). See pp. 158-163 for an explanation of blues pentatonic modes.

ous tracks by Blood Sweat and Tears, Chicago, Herbie Hancock, John McLaughlin, Santana, Weather Report, Frank Zappa and Joe Zawinul but failed to find consistent use of quartal *harmony*.⁵⁰ There were runs of parallel fourths and jazzy quartal voicings but, so to speak, nothing resembling the non-ionian quartal harmony of Bartók, Stravinsky or McCoy Tyner.

Symptomatic of this process of *Ex. 235. Sting: Seven Days (1993)*

‘non-discovery’ was the C_6^9 in Sting’s *Seven Days* (ex. 235). In quartal theory it’s either an E_4^{f5} (e-a-d-g-c) or, more likely, C_5^{f5} (c-g-d-a-e) revoiced as c-g-a-d-e.

The image shows a musical score for Sting's 'Seven Days'. It is in 5/4 time. The melody is in the treble clef, and the bass line is in the bass clef. The lyrics are 'Seven days' was all she wrote'. The chord is labeled as 'C6/9'.

That said, ‘C6/9’ is how the official sheet music of the song labels the chord; and ‘C6/9’ normally designates a C_6 (c-e-g-a) with $\hat{9}$ (d) as an extra note. That’s also how it sounds in context, like the F_9^9 in example 232 (p. 325). Once again, the G^2 (g-a-d) in mid register may make the Sting chord’s *voicing* nominally quartal but it doesn’t work as quartal *harmony* because it’s above a c bass and because $\Delta\hat{3}$ (the e on ‘days’) is strongly present in the melody. It’s a tonic major triad in quartal clothing. Of course, there’s absolutely nothing wrong with chords containing $\hat{1}$, $\Delta\hat{3}$ and $\hat{5}$: it’s just that they’re not really quartal, even when voiced as if they were.

Sounds closer to the notion of quartal harmony presented in this chapter can be found in recordings by artists like Emerson, Lake and Palmer, Gentle Giant, King Crimson, Stormy Six and Yes.⁵¹ Example 236 is, I think, a textbook example of rock quartality.⁵²

50. Despite Zappa’s fondness for Bartók (§6, footnote 109, p. 142), I found no consistent use of quartal harmony in recordings of his that I was able to access.

51. For example: [1] ELP: start of *Tarkus* (1971); [2] Gentle Giant: 5:58-6:27 in *Panagruel’s Nativity* (1971); [3] Stormy Six: *passim* in *Panorama* (1982); [4] Yes: start of *Starship Troupers* (1971). See also XTC’s *Scarecrow People* (1989), an extraordinary piece containing quartal motifs in bitonal dissonance.

52. King Crimson’s leading figure and guitarist Robert Fripp performs the constant semiquavers in the middle staff of the example and deplors the ‘progressive’ label. For Bartók’s influence on Fripp, see Hage (1999).

Ex. 236. King Crimson: 'Frame By Frame' (Discipline, 1981), 2:19-2:39.⁵³

The musical score is presented in three systems, each with three staves: guitar 1 (gtr. 1), guitar 2 (gtr. 2), and bass. The key signature is one sharp (F#), and the time signature is 4/4. The first system (measures 1-2) features a C#4 chord in the first guitar part and a tremolo arm effect. The second system (measures 3-5) features a motorbike anaphone (D string) in the first guitar part and an E4 chord. The third system (measures 6-8) features muting (LH) in the first guitar part and a tremolo arm effect.

In basic harmonic terms, example 236 consists of a quartal triad, stacked $c\#-f\#-b$ ($C\#4/F\#4$), that shifts up a minor third to $e-a-b$ ($E4/A4$) in bar 5, then by another to $g-c-f$ ($G4/C4$) just after the cited extract. The second guitar's constant semiquavers, played consistently in 6/8 across the underlying 4/4 metre, expands the three-note quartal stack by a note at each end to produce the quartal pentad $g\#-c\#-f\#-b-e$ ($G\#4^5/F\#4^5$). Those semiquavers rise by a minor third along with the bass and the upper guitar part.

Now, King Crimson didn't always use quartal harmony but the band's guitarist, Robert Fripp, has since 1986 strongly advocated his 'New Standard Tuning' in fifths for the instrument (CGDAE plus G, a minor third above E). The idea was, says Fripp, to create 'a more rational system', one that sounded 'better for chords', es-

53. Thanks to Diego García Peinazo for help with this transcription. See Conti (2007: 30-38) for more detail about the tracks *Discipline* and *Frame By Frame*.

pecially if built ‘in fourths, fifths and octaves, so avoiding thirds, especially major thirds’ (Mulhern, 1986).⁵⁴ Fripp also addressed the doctored pitching of thirds in equal-tone tuning, expressing preference for the more open, brighter sounds of perfect intervals (unison, fourth, fifth, octave), and of just-tone intonation.⁵⁵

Another artist to clearly favour a bright, full, open, overtone-rich, chordal sound is Joni Mitchell. Given the acoustic link between fourths/fifths and the harmonic series, it would be surprising if quartal harmony did not appear in her work. Indeed, *The Dawn-treader* (1967), *Song To A Seagull* (1968), *Blue* and *This Flight Tonight* (1971), *The Magdalene Laundries* and *Sex Kills* (1994) are just some of her songs to contain significant elements of quartal harmony.⁵⁶ The opening of *This Flight Tonight* (ex. 237) will have to suffice here by way of illustration. It’s interesting for several reasons: [1] it’s an early example of quartal harmony in a pop-rock artist’s own song-writing; [2] it illustrates the importance of Mitchell’s alternative tunings to produce a tonal sphere able to carry both tertial and quartal chords; [3] it illustrates a particularly useful technique for voicing quartal chords. Let’s see how points [2] and [3] work.

In example 237, Mitchell has tuned her guitar to an open $A\flat$: the bottom string is set to $a\flat_1$ (52 Hz), a minor sixth below standard tuning’s low e (e_2 , 87 Hz). That $a\flat_1$ and the open-string octave above it ($a\flat_2$, 104 Hz) sound throughout the excerpt, as does the open-string fifth ($e\flat_3$) above that, except for the last two chords, when it moves to another $a\flat_3$. In the penultimate chord, the $a\flat_3$ is also sounded in unison on the next string up, while the final fifth

54. Mulhern (1986) cited in Wikipedia article ‘Regular tuning’ [140422]. I agree with Fripp: bass and lower mid-register thirds are so ‘muddy’ that I told my keyboard accompaniment students in the 1970s to avoid ‘Beethoven’ triads that may have been fine on the *Hammerklavier* but which are plain ugly on a modern piano. That’s also why power chords on saturated guitar are fifth dyads, not complete tertial triads which sound absolutely dreadful.

55. Thirds are ‘out’ by around ten cents (see pp. 74-78).

56. In *Sex Kills*, for example, Mitchell’s guitar is tuned $C\ G\ B\flat\ E\flat\ F\ B\flat$. It contains both tertial and quartal chords, e.g. C^9 , C^{11} , $Cm7$, $A\flat_2$, $B\flat_2$, Cm^{11} . There are doubtless other tunes but I’m unable here to produce an exhaustive list.

Quartal pop

Before taking the small step from Joni Mitchell to quartal aspects of traditional music from the British Isles and the Appalachians, I need to briefly mention quartal harmony in mainstream pop and rock, or, rather, the lack of it. I say ‘lack’ because I can bring to mind only one consistently quartal track from my pop- and rock-playing days in the 1960s and 1970s. It’s the one-bar pattern shown as example 238 and it’s played as shown, as well as transposed to the same quartal sound over A and B, throughout the B side of a minor Manfred Mann hit from 1964.⁵⁸ I am reasonably confident that *Kingpin* is a rare exception because, even if songs like *Nowhere To Run* (Martha and the Vandellas, 1965) and *The Road To Nowhere* (Carole King, 1966) contain passages of bare fourths and/or fifths, they are treated literally as bare, not quartally à la Joni Mitchell, King Crimson, McCoy Tyner, Copland or Bartók. That ‘bare thirdlessness’ from the 1960s tends rather to act as word painting for the emptiness of the ‘nowhere’ dominating the lyrics to both songs; it works as contrast to the implicit ‘tertial completeness’ of what was then normal pop.⁵⁹

Ex. 238. Manfred Mann: *I’m Your Kingpin* (1964: riff on i)

However, from around 1980, quartal chords start to appear in the borderlands between pop and rock, not as a 1960s ‘emptiness cue’ but as an alternative or contrast to a tertial tonal idiom. *Message In A Bottle* (Police, 1979) provides an early example of the clear use of quartal chords in at least *part* of a song. Subsequent instances of quartality in anglophone pop-rock music include *The Weapon* (Rush, 1982), *Heart Telegraph* (Divinyls, 1985), *New Day Rising* (Husker Du, 1985), *Big Blue Sky* (Northern Pikes, 1987), *What I Am* (Brickell, 1989), *Furious* (Throwing Muses, 1992) and *Wonderwall*

58. *Kingpin* was B-side to *Hubble Bubble* (1964). A reasonable speculation: as a jazz keyboard player, Mann himself, who penned *Kingpin*, may by 1964 have heard McCoy Tyner’s album *Reaching Fourths* album (1962).

59. See footnote 26 (p. 316) for more about ‘bare’ fifths.

(Oasis, 1995).⁶⁰ Some of this pop-rock quartality can be heard as the extension of the open-fifth power chord by one quartal/quintal step — for example C² (c-d-g) instead of C⁵ (c-g) in the Husker Du track —, while in other instances — e.g. Divinyls, Edie Brickell and Oasis — the quartal idiom resembles more closely that of the Joni Mitchell and King Crimson citations (ex. 236-237).

Please note that the power fifths and fourths of heavy metal, industrial and grunge constitute a different sort of ‘thirdlessness’ and are discussed in Chapter 9 on pages 280-284.

‘Folk’ fourths and fifths

Resuming the connection between open tunings, just-tone intonation and quartal harmony, we need to backtrack one final time, on this occasion from the relative modernity of King Crimson, Joni Mitchell, The Police, Edie Brickell and Oasis to sawmills in the Appalachian backwoods.

Banjo tunings

The banjo is an instrument of African origin that developed, mainly during the nineteenth century, to cater for the tonal idioms of both black and white populations living in the rural US South. The most common type of banjo has five strings of which the fifth is shorter and pitched highest. It’s mostly played with the thumb as a rapidly repeated ‘top-down’ drone note and is represented in Figure 63 by the black blobs. The other strings are arranged in ascending order. For example, the ‘open C’ tuning (‘1’) has a high g (g₄) as fifth string, low d (d₃) as fourth, g₃ as third string, b₃ as second and a high d (d₄) as first. Its tuning shorthand is ‘g’dgbd’.

60. Thanks to Chris McDonald (Cape Breton) for highlighting this trend and for providing references. The quartal passages in the Divinyls track are 01:37-01:50 and 03:20-04:46, in the Police song 0:00-0:33. All songs mentioned were released over ten years after the quartal sounds that start and end *Castles In The Sand* (Hendrix, 1967d). Thanks to Jacopo Conti (Turin) for the Oasis references: *Wonderwall* starts ♮|F#m7|A|E⁴|B⁴♮, *Cast No Shadow* ♮E⁴↔G⁵.

Fig. 63. 5-string banjo tunings

OPEN G OLD TIME DOUBLE C SAWMILL OPEN D

G C[♯] C² D² G⁴ A⁴ D

g'dgbd' g'cgbd' g'cgc'd' a'dad'e' g'dgc'd' a'ead'e' f#°df#ad'

1 2 3_a 3_b 4_a 4_b 5

Tunings 1 and 5 are clearly useful for melodies in G and D major (pentatonic, hexatonic or heptatonic) and tuning 2 is convenient if you need to switch either way between G and C. The two other tuning types, 'double C' and 'sawmill' are both distinctly quartal and well suited to pentatonic or hexatonic melodies in minor or quartal modes, as illustrated in example 239.

Ex. 239. *Shady Grove* (Scot.-US trad. via Clarence Ashley); ré-pentatonic tune in A with sawmill banjo tuning (a'ead'e', n^o 4b in Fig. 63)⁶¹

♩ = 124 A⁴

Shad - y grove, my lit - tle love, Shad - y grove, I say.

Shad - y grove, my litt - le love, now I'm going a - way.

A⁴ A⁴ (A⁴) A⁴

Sawmill (g'dgc'g' or a'ead'e') may not be the most common banjo tuning but nor is it exceptionally rare or exotic, even though liner notes to an early recording of *The Cuckoo Bird* (ex. 80, p. 156) characterise the tuning as 'archaic'.⁶² In fact, sawmill is used for a whole host of other tunes including *Black Nag*, *Clinch Mountain*


61. Sawmill, with no 3̂, is also misleadingly called 'mountain minor', or 'sus 4th tuning' although its fourth is no suspension, or even 'modal' (all modes are modal, not just the ré-pentatonic). Sawmill in A involves tuning strings up a whole tone or putting a capo on second fret. The transcription is adjusted in accordance with banjo tabs and tutorials at e.g. brooksbanjos.com/index.php/resources/common_tunings, ezfolk.com/banjo/tab/qrst/Shady_Grove/shady-grove-1.gif, [IHKOWKnfUQ\[all 1403222\]](http://IHKOWKnfUQ[all 1403222]). *Shady Grove* has the same tune as *Matty Groves* (Scot. trad. via Fairport Convention, 1969; Thompson, 2013 at 0:50:20).

Backstep, *Easy Cluck Old Hen*, *Frosty Morning*, *Kitchen Girl*, *Little Sadie*, *Santa Anna's Retreat* and *Wayfaring Stranger*.⁶³ The main reasons for citing example 239 (p. 335) are: [1] it uses quartal harmony throughout because its open strings are tuned to an A⁴ chord; [2] its origins are rural and popular, not erudite, cool or urban; [3] its sound has been called 'archaic' as opposed to the 'modernity' ascribed to quartal harmony in other types of music (pp. 312-315); [4] it illustrates the use of tonic drones, the importance of 'alternate' tunings and of counterpoise. It's these latter issues — DRONE, TUNING and COUNTERPOISE — that occupy the next few pages.

Counterpoise

The DRONE note of example 239 (a₄; p. 335) is obviously the tune's tonic. That tonic drone is pitched at both ends of the octave encompassing all notes in the ré-pentatonic melody, except for the lower g₄ (b⁷, bars 2 and 6). Ré-pentatonic modes consist of $\hat{1} \hat{2} \hat{4} \hat{5} \hat{b}^7$, which in A translates to a b d e g. Three of those five notes are playable on the open strings of a banjo with sawmill tuning in A (a'ead'e'). That tuning produces the excerpt's A⁴ chord (a-d-e), theoretically invertible as E⁴ (e-a-d) or A⁴ (e-a-d). The tune's two other notes, b and g, are each on either side of the central e-a-d tonical neighbourhood and can be understood as one-step expansions of e-a-d (A⁴) to the quartal pentad b-e-a-d-g (A⁴₅), or, voiced quintally, as g-d-a-e-b (A⁵₅). As tonal extensions of the core quartal triad (e-a-d becoming b-e-a-d-g), b and g are the two notes in the ré-pentatonic melody that are situated furthest away on the key clock from the tonic drone. They are in other words ideal candidates for treatment as COUNTERPOISE, i.e. as a tonal 'elsewhere', 'another tonal place to be'. Since g is the exception on two counts — the low g is also outside the octave pitch range of the two a₄-s —, it's also most likely to be counterpoise to the piece's central A⁴.⁶⁴

62. Notes to track 57 (Clarence Ashley's 1929 recording of *The Cuckoo Bird*) on the *Folkways Anthology of American Music* (1952).

63. Sources for these tunes are: Mike Iverson's *Clawhammer Banjo Tablature & Instruction* (as TAB notation and MP3s  bluesageband.com/Tabs.html [140422]) and *Six Easy Clawhammer Banjo Tabs: Sawmill Tuning* (Brooks, 2012).

Musicians occasionally vary in their choice of which note, if any, to treat as ‘tonal elsewhere’. There tends to be more variation about *where and how* to mark the counterpoise. For instance, it’s not until bar 6 in example 239 (p. 335), at the second ‘my little love’, that a tonal shift to the *g* area (including *d* and possibly *b*) is clearly audible in the banjo part. That shift accompanies a melodic shift from a general pattern of onbeat *a* and *e* to onbeat *g* and *d*.⁶⁵ Here it’s important to note that the tonal rhythm generated by varying metric and periodic placement of change between tonic and counterpoise is a factor of interest in many a traditional melody that lends itself to droned accompaniment.

COUNTERPOISE PLACEMENT is pretty obvious in *The Drunken Sailor* (ex. 240, p. 338), given that the tune in bars 1-4 oscillates between a D minor and a C major common (tertial) triad. Part 1 of example 240 shows how rudimentary fifths (D⁵ and C⁵ in parallel organum style) can accompany the melody in regular patterns of two bars per chord, except for bars 7 and 8 where the accompaniment can only spend one bar on C⁵ if the eight bar period is to finish back on the tonic. That single bar on the counterpoise breaks the previously established two-bar oscillation pattern and can be heard as the KICKBACK POINT at which the preceding tonal direction is reversed. In this case the initial movement *out from tonic to the counterpoise* (D⁵→C⁵) is replaced by movement *back to the tonic from the counterpoise* (C⁵→D⁵). Kickback simply *has* to occur if a four- or eight-bar melody is to both start and end on the tonic. That’s because regular shuttling between two tonal poles over an even number of bars will automatically end on the second of the two poles unless the regularity of the established shuttle pattern is broken (see also Table 25, p. 339).

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64. COUNTERPOISE (see Glossary) normally means a counterbalancing weight. Here it denotes a tonal *complementary pole* or *counterbalance* to the tonic. COUNTERPOISE has a similar meaning to ANITONIC (Lendvai, 1971, 1993), and is not altogether unlike the Northern Indian concept of VADI in relation to *sa* (ī).
65. See comments after example 240 (p. 338).

Ex. 240. The Drunken Sailor (*Eng. trad.*) with droned accompaniment: (1) parallel 'organum' fifths (no drone); (2) drone plus parallel fifths creating quartal chords; (3) counterpoise kickback with cadence direction.⁶⁶

[1] ♩ = 120

[2]

[3]

Example 240-1⁶⁶ is the same as 240-2, except that the tonic drone notes are held throughout the eight bars of version 2 so that the c-g dyad in bars 3-4 and 7, added to the d-a drone, creates the quartal chord $D\bar{4}$. It's the same technique Joni Mitchell uses in the intro to *This Flight Tonight* (ex. 237, p. 332). The kickback point in version 2 is identical to that in 1 but it's different in example 240-3, where it's brought forward by one beat and syncopated. Its arrival on the target D^5 is delayed by another beat and different notes are introduced to give a greater sense of cadential direction (f→e→d). Counterpoise kickback points are more complex in example 241.

The first four bars in all four eight-bar sections in example 241 (p. 339) start with regular shuttling each bar between tonic (t) and counterpoise (s). They also all start bar 5 on the tonic. As shown in Table 25, section 'A' delays kickback until bar 8, while section 'C' inserts an earlier flat seven in the second half of bar 7. Sections 'B' and 'D' start kickback in the middle of bar 5. These early kickbacks act as tonal syncopation and give the music extra impetus at the

66. In (b) and (c) the guitar's low E is tuned down to D (see Table 9, p. 81).

end of each eight-bar period.⁶⁷ But the counterpoise and its kickback placement aren't the only factors of tonal interest in this music and its drone-based accompaniment.

Ex. 241. Farewell To Erin (*Irish trad., Bothy Band, 1976*); † = tonic (usually A5), § = counterpoise (typically G5); esp. 02:08-03:17 (end).

Table 25. Kickback points (★) in examples 239-241. † = tonic; ● = counterpoise.

Tune (ex.) ↓ Bars →	1	2	3	4	5	6	7	8
<i>Shady Grove</i> (239)	†	†	†	†	†	† ★●	† ●	→†
<i>Drunken Sailor</i> (240)	†	†	●	●	†	★●	(†) ●	→†
<i>Farewell To Erin</i> (241) A	†	●	†	●	†	●	†	★●→†
<i>Farewell To Erin</i> B & D	†	●	†	●	† ★●	●	† ●	●→†
<i>Farewell To Erin</i> C (241)	†	●	†	●	†	●	† ★●	●→†


As mentioned earlier, tuning is also an important issue, as the next few (partly autobiographical) paragraphs will hopefully demonstrate.

67. The effects are easy to hear on the Bothy Band original studio recording (1976), especially after 02:08.

Open tuning and drones

With a euroclassical background and the church organ as my main instrument, I was ‘the typical middle-class keyboard player’ when I started making popular music in the 1960s. My first gigs were with a Scottish country dance band. My function in the band was, as I heard things (though it was never stipulated as a contractual obligation), to provide ‘oom-pa’ chords and to mark bass ‘lead-ins’ across bar lines. I also came to realise that it often sounded better if I held over a high tonic note as a top-down drone over changes to IV and to mixolydian \flat VII, although I had no theoretical notion of what I was doing. Then I joined an R&B band. I soon discovered that thirds in the low and mid registers (what I called ‘Beethoven thirds’) sounded muddy and wrong but I could not at the time have told you why. I was also slow to understand why guitarists in the band spent so much time ‘fiddling around’ with their amps and with their tuning because I had largely been led to believe that ‘the notes’, equal-tempered ones to boot, were the be-all and end-all of ‘the music’.

It was with that musical mindset that I found myself, in the 1970s, teaching aurally based keyboard accompaniment skills at a music teacher training college in Sweden. One of my students was Pelle Björnler, a young fiddler from Östergötland, whose open tuning was a key aspect in the sound he wanted to make.⁶⁸ ‘*Giss-diss-giss-diss*’ (= G# D# G# D#), he would say with glee when we tried out droned fourth- and fifth-based accompaniment patterns at the keyboard (but not in G#). His glee stemmed from the fact that G#-D#-G#-D# was his preferred fiddle tuning because, he told me, it was clean, clear and bright. It was also in the 1970s that I met up several times with Ulf Gruvberg and Carin Kjellman, the two founding members of Folk och Rackare, Scandinavia’s best known ‘folk rock’ outfit at the time.⁶⁹ They expressed a similar view about the uncluttered clarity of open tunings, drones, fifths and fourths. Example 242 provides a very brief glimpse of their tonal world.

68. Björnler is now a celebrated member of the Swedish folk music community
 sv.wikipedia.org/wiki/Pelle_Bj%C3%B6rnler [140425].

Ex. 242. *Vänner och fränder* (Swedish trad., *Folk och Rackare*, 1978)⁷⁰

The musical score for 'Vänner och fränder' is presented in two systems. The first system covers bars 1-8, and the second system covers bars 9-16. The tempo is marked as quarter note = 72. The key signature is A major. The guitar accompaniment features a drone on the A string (open) and the fifth string (open), with various chords and rhythmic patterns. The vocal melody is in a hemitonic pentatonic mode. The lyrics are in Swedish.

System 1 (Bars 1-8):

Chords: A⁵, A-6, A⁵

Vänn - er å fränd - er de lad - e om råd hur de skull - e gift - a bort sin fränk - a i år. Ut - i
 Dig vill vi giv - a en kung - a - son till man å han har mera guld än lill - e Rol - and hav - er land.

System 2 (Bars 9-16):

Chords: A⁵, A-6, A⁵, A², A⁵

ros - en, lad - e om råd hur de skull - e gift - a bort sin fränk - a i år.
 kung - a - son till man å han har mera guld än lill - e Rol - and hav - er land.

The drone in example 242 is set to A: $\text{a}\sharp$ is sounded constantly and the fifth, $\text{e}\sharp$, most of the time. The tune is hemitonic pentatonic ($\text{a c}\sharp \text{d e f}\sharp$, bars 1-6), repeated at the fifth ($\text{e g}\sharp \text{a b c}\sharp$, bars 7-8).⁷¹ In bars 1-6 the counterpoise is on the minor sixth ($\text{f}\sharp$), emphasised by the $\hat{5}-\flat\hat{6}-\hat{5}$ motif for the recurrent hook phrase '*Uti ros-en*'. That $\hat{5}-\flat\hat{6}-\hat{5}$ idea is also prefigured on guitar in bar 2. The melody's $\text{A}\hat{3}$ ($\text{c}\sharp$) and the $\text{b}\hat{6}$ ($\text{f}\sharp$) are both quite distant on the key clock from the

69. Gruvberg and Kjellman lived a 15-minute walk from my home in Göteborg and had studied musicology at the city's university where I did my doctorate. 'Folk rock' is an unsatisfactory designation of their music but it is probably the least inadequate of familiar anglophone genre labels for their work. See also sv.wikipedia.org/wiki/Folk_och_rackare [140425].
70. The transcription is, for reasons of space, a simplified composite of the track's first 49 seconds. Please note (7 points): [1] the intro (0:00-0:23) involves no vocal input and includes extra bars on A⁵; [2] the first 8 bars including vocals (starting '*Vänner å fränder*' ..., 0:24-0:37) are sung unaccompanied in two parts (mainly fourths or fifths); [3] the repeat ('*Dig vill vi giva*' ..., 0:37-0:49) is performed as notated; [4] the fiddle pizzicato figures playing drone notes a-e-a do not appear in the transcription; [5] 'A-6' designates a dyad consisting of $\text{a}\sharp$ and its flat sixth, f . [6] The extract is audible at tagg.org/audio/Quartal/Vanner-FranderStart.mp3 [140426]. [7] The track has been covered by Garmarna (1996) and repackaged as metal by German band In Extremo (1999).
71. I'm discounting $\text{g}\sharp$ in bar 2. It only occurs once, unaccented and in passing. The hemitonic pentatonic mode in this song consists of $\hat{1} \hat{3} \hat{4} \hat{5} \flat\hat{6}$ ($\hat{1}$). There's a gap of major third at either end ($\text{a-c}\sharp$, $\text{f}\sharp-\text{a}$) and its scale steps are (in whole tones) 2, $\frac{1}{2}$, 1, $\frac{1}{2}$, 2.

droned tonic (a \natural) and the only quartal triads produced are some brief appearances of A⁴ and the longer duration of A² in bars 7 and 8.⁷² The example illustrates how droned accompaniment, open tuning and untempered intonation can sharpen tonal focus, also in melodic modes containing non-quartal scale degrees like A[♯] and b $\hat{6}$.⁷³ Drones, open tunings and untempered intonation are in other words essential factors enabling artists like Joni Mitchell and Folk och Rackare to switch between quartal and tertial harmonies ‘without apology or embarrassment’.

Open tunings and fourths/fifths, are also essential to the tonal world of artists like Malicorne (e.g. *Le branle des chevaux*, 1979), Värtinna (e.g. *Oi Da*, 1991), Hedningarna (e.g. *Kruspolska*, 1992), and, in the anglophone sphere, Richard Thompson (see below), as well as folk rock bands like Steeleye Span. Among tracks representative of this UK tonal idiom are *The Murder of Maria Marten* (Albion Country Band, 1971) and, by Steeleye Span, *The Lowlands Of Holland* (ex. 84, p. 157) and *The Blackleg Miner* (both 1970) plus *Cold, Haily, Windy Night; The Female Drummer* (ex. 85, p. 157); and *The Lark In The Morning* (ex. 16, p. 104).⁷⁴

In most of the tracks just mentioned, as well as in the work of Richard Thompson, drone notes and open tunings can, in combination with the melody line produce both tertial and quartal chords. For example, in *Sam Jones* (ex. 243), Thompson uses an open B tuning (B F \sharp B F \sharp B F \sharp) over which he sings in ré-pentatonic B (b c \sharp e f \sharp a). He anticipates the melodic line with an e-c \sharp figure on guitar, thus producing the quartal chord B $\frac{4}{2}$ (b-c \sharp -e-f \sharp). When, in bar 3, he sings the same notes as before but raises the accompaniment in parallel fifths to bIII (D), a standard tertial chord is produced (D) and the same basic melody is heard in A doh-pentatonic.

72. A⁴ occurs briefly in the guitar part on the first quaver of bars 1-6 and together with the d \natural in the vocals at ‘gifta bort!’/‘guld än lille’ and ‘är!’/‘land’ (bars 3-4).

73. For use of drones to improve violin intonation, see Muresan (2012).

74. The Steeleye Span recordings are from 1971. All titles mentioned in this paragraph are traditional melodies arranged by the performing artists.

Ex. 243. Richard Thompson: *Sam Jones* (1996); opening bars (simplified)

My name is Sam Jones & it's bones my occupation. Chuck me your old socks for my consideration.

Ex. 244. Richard Thompson: *Yankee Go Home* (1988); final verse (simplified)⁷⁵

Ov - er - sexed, ov - er - paid and ov - er here. Get smart, gring - o,
dis - app - ear. The Hun's at the gates of Rome. Yank - ee, go home!

cl. guitar (approx.)
elbs. root notes 8vb

At first glance, example 244 looks like a standard eight-bar progression – I |V|I|V|IV|V|I|I– with standard tertial triads – G|D|G|D|C|D|G|G. The bass certainly follows that familiar pattern but the guitar parts do so only partly because, tuned to open fifths in G, g and d (without b \sharp) are sounded throughout the example. That produces G⁵ instead of G, D⁴ (or G²) instead of D and C² (or G⁴) instead of C. It illustrates a common way in which standard I-IV-V progressions can be dealt with in droned harmony. It's a process in which: [1] I is an open-fifth dyad on the tonic (e.g. G⁵); [2] IV is the tonic quartal triad in central position, e.g. d-g-c (D⁴) inverted

75. The straight ♪♪♪♪ arpeggiation is not what the guitar actually does on the recording which also includes an acoustic guitar strum, a mandolin, an organ part and backing vocals. ♩ is audible on more than one occasion in one or more of those parts. The lyrics and general attitude of this song are a strong reminder of what it was like to be twenty years old when the GIs came off the Alconbury base into Cambridge (UK). The fact that they made off with all the good-looking young women in the county and that they drove gas-guzzling cars far too wide for our country lanes did not endear them to us. 'Overpaid, oversexed and over here', they were badly behaved and much resented!

to **g-c-d** (**G⁴**); [3] **V** is the tonic quartal triad stack in flatward position, e.g. **a-d-g** (**A⁴**) inverted to **g-a-d** (**G²**). In short, **IV-I-V** with **I⁵** as drone constitutes a tonical neighbourhood of the type described on pages 295-302. Of course, with $\hat{4}\hat{3}$ in the melody of example 244, the **G⁵** and **C²** come across as common triads on **G** (**g-b-d**) and **C** (**c-e-g**) respectively, but there's no **f^{\#}** in the tune for the **D** chords until 'Rome' in bar 6. That single **f^{\#}** is heard against the **g** drone and immediately followed by a **g** in the melody (on 'Yankee') that turns at least half of that **D** chord into **D⁴**.

Yankee Go Home (ex. 244) doesn't illustrate quartal harmony according to the account given earlier in this chapter (pp. 295-302) but it does serve as an example of how droned accompaniment can give rise to quartal chords, even in an apparently 'normal', major-key, tonic-dominant context. That said, quartal harmony is more likely to arise from droned accompaniment to modes containing $b\hat{7}$, as we shall see in the next and final section of this chapter.

'The Tailor and the Mouse'

This section is mainly practical. Its aim is to suggest how flat-seventh traditional tunes from the British Isles can be given a droned accompaniment and to discuss ways in which the chords used can be designated. It concentrates on the single melody shown as example 245, a song my mother used to sing when I was a small child. It's in the common, 'sixthless' la-hexatonic mode ($\hat{1} \hat{2} b\hat{3} \hat{4} \hat{5} b\hat{7} = g a b\flat c d f\flat$ in **G**).⁷⁶

Ex. 245. *The Tailor and the Mouse* (Eng. trad. after Mrs. O.M. Tagg, c. 1948)⁷⁷

The image shows a musical score for the song 'The Tailor and the Mouse'. It consists of two staves of music in G minor (one flat) and 2/4 time. The top staff is labeled 'Vox' and contains the melody with lyrics underneath. The bottom staff is an accompaniment line. The score is divided into measures, with measure numbers 1, 5, 9, 10, 13, and 16 indicated. The lyrics are: 'The tai-lor found his mouse was dead. Hi did-le um cum fee - dle. So he bought a-no-ther one in - stead. Hi did-le um cum fee - dle. Hi did-dle um cum ta-rum tan-tum thru' the town of Rams - ey. Hi did-dle um cum o - ver the lea. Hi did-le um cum fee - dle.'

76. For more about minor, incl. la-hexatonic, see pp. 165-172.

77. I've posted an animated demo [5:46] of this subsection on YouTube under the title *Droned Fifths for The Tailor and the Mouse*. Enter "tailor mouse drone fifth" in the YouTube search box or see Tagg (2009a).

This tune can be accompanied using either tertial harmony or drones and parallel fifths. Starting with tertial harmony and sticking to triads whose constituent notes are in the melody's hexatonic pitch pool (g a b \flat c d f), it's clear that the tune in bars 1 and 5 (with upbeats) traces a G minor triad (d b \flat g: Gm/i), a chord that would theoretically fit all sixteen bars except 2, 6, 11 and 12. However, a D minor triad (d-f-a: Dm₅ or v) would be better for bars 3, 7 and 15 because they only contain cadential ds and neither the g nor b \flat of Gm. Bars 2 and 6 emphasise f and contain a d, two of the three notes in a triad of D minor (d-f-a: v) or B \flat major (b \flat -d-f: bIII).⁷⁸ Bars 11 and 12, on the other hand, contain a and c, two notes in an F major triad (bVII).⁷⁹ One simple but viable solution for the tertial harmonisation of the sixteen bars of example 245 is therefore ♯: Gm | Dm | Dm | Gm :|| Gm | Gm | F | F | Gm | B \flat | Dm | Gm|. That amounts to eight bars of G minor and eight bars of 'tonal elsewhere'.

When using drones and parallel fifths or fourths to harmonise a tune like *The Tailor and the Mouse*, it can be useful to identify its 'tonal elsewhere' — its COUNTERPOISE⁸⁰ — as a single note other than the tonic. Just as the tonic, with its real or potential drone(s) on scale degrees 1 (g) and 5 (d) — G⁵ — acts as tonal reference point for the song as a whole, the melody also has its 'contrary' pitch pole, its SOMEWHERE OTHER THAN THE TONIC, its COUNTERPOISE. In the case of example 245, that other pole is the tonal common denominator of all notes in the tune other than g or d (and b \flat), i.e. the f in bars 1, 5 and 14, and the a \natural and c \natural in bar 11.⁸¹ Now, our simple tertial chords for those bars were Dm, F and B \flat , common triads whose constituent notes are d f a (Dm), f-a-c (F) and b \flat d f (B \flat). Only one note occurs in all three of those tertial 'elsewhere' triads: f, the sub-

78. Why to B \flat ? To increase harmonic motion towards the end of the 16-bar tune.

79. Yes, a and c are also in an A minor common triad but that's no good for this song because it contains the keynote's major sixth, e \natural , which is foreign to the tune's hexatonic tonal vocabulary. Besides, would the sixth be e \natural or e \flat ?

80. For explanation of COUNTERPOISE, see p. 336, ff.

81. i.e. all pitches that are not passing notes. One reason for choosing *The Tailor and the Mouse* as an example was that it contained no passing notes. That made the presentation of principles about its harmonisation a simpler matter.

tonic ($b\hat{7}$). It's the central note for all points other than that of the tonic drone (G^5) and the tonic 'common triad' (Gm). In short, g is tonic pole (I^5) in *The Tailor and the Mouse* and f ($bVII^5$) its counterpoise, just like D^5 and C^5 in *The Drunken Sailor* (ex. 240, p. 338).

Constructing a temporary pseudo-drone on the counterpoise is a common harmonisation device for traditional melodies like example 245. If the tune had been in G ionian, its counterpoise would most likely have been on the fifth (d), in which case the tonic's G^5 would have alternated with D^5 ($V^5 = d + a$). If it had been in G mixolydian, the counterpoise fifths to G^5 (I^5) would have been either C^5 ($IV^5 = c-g$) or F^5 ($bVII^5 = f-c$). In *The Tailor and the Mouse* the counterpoise fifths work best as F^5 ($bVII = f-c$). As shown in the second line of example 247, F^5 can cover all the tune's 'tonal elsewhere's' (bars 2-3, 6-7, 11-12, 14-15). However, in order to keep a droned effect throughout the piece, that rudimentary organum shuttling in parallel fifths between G^5 and F^5 would miss the richness of the sonority arising from the simultaneous sounding of the tonic drone and the quintal dyad on the counterpoise. And that, finally, is where quartal harmony comes in because if the tonic drone is combined with the counterpoise's pseudo-drone, the resultant chord contains, as shown in the 'Combined fifths' line of example 247 (p. 347), scale degrees 1, 4, 5 and $b7$ ($g-c-d-f$), i.e. G_4^7 (' G seven-four').⁸²

The arrangement shown as example 247 (p. 347) could do with some ongoing movement, maybe a guitar with DADGAD tuning and a 'top-down' tonic drone, picking arpeggios *à la* example 246. It would definitely also improve if given a suitable bass line, as suggested in example 248 (p. 348).

Ex. 246. Possible guitar pattern for ex. 247



82. It's the same device as used by Joni Mitchell (ex. 237, p. 332).

Ex. 247. *The Tailor and the Mouse* with tonic drone and alternating tonic-counterpoise fifths, both separate ($G^5 \leftrightarrow F^5$) and combined ($G^5 \leftrightarrow G^7_4$).

$G^5 \rightarrow G_4^7$ and chord 1 is in that sense no exception. Or perhaps you prefer the quartal pentad label ' $A^4 5^5$ ' because that's also in keeping with the piece's other quartal features. Or maybe you think of the chord in terms of F major in first inversion – $F_6^9/3$ or $F6^{add9}/a$? At least those labels underline tonal movement in the bass line towards the subsequent $b\flat$ in bar 13.

Ex. 248. *The Tailor and the Mouse* with shuttled drone and bass line

Chord 2 – $b\flat-d-g$ – is labelled ' $G^5/b\flat$ ' but you might hear it primarily as a standard G minor triad in first inversion ($Gm/3$). Personally, I prefer ' $G^5/b\flat$ ' to ' $Gm/3$ ' for the same reason that I prefer ' G_4^7/a ' to ' $F_6^9/3$ ': I see no reason to alter the basic $G^5 \rightarrow G_4^7$ rationale of the piece just because the bass line diverges from the notes in those two drone chords.

Chord 3 – $d-f-c-d-f$ (G_4^7/d), bar 16 – can, thanks to the V-I cadence in which it appears, also be heard as Dm^{11} . I've chosen G_4^7/d because, as with chords 1 and 2, there's little point in discarding the basic $G^5 \rightarrow G_4^7$ mechanics of the piece as a whole.

To be quite frank, I don't think there are definite rights and wrongs when it comes to labelling chords like 1, 2 and 3 in example 248. There's just no current consensus about such issues. In fact, how you name the chords will ultimately depend how you hear them and on the chord-descriptive vocabulary available to you. Availa-

ble chord-descriptive vocabulary is an important issue because you clearly can't name a chord 'as you hear it' if you don't have the requisite vocabulary to do so, or if you rely entirely on pre-existing terminology that pays no attention to the relevant tonal idiom, nor to how it works or is heard. 'Sus 4' is the most obvious example of the problem because it's often used to denote a quartal chord, not as it works or 'as you hear it' in a quartal context, but in terms of harmonic implications that just aren't there, that are obviously unintended, and, most importantly, that no-one hears. The tonally alien implications of the terms you use in this way may even end up influencing how you hear the music — a supposedly missing third in 'G omit 3' when you meant G⁵, a supposedly suspended fourth in 'G sus 4' when you mean G⁴ etc. Which is where this chapter started and the main issue necessitating all the words, diagrams and music examples you've had to plough through since then. They were all intended as guidelines for understanding — and hearing — quartal harmony, not according to conventional wisdom but *on its own terms*.

Summary in 18 points

[1] Unlike its tertial cousin based on the stacking of thirds, quartal harmony is based on stacked perfect fourths or on their octave complement, fifths.

[2] The basic quartal chords are the open-fifth dyad (e.g. g-d) and the quartal triad stack, for example d-g-c which can be inverted as g-c-d, c-d-g, or c-g-d.

[3] Unlike tertial common triads, a quartal triad stack and its inversions share no unequivocal single root note. For example, d-g-c (D⁴) inverted as g-c-d produces G⁴, c-d-g produces C², and c-g-d produces the quintal stack C⁵†.

[4] Since notes in quartal triads are related to each other by fourths or fifths, they are only one key-clock step away from each other, whereas tertial harmony's thirds are three or four steps removed from the triad's other two notes.

[5] Quartal triads contain a central note with a second note located one step flatward round the key clock and a third note one step sharpward, for example the **g** in **d-g-c** (**G4**) in which **c** is one step flatward from **g** and **d** one step sharpward. Such triads constitute a tonical neighbourhood spanning three positions on the key clock.

[6] Due to key-clock proximity and the ease with which tonal centre can shift between the three notes of a quartal triad, the tonical neighbourhoods of quartal harmony are more fluid and wider than the discretely focussed 'keys' of tertial harmony.

[7] To effectuate a clear change of quartal 'key' you have to shift tonical neighbourhood by at least three steps on the key clock, i.e. a minor third up or down. Changing to a counterpoise pole two steps away (e.g. from **I⁵** to **bVII⁵**) creates enough tonal difference to allow for harmonic movement but it does not 'change key'.

[8] 'Major', 'minor', 'dominant' and 'subdominant' are to all intents and purposes irrelevant concepts in quartal harmony. 'Suspended' fourths and ninths are totally erroneous notions in a quartal context, as are 'omitted' thirds.

[9] Quartal pentads contain the notes of anhemitonic pentatonic scales, typically those of the **RÉ**, **SOL** and **LA** modes. Quartal chords are particularly well-suited to accompanying melody that includes $\hat{4}$, $\hat{5}$ and $b\hat{7}$.

[10] The greater the number of notes in a quartal chord, the more likely it is to contain thirds and to sound tertial. The 'eleven chord' is one such sonority. It is often used as substitute for a tertial dominant when the melodic material includes no $\Delta\hat{7}$.

[11] During the heyday of euroclassical tertiality, thirdless chords, particularly open fifths, were associated with olden times and rural backwardness. Through composers like Stravinsky, Bartók and Copland, quartal harmony acquired associations of modernity that were later used extensively in music for film, TV and advertising.

[12] Quartal harmony entered the jazz world around 1960 but many musicians schooled in the **II-V-I** directionality of jazz standards and bebop seem often to confuse the approximate *voicing* of

quartal triad stacks with quartal *harmony*. Those voicings tend to include an augmented as well as a perfect fourth, a combination that produces chords containing double leading notes well suited to chromatic circle-of-fifths runs à la bebop, progressions that are quite alien to quartal harmony.

[13] Quartal harmony has yet to fully enter the sphere of mainstream pop but it can be found in the work of prog rock artists like King Crimson. Quartal sonorities occasionally turn up in the work of bands like Police and Oasis.

[14] Aside from its use in the audiovisual media to connote a sort of positive modernity (see §11), quartal harmony is probably most commonly heard in what, for want of a better label, is often called folk rock (e.g. Steeleye Span).

[15] In folk rock and related styles, the factors most likely to produce quartal harmony are drones and open tunings based on $\hat{1}$ and $\hat{5}$, more often than not doubled in unison or at the octave. Quartal harmony is typically produced when $\hat{2}$, $\hat{4}$ or $b\hat{7}$ sounds simultaneously with the drone notes on $\hat{1}$ and $\hat{5}$ (e.g. Joni Mitchell).

[16] Quartal harmony in folk rock and related styles can be more or less ongoing. With drones and open tuning the music can move between a relatively tertial and a relatively quartal sphere without compromising the tonal integrity of the music (e.g. Richard Thompson).

[17] There is no consensus about how to designate the elements of quartal harmony. The ideas set out in this chapter are no more than carefully reasoned suggestions as to how some sort of viable consensus might eventually be reached.

[18] Musical structures cannot be named if they have no names and they cannot be accurately named if existing concepts shoot wide of the mark. In this chapter I've tried to address that issue with reference to quartal harmony.

11. One-chord changes

- When is a chord not a chord?
- When it’s two or three.

Harmonic impoverishment?

‘One chord as more than one chord’ is an intentionally contradictory expression. It’s supposed to draw attention to the flawed argumentation often used by the self-styled guardians of ‘good music’ when they try to justify their ‘superior’ tastes by branding ‘inferior’ music as harmonically impoverished. One argument I’ve heard is that the twelve-bar blues is uninteresting because it only contains three chords (I|I|I|I|IV|IV|I|I|V|IV|I|I). Jazz adepts will understandably retort that a bebop blues performance includes many different chords of considerable complexity. Indeed, I remember having great difficulty learning the twelve-bar harmonic sequence shown in Table 26. The chord symbols in brackets (‘Ab=I’ etc.) present the three chords in a simple I-IV-V variant of the twelve-bar blues matrix. They’re included in the table to orientate readers in the complexities of bebop chord alteration shown below them (Ab13, D+9b5, etc.).¹

Table 26. *Engdahl’s bebop chords for a blues in Ab*

<i>bar 1 (Ab=I)</i> ♩. Ab13 ♩. D+9b5	<i>bar 2 (Db=IV)</i> ♩. Db9 ♩. G7ab	<i>bar 3 (Ab=I)</i> ♩. Ab13 ♩. A13	<i>bar 4 (Ab=I)</i> ♩. Ab13 ♩. D+9b5
<i>bar 5 (Db=IV)</i> ♩. Db9 ♩. Gb13	<i>[6] ♩. Bb13 ♩. E+9</i> ♩. Bb-9+5 ♩. Eb+9	<i>bar 7 (Ab=I)</i> ♩. Ab13 ♩. G13+9	<i>bar 8 (Ab=I)</i> ♩. Gb13 ♩. F+9
<i>bar 9 (Eb=V)</i> Bb-9+5 or E+9	<i>bar 10 (Db=IV)</i> ♩. Eb+9+5 or A13	<i>bar 11 (Ab=I)</i> ♩. Ab13 ♩. Bb13	<i>bar 12 (Ab=I)</i> ♩. E9 ♩. Eb13+5

Whatever respect I may have for the complexity of such harmonies, I cannot logically argue (like some jazzos I’ve known) that

1. In the mid 1970s, Swedish jazz pianist Göran Engdahl tried to teach me this sequence of chords. The sorts of chord listed in Table 26 are notated in C on pp. 232-233 and explained on pp. 237-239. N.B. Bar 6 contains four chords.

music normally devoid of thirteenth- and altered ninth-chords (chanson, pop songs, rock tracks, traditional ballads, etc.), is intrinsically less interesting than bebop. Nor should it imply, as we shall see, that songs containing 'only three chords', like Chuck Berry's *Nadine* (1964),² are tonally less interesting than the first movement of Mozart's *Eine kleine Nachtmusik*, another entertaining piece of music, but from 1787 rather than 1964.³

There are at least three problems with the idea of popular music as harmonically impoverished. The first of these relates to the privileged status of harmony in seats of conventional musical learning and to the notion that texture, timbre, rhythmic articulation and other non-notatable parameters of musical expression are somehow of secondary importance. It's as if the moving coil microphone, amplification, multi-channel recording, sound treatment, sequencing, digital sampling and the change of musical commodity from notation through phonogram to audio and video files had never taken place, nor in any way contributed to any change in the way music's expressive potential is realised. While harmony still has an obvious part to play in today's music making, it can, thanks to the changes just listed, no longer be treated as intrinsically more important than other parameters of expression. Multi-channel input that is electrically amplified and carefully mixed allows for the expression of intimate vocal nuance, as well as for the presentation of complex acoustic space through use of panning, reverb, delay, chorus and so on. Moreover, popular musicians devote much time and attention to perfecting particular sounds with their instruments and equipment, while mashers and remixers seem to favour parameters of synchronicity, metricity and timbral interest to cre-

2. B♭×12 bars, E♭×2, B♭×2, F, E♭, B♭×2; see example 251, p. 358.

3. *Eine kleine Nachtmusik* starts in G, modulates to D, repeats that whole process, then jumps to C major, after which it modulates through A minor and, via D, back to G to recap the first themes. The whole process is embellished with standard tertial chord changes between, and with cadential harmonic formulae at, the tonal milestones just mentioned. It's harmonically no more of a 'big deal' in its idiom than the Chuck Berry number is in its.

ate their sample-based compositions. To turn the tables, no-one in their right mind would dismiss Beethoven quartets (for example Op. 131 in C# minor) on grounds of monometricity (no cross-rhythms), monotimbrality (just a string quartet) or monospaciality (no variation of acoustic ambiance) because it's obvious that the main dynamic of those quartets comes from thematic and harmonic development over time. By the same token it's silly to dismiss Chuck Berry's *Nadine* (1964; ex.251, p. 358) because it spends 70% of its time on one chord, or Bo Diddley's *Bo Diddley* (1958) because it's *all* on one chord.

The second reason for refuting high-art arguments of harmonic complexity versus impoverishment is that while many types of popular music are frowned on for containing too few chords that are too simple, other music that contains no chords at all, such as rāga music from India, is rarely the target of the same sort of disdain. Similarly, the four-and-a-half-minute-long Eb major chord at the start of the overture to Wagner's *Rheingold* (1869) is apparently qualifiable as 'miraculous', while pop music's most common chord sequences are more likely to be written off as 'boring', 'dumb' or 'trite'.⁴ One set of values apparently applies to classical musics of the world and another to the everyday musical fare of the popular majority in the urban West.

The third reason — and the main topic of the next few chapters — is that harmony in many types of popular music just doesn't function in the same way as jazz or euroclassical harmony and that it's not as crude or simple as uninformed jazzos and classical buffs still sometimes seem to believe.

4. 'There is nothing... like this miraculous beginning: a low E flat softly played by the doubles basses, then, four measures later, a B flat added by the bassoons' etc., etc. (Thomason, 2014). For a detailed discussion of the genesis of this one chord, see Darcy (1989). Fascination with euroclassical single chords is apparently permitted, e.g. the 'Tristan chord', an enharmonically spelt $m7^{\flat 5}$ (see Tagg 2011a). Thanks to Diego García raising these points. For the 'inadequacies' of simple pop harmony, see Jaltcoh (2009) and Falconer (2011).

Extensional and intensional

The very notion of chord change has an obvious temporal dimension. I don't mean the short hiatus that sometimes arises when performing a technically difficult chord change. I mean the fact that chord changes entail by definition movement from one tonal configuration to another and that no movement of any type can take place without time passing. For example, the $E \leftrightarrow A$ shuttle with the famous sus⁴ guitar riff over A in *Satisfaction* (Rolling Stones, 1965; ♩=136) occupies 3.6 seconds before it is repeated.

Ex. 249. *Satisfaction guitar riff shuttle occupying 3.6 seconds*

namic from the presentation of ideas over a duration of several minutes, while a pop song or film music cue is more likely to do so in batches of ‘now sound’, inside the extended present, like the 3.6-second *Satisfaction* riff (example 249). None of this means that sonata form movements never exhibit timbral or metric interest or that pop recordings never express a sense of narrative. It’s simply a question of degree and of general tendency. It’s also a question of different types of harmonic function, of chords and of chord changes, not just as harmonic ‘travelling’ — ‘somewhere worth going’ — but also as harmonic *being* — ‘somewhere worth staying’. Clearly, the experience of ‘being in one place’ does not necessarily mean that nothing happens there or that the experience is dull. That’s why it’s essential to examine the functions and tonal reality of what jazzos and euroclassical buffs tend to think of as simple, single chords in many types of popular song. Example 250 (which you may remember from Chapter 10)⁶ illustrates this point.

Ex. 250. *Dancing In The Street* (*Martha & Vandellas*, 1964); *transp. from F*.

According to the official sheet music of this song, a single chord — G7 — covers the two bars just cited.⁶ In reality, no G7 is played or heard at this point in the recording because the musicians start on G¹¹ and shuttle from there to G (without a seventh) and back. Without the eleven chord it just doesn’t sound like *Dancing In The Street*. Example 250 is the first of eighteen ‘multi-chord’ variants of the ‘single chord’ G (or G7) cited in this chapter (ex. 250, 252–269).

6. The recording is actually in F (F¹¹↔F) and the sheet music in E with the lead sheet instruction ‘E7’, a guitar-friendly but inaccurate chord designation. See also example 211 (p. 308).

The wonders of one chord

Bo Diddley (Diddley, 1958) is a well-known R&B track for at least two reasons: [1] it features Diddley's trademark guitar-strum patterns $\text{♩} \text{♩} \text{♩} \text{♩} \text{♩} \text{♩}$, etc., all partially swung ($\text{♩} = \text{♩} \text{♩} \text{♩}$); [2] *it contains only one chord*. Lively strum patterns certainly offset the tune's lack of harmonic variation, as do changes of fretboard position and the guitar tremolo effect's regular quavers; but the performance also derives interest from passages where Diddley embellishes the permanent tonic F (I) by alternating it with Eb (bVII).⁷ In other words, not even this infamous single-chord piece consists of just one chord. It includes variation not only in timbral, rhythmic and registral terms but also *tonally*. Now, shuttling in parallel motion between barré chords on I and bVII is neither the only nor the most common way of creating tonal interest on one chord. Other means are used, for example, for the twelve consecutive bars of Bb in Chuck Berry's *Nadine*.

Ex. 251. *Chuck Berry: Nadine* (1964): generic tonal groove for Bb tonic (6.7")

The musical score for Ex. 251 is written in 4/4 time with a tempo of 140. It features three staves: saxophones, vocal, and piano accompaniment. The key signature is Bb major. The saxophone part includes a 'slide' effect. The vocal part includes the lyrics 'Na - dine!' and 'Hon-ey, is that you? etc.'. The piano part is an 'Accomp. piano reduction'.

The Bb chord in example 251 is clearly no simple tonic common triad for at least four reasons.

[1] The strong downbeats at the start of odd-numbered bars contain a flat seventh (ab) and no third (d#). Strictly speaking that's Bb7omit3, not Bb.

7. The key used live by Diddley varies from Eb to E to F. bVII is also used as alternating poles in *Tequila* (Champs 1958: F↔Eb), *Ode To Billy Joe* (Gentry 1967: D↔Am7) and *Take Five* (Brubeck 1959: Ebm↔Bbm7).

[2] The major third ($d\sharp$) is either absent on the weaker downbeats at the start of even-numbered bars (the sax's d at the end of bar 1 does not carry over into bar 2) or else it is smudged ($d\flat$ into $d\sharp$).⁸

[3] The same $d\sharp$ s only appear as unaccented notes in the vocal line.

[4] $E\flat$ triads occur on the fourth beat Fig. 64. Nadine's ' $B\flat$ '

of each bar over the V-I anacrusis ($f\text{-}a\flat\text{-}a\sharp$) in the bass that leads back into the each bar's $B\flat$ like a very brief dominant eleventh chord ($F^{11}\rightarrow B\flat$). Jobbing musicians wouldn't dream of referring to the harmony of example 251 in terms of the reduction shown as Figure 64. It's all just part of ' $B\flat$ ' in *Nadine*.

The function of extended one-chord harmony in a song like *Nadine* is at the same time stylistic and kinetic. Cover band musicians have to learn aurally how to configure, both rhythmically and tonally, the tune's $B\flat$ so it sounds like classic rock and roll rather than like, say, trad jazz, disco, bossa nova or a polka. That stylistic experience involves knowing which notes to include, omit, smudge, slide, embellish or accentuate, which tonal shuttle poles to use in inner parts and bass lines, and how to rhythmically articulate those notes in terms of anticipation, on-beat placement, phrasing and so on.

Demonstrating the full complexity of harmonic groove would demand the detailed transcription of drumkit and other accompanimental patterns, including copious articulation marks, as well as descriptions of timbre and sound treatment. I have chosen not to undertake such tasks, not so much because that work would have been excessively time-consuming as because it would have blurred the focus of this book on the *tonal* elements of music. That's also why musical examples in this section are mainly presented as pi-

8. For reasons of space and clarity the blues smudge is transcribed enharmonically as a $c\sharp$ grace note running into $d\sharp$ in the right hand of the piano reduction. Simultaneous $d\flat$ s and $d\sharp$ s abound in the recording's real piano track, detuned for bluesy honky-tonk purposes and played two octaves higher.

and reductions allowing readers with moderate keyboard skills to concretise the harmonic and basic rhythmic issues under discussion.⁹ It's also why we'll now concentrate on the harmonic variation of literally one single chord: G.

G? Which G?

The *Nadine* groove's 6.67 seconds (2 × 3:33, ex. 251, p. 358) demonstrate how one chord of pop music can be tonally expanded in four different ways, one of which was the use of the chord's fifth degree as alternate bass note on beat 3 of each 4/4 bar. This kind of bass

Fig. 65. *Oom-pa[pa]*



shuttle is common in many types of popular song and, in its simplest form, presents the second inversion of the same chord in 'oom-pa' and 'oom-pa-pa' accompaniment figures for dances like the polka or waltz (G₅ in Figure 65). In some styles arpeggiated figures are used in conjunction with the shuttling bass fifth, for example in Country ballads (ex. 252) and *valse*s *chantées* (ex. 253).

Ex. 252. *Arpeggiated Country ballad accompaniment figure in G with shuttling fifth (d): e.g. chorus of Detroit City (Bobby Bare, 1963)*



The Country accompaniment figure's G chord in example 252 consists of a simple dotted arpeggiation with a bass fifth shuttle on beat 3 and an anacrustic f# leading the bass line back to g. The only note otherwise extraneous to the common triad of G major is the slightly accentuated a^b which, in the style of Country pianist Floyd Cramer (1960, 1961), imitates a typical Country guitarist's 2̂-3̂ ham-

9. Many of the piano reductions in this chapter derive from my Aural Keyboard Harmony teaching days (Göteborg, 1971-78).

mer-on embellishment of the chord. It would be stylistically out of place in jazz standards, waltzes, folk rock, chansons, reggae and most other types of music, including *valse chantée* (ex. 253).

The sheet music source for the refrain of *L'hirondelle du faubourg* contains just the vocal line and the chordal shorthand 'SOL' (=G) and 'RÉ7' (=D7). The arpeggiated accompaniment in example 253 derives from French accordion patterns featuring the familiar $\hat{8}-\hat{7}-\hat{6}-\hat{7}$ 'carrousel' motif (the loop of the right hand's top notes: g-f#-e-f#).¹⁰ Although this tonal expansion of bar 1's G common triad produces three chords (G, G^Δ and G⁶), the single chord designation G (SOL) covers all of them on paper.

Ex. 253. F. L. Bénéch: *L'hirondelle du faubourg* (1912) with accordéon musette arpeggiation in G and bass-line shuttling to the fifth (d)

♩=180 SOL (G)

On m'app-elle l'hir - on - elle du fau - bourg. Je ne suis qu'une pauvr -

G *sempre legato* G^Δ G⁶ G^Δ G

RÉ7 (D7)

- e fille d'am - our. Née un jour d'la sais - on print - an - ière etc.

G^Δ D^{sus4/5} D7 Am7 D7 D^{sus4/5} etc.

No less than with *Nadine* and the Country example (pp.358, 360), musicians accompanying a *valse chantée* need to know what notes to add, change or omit, what arpeggiation figure to provide, and what type of phrasing, ornamentation and articulation to apply, etc. They also need to know that the bass note of the first dominant chord reached (the D7 or RÉ7 at bar 7 in example 253) will most li-

10. Widor's Toccata (1879: 40, ff.) uses the same idea (f e d e = $\hat{8} \hat{7} \hat{6} \hat{7}$ in F).

likely be that chord's fifth (the $a\sharp$ in D7) so that the see-saw profile of the bass line can remain in tact and so that the return to I (G) is marked by a V→I change ($d\rightarrow g$ and $D\rightarrow G$, ex. 254, b. 8-9) rather than just $a-g$ ($D7_{/5}-G$).¹¹ Besides, if the 'carrousel' top-note loop continues into the dominant chord, which it often does in this kind of valse musette accompaniment, suspended fourths will occur over the dominant chord's root. That's another reason why the D7 (V) in bar 5) has to start with the shuttling fifth ($a\sharp$) in the bass line (bar 5 in example 254).

Ex. 254. *Musette waltz one-chord loops in G without arpeggiation*

In most types of popular song and dance music, the commonest shuttle pole in *bass* lines is the fifth (d in G). In many styles a PLAGAL SHUTTLE —single- or multi-voice¹²— can be added at the fourth (c in G). *Single-voice plagal shuttles* are simple embellishments of a common triad's third: they introduce a fourth or second, or both, into the chordal configuration, as shown in example 255.

Ex. 255. *Single-voice plagal embellishment of major third: Needles and Pins (Searchers, 1964); transposed from A.*

11. $|G|G/d|G|G/d|G|G/d||D/a|D D/a|D|D/a|D|D/a|D|D|G|$ is much more convincing than $|G|G/d|G|G/d|G|G/d||D|D/a|D|D/a|D|D/a|D|D/a|G|$.
12. By *multi-voice plagal shuttle* I mean that two or more notes in the unconfigured chord shift to at least two other notes in a plagal relationship to the root of the unconfigured chord (see examples 251, 256-267).

This sort of single-voice plagal ornamentation is popular with guitarists because it involves simple hammer-ons and pull-offs that produce a momentary ‘sus4’ or ‘sus2’ effect (e.g. c as $\hat{4}$ and a \flat as $\hat{2}$ circling around b as $\hat{3}$ in G). It’s an instantly recognisable sort of sound which I personally associate with English-language protest song from the 1960s, probably thanks to its conspicuous presence in *Eve Of Destruction* (McGuire, 1965).¹³

Multi-voice plagal shuttles are almost mandatory in soul, gospel and blues-based rock. Examples 256-258 illustrate such plagal embellishment of the same tonic G chord without any bass shuttle at the fifth. The generic rock pattern of example 256 includes smudged blues thirds (b \flat -b \natural) but none of the flat sevenths shown in examples 257 (fast gospel) or 258 (slow blues).

Ex. 256. *Plagal rock shuttle (generic pattern: G as G-C-G)*

Ex. 257. *Can I Get A Witness (Marvin Gaye, 1963; transposed):
plagal extension of G to C and G7 no 5*

Ex. 258. *Plagal extension of G to C and G7 no 5; generic slow blues in G: based
on Going Down Slow (Alan Price, 1966)*

13. The intro to *Eve Of Destruction* consists entirely of a first-position D embellished with a hammer-on g ($\hat{4}$) and a pull-off e ($\hat{2}$) around f \sharp ($\hat{3}$).

Ex. 259. *Plagal alternation of G and C over bass fifth shuttles with anticipated chord changes. Fits slowish pop ballads like Ode To Billie Joe (Bobbie Gentry, 1967)*

The image shows two systems of musical notation for Example 259. The first system covers bars 1 through 4. The right hand (treble clef) starts with a G chord, followed by a C chord. Annotations include 'C: plagal shuttle', 'early downbeat', and 'I↔IV shuttles on G'. The left hand (bass clef) has a bass line with annotations 'bar 1: start I bass 5ths', 'b. 2 & 3: repeat I', and 'b. 4: change to IV'. A box labeled ''11 effect'' is placed over the middle of the first system. The second system covers bars 5 through 7. The right hand starts with a C chord, followed by an F chord, then a G chord, and finally a C chord. Annotations include 'F: plagal shuttle', 'early chord change', and 'I↔IV shuttle on G'. The left hand has annotations 'b. 5: IV C7', 'b. 6: back to I', and 'b. 7: come prima I'. A box labeled 'etc.' is placed to the right of the second system. Brackets at the bottom of each system indicate '1↔5 shuttles on G' and '5th in C' for the first system, and '1↔5 shuttle on C' and 'lead-in to G' for the second system.

One of the most salient tonal features in example 259 is the 'eleven chord effect' created by combining a plagal shuttle chord in the upper accompanying parts with the bass line's shuttle fifth. The C major triad over a d bass in the middle of bars 1-4 and 7 creates a D¹¹ chord, while the F major triad over a g bass in bars 5-6 produces a G¹¹ effect. Note also how the right hand's rhythmic pattern $\downarrow \uparrow \downarrow \uparrow \downarrow \uparrow$ necessitates anticipation by one quaver of the change from G↔C to C↔F (bars 4-5) and back again (bars 6-7).

The 'eleven effect' is even clearer in examples 260-261 because the right hand's multi-voiced plagal pole, C (g-c-e), is struck simultaneously with the bass line's d to create a momentary D¹¹ chord.

Ex. 260. *Harmonic groove from Watermelon Man (Hancock, 1962; transposed from F): '11-chord' effect of plagal alternation with shuttle fifth in bass*

The image shows the musical score for Example 260. It consists of two staves: a treble clef staff and a bass clef staff. The treble clef staff starts with a G chord and has a rhythmic pattern of eighth notes. The bass clef staff has a bass line with a steady eighth-note rhythm. The tempo is marked as quarter note = 128. The key signature is one sharp (F#).

Ex. 261. G as 7th chord, plagal expansion (C) and D¹¹ effect; fits *Mercy Mercy* (Don Covay, 1966)

The musical score for Ex. 261 is in 4/4 time with a tempo marking of $\text{♩} = \text{c. } 82$. It consists of two staves: a treble clef staff for the right hand and a bass clef staff for the left hand. The right hand plays a series of chords, primarily G major and D¹¹, with some rhythmic variation. The left hand plays a steady eighth-note bass line.

In *Living For The City*, Stevie Wonder (ex. 262) uses the same basic plagal shuttle pole and rhythmic pattern as Herbie Hancock (ex. 260) but expands the tonal configuration of G to also include a B \flat triad, creating a major-minor shuttle consistent with the blues-related hardships recounted in the song's lyrics.

Ex. 262. Expansion of I to I IV \flat III IV (G C B \flat C) in verses of *Living For The City* (Wonder 1973) with resultant G⁷, C₅, B \flat /_g=Gm⁷ and D¹¹.

The musical score for Ex. 262 is in 4/4 time with a tempo marking of $\text{♩} = 100$. It features a major-minor shuttle between G major and B \flat major. The score includes the following chords: G, G⁷, C₅, B \flat /_g, C₅, D¹¹, and G⁷. The bass line consists of eighth notes.

A similar expansion of the simple tonic chord to include both \flat III and IV, though this time without the eleven-chord effect, is at the basis of the well-known *Green Onions* riff (ex. 263). It's applied to all three chords in the twelve-bar blues format the tune: I/G = G B \flat C, IV/C = C E \flat F and V/D = D F \sharp G.

Ex. 263. Expansion of I to I \flat III IV (G B \flat C) in *Green Onions* (Booker T and the MGs 1962, transposed from F)

The musical score for Ex. 263 is in 4/4 time with a tempo marking of $\text{♩} = 134$. It features a major-minor shuttle between G major and B \flat major. The score includes the following chords: G, G⁷, B \flat , and C. The bass line consists of eighth notes.

The consecutive juxtaposition of minor and major (ex.262-263) can also be made simultaneous, as with the bebop +9 chords of Table 26 (p.353) or in the characteristic sound of Hendrix numbers like *Purple Haze* (1967b) and *Foxy Lady* (ex.264).¹⁴

Ex. 264. *I expanded to I+⁹ with heavy anacrusis in Foxy Lady (Hendrix 1967c, transposed from F#)*

The chordal effects of blue notes in contrapuntal one-chord configurations like example 265 can also be quite striking, as can the sonorities created by delayed bass root notes sounding with incomplete seventh chords (example 266).

Ex. 265. (right) *Plagal and bluenote (b $\hat{3}$, b $\hat{5}$, b $\hat{7}$) contrapuntal expansion of G, producing momentary dissonances; fits Good Golly Miss Molly (Little Richard 1958)*

Ex. 266. (below) *Incomplete G7 chord with delayed bass root in harmonic groove at start of Lively Up Yourself (Marley 1975)*

Finally, while the G major of example 267 is unambiguous, the bass line's pentatonically delayed root notes, the G⁹ effect of the trumpets' $\text{f}\sharp$ and a , the guitar's three $\text{b}\hat{3}$ s contradicted by a $\text{b}\flat$ in the strings and flute part, the insistence on $\text{f}\sharp$ in the trombone part, not to mention the fact that it is easy to hear the downbeat of each bar a quaver later than it actually occurs, make for yet another tonally distinct configuration of the 'same' chord: 'G'.¹⁵

14. The +9 variant is also prominent in *Spinning Wheel* (Blood Sweat & Tears 1969), and in the intro to *Thank You For Lettin' Me Be...* (Sly And The Family Stone 1970).

Ex. 267. *G major section in the middle of Shaft (Isaac Hayes 1971)*

The fifteen examples (252-267) just presented of the single chord G vary considerably, not just in terms of voicing, register, instrumentation, tempo, timbre, phrasing and rhythmic configuration but also, as the piano reductions were intended to show, *tonally*. It should be clear from all these variants of ‘G’ that ‘chord’ means at least two chords in the sense of the word defined on page 219, whether that ‘one chord’ be in a *valse chantée* or a soul number. Readers still unconvinced by this exposé are urged to peruse examples 268 and 269 (p.368) which show two standard variants of what would most likely appear on a lead sheet as just ‘G’.

Ex. 268. *Single tonic chord expanded to standard turnaround sequences in bars 11 and 12 of a slow twelve-bar blues in G¹⁶*

If the chords of a standard simple twelve-bar blues in G are supposed to run |G|G|G|G|C|C|G|G|D|C|G|G|, why, you may well ask, are there six different chords in the cycle’s last two bars of ex-

15. Example 267 is adapted from the transcription by Davis (2005:299).
16. This turnaround contains the minichromatic parallel lines $\hat{5}-\flat\hat{5}-\hat{4}-\hat{4}\hat{3}$ (right hand) and $\hat{4}\hat{3}-\flat\hat{3}-\hat{2}=\hat{1}$ (bass), one of the conjunct harmonic tropes mentioned in the Preface (p. 00).

amples 268 and 269?¹⁷ It's partly because the harmonic notion of a twelve-bar blues is, like the concept of a 'single chord', no more than an abstraction of real musical practices.

Ex. 269. *Tonic chord extended to standard ending of blues in G (bars 11-12)*

Just as musette accordionists and rock guitarists learn by ear what to omit, include and add, all in accordance with the relevant style, to the stated chord indication, blues pianists know that staying on the tonic for the last two bars of a chorus will halt harmonic movement and give no forward drive into the first chord of the next chorus or create no sense of tonal finality (ex. 269). Blues pianists compensate for such harmonic stasis by increasing harmonic rhythm to lead appropriately into a reprise of the matrix (ex. 268) or to finish the piece (ex. 269).¹⁸ As stated earlier, one of the main reasons for tonally expanding single chords well beyond the notes they theoretically contain is to create tonal movement, usually by shuttles in the bass line and inner chordal parts. That sort of movement livens up the single chord, producing appropriate harmonic activity as an intrinsic part of the relevant groove. It is in that sense of harmonic groove that single chords can, as suggested earlier, turn into 'somewhere worth staying'.

The next chapter deals with the harmonic groove of *two* chords as 'a place to be'...

17. Ex. 268 |G G₃ Gm₃ Am7 |G Eb⁹ D7|; ex. 269 |G G₃ C C^{#dim} |G₅ D⁹ G7|.

18. Example 269 brings movement into the tonic chord by using two minichromatic conjunct lines in contrary motion: $\hat{8} \hat{b} \hat{7} \hat{A} \hat{6} \hat{6}/\hat{b} \hat{6} \hat{5}$ (right hand) and $\hat{1} \hat{A} \hat{3} \hat{4} \hat{\#} \hat{4} \hat{5}$ (bass) to produce I-I₃-IV- $\hat{\#}i \vee^{\dim}/\flat \vee I_{/b} \vee -V \hat{4}$.

Summary in 5 points

- [1] The dynamics of *harmony in popular music* tend to rely less on long-term narrative (diataxis) and much more on tonal variation presented in bouts of the *extended present* (synchrisis).
- [2] The indication of a *single chord on paper*, or in theory, is in practice *rarely performed as just one single chord* by competent musicians accompanying a popular tune in such styles as *valse musette*, rock, pop, gospel, soul, R&B,¹⁹ funk, etc. (see examples 250-267).
- [3] Accompanying musicians have to learn how to *configure a single chord in a range of style-appropriate ways* (§2). Such configuration involves the *inclusion of other chords* that provide the theoretical 'one single chord' with a *sense of ongoing cyclical tonal movement*. Accompanimental configurations of this type constitute the *tonal aspect of groove*.
- [4] A *single chord indication* can in aural reality be interpreted as a sequence of *up to five different chords*, if the sequence were transcribed and set in front of euroclassical harmony students, as in examples 268 and 269.
- [5] Equating the indication of a single chord in the sheet music to a popular song with harmonic impoverishment is a sign of musical naïvety or ignorance.

19. By *R&B* is meant the work such artists as Muddy Waters, Howlin' Wolf and John Lee Hooker, *not* that of Whitney Houston, Mariah Carey, Janet Jackson, Michael Jackson, Boyz II Men etc. ('contemporary R&B').

12. Chord shuttles

As we saw in the previous chapter, harmonic shuttles are an effective way of putting life into single-chord passages of music and of establishing a groove and sense of style. Now, one of the shuttles cited —Bob Marley’s *Lively Up Yourself* (p. 366)— is different. It’s not a plagal expansion of an ongoing D tonic but a two-chord alternation between D and G, lasting six seconds, that runs throughout the whole performance. The duration of a two-chord shuttle unit, from one chord to the other and back, is, like that of a single-chord shuttle, always containable within the *extended present*. The fact that, for example, Chuck Berry’s two-chord song *Memphis Tennessee* (1960), spends twelve seconds on one chord and twelve more on the other —that’s 24 seconds in all (16 bars of 4/4 at $\text{♩}=160$)— means that each harmonic to and fro in the song is about four times too long to qualify as a shuttle.

The difference between one-chord and two-chord shuttles is not determined by duration but by whether or not *both* chords in the shuttle are complete in themselves. The most reliable signs of a complete two-chord shuttle are: [1] each chord can be heard in root position for part of its duration;¹ [2] a similar amount of time is spent on each chord as long as the shuttle is in operation; [3] it occurs as to-and-fro movement at least twice in immediate succession and does not exceed the limits of the extended present. One consequence of these three traits is that, like two equally heavy children each at opposite ends of a seesaw, there need be no specific tonal hierarchy between the two chords of a shuttle. As we shall see later, while many of the chordal alternations under review *can* be heard in relation to a tonic (I), others *cannot*. But first I’d better clarify the sort of repertoire I draw on in what follows and explain how the material is presented and categorised.

1. *Root position*: see under ‘Inversions’, p. 225.

About the material

Tables 27-31 (pp.374-389) show the most common types of chord shuttle used in widely disseminated recordings of English-language popular song released between 1955 and 2005. Here I have to confess that my repertoire selection criteria have not been particularly rigorous because, as the preponderance of recordings from my band-playing years in the 1960s and 1970s suggests, about half of the pieces listed in the tables are simply tunes I have either actually played or that I remember well from younger days. To counteract that personal bias I expanded the selection by listening to most UK number-one hits, especially those I did not know, released between 1960 and 2007 and by noting details of the chord shuttles I heard. Therefore, although the tunes listed in the tables in no way constitute an exhaustive inventory of anglophone hits containing chord shuttles during that period, they should not be dismissed as an entirely misleading sample of that repertoire.²

Tables 27-31 present shuttle types in ascending order of the scale degree of the root of the second chord in relation to the first, i.e. $I \leftrightarrow II$, $I \leftrightarrow IV$, $I \leftrightarrow V$, $I \leftrightarrow VI$, $I \leftrightarrow VII$ ($I \leftrightarrow III$ is absent for reasons given on page 374).³ Each table divides the relevant scale-degree-based category into subgroups. For instance, the main category, ‘Quintal shuttles ($I \setminus V$)’ (p. 383), contains (using the key of D as example) the subgroups $I \leftrightarrow V$ ($D \leftrightarrow A$, *ionian shuttles*), $i \leftrightarrow V$ ($Dm \leftrightarrow A$), $i \leftrightarrow v$ ($Dm \leftrightarrow Am$) and $V \leftrightarrow I$ ($A \leftrightarrow D$). The last of these subgroups, the *reverse ionian shuttle* $V \leftrightarrow I$, is included in the $I \leftrightarrow V$ category because, even though ‘ $A \leftrightarrow D$ ’ on paper looks like a $I \leftrightarrow IV$,⁴ the key of $A \leftrightarrow D$ in the chorus of The Police’s *Every Little Thing* (Table 29, p. 383) is, unlike the tunes listed in Table 28 (p. 376), clearly D, not A. The point

2. Aiming for greater reliability, I also rechecked original recordings of all the shuttle songs with which I was previously familiar.
3. Here upper-case roman numerals are generic, e.g. ‘I’ means either I or i. While bass notes in a C major $I \leftrightarrow ii$ shuttle would, starting on C in octave 3 always be c_3 and d_3 (octave numbers, see p.69), bass notes in a $I \leftrightarrow IV$ shuttle could be *either* a fourth (e.g. $c_3 \leftrightarrow f_3$) or a fifth apart ($c_3 \leftrightarrow f_2$).
4. See Floyd Cramer, Spencer Davis and Paul McCartney in Table 28, p. 376.

of this aspect of classification is to group together, where possible, shuttles that use the same harmonic constellation in relation to an unambiguous tonic. Example 270 illustrates this point: $E \leftrightarrow A$ in *Satisfaction* clearly shuttles plagally between the tune's tonic and fourth degree in E ($I \leftrightarrow IV$) while the Beethoven $E \leftrightarrow A$ is a reverse ionian shuttle between dominant and tonic ($V \leftrightarrow I$).

Ex. 270. $E \leftrightarrow A$ shuttle in different keys: (1) *Satisfaction* (Rolling Stones, 1965); (2) *Symphony N^o7 in A, last movement, bars 5-8* (Beethoven, 1812).

Although the roman numerals used in the previous paragraph and in tables 27-31, are essential to chord shuttle classification in sound-alike types, they can cause a major problem in that their use assumes that the chords under discussion all relate to an unambiguous tonic. Since such notions of harmony do not apply to several of the recordings listed below, the tables also include absolute chord indications (e.g. 'C→F' rather than just 'I→IV') for each song. In most cases it *has* been possible to assign a keynote to the section of the recording in which each shuttle occurs. Those keynotes are shown in column three of each table. Question marks are inserted when the tonic's identity is ambiguous and such cases are discussed in conjunction with the table containing those peculiarities.

Apart from the shuttle types, chords and keynotes in the left three columns, each table also refers to each recording by artist, title and year. Publishing details of each tune are included in this book's Reference Appendix (p. 505, ff.) so that readers can more easily locate and access the recordings mentioned (see 'Accessing and using musical sources', p. 29).

It will be clear from what follows that some types of chord shuttle are more common than others. Although plagal shuttles seem to be in widest use (p. 375, ff.), other patterns of chord alternation are

also common, notably those at the fifth, sixth and seventh (pp.381-400). On the other hand, I found far fewer $I \leftrightarrow ii$ shuttles and virtually *no* $I \leftrightarrow III$ s – just the $I \leftrightarrow iii$ in Roy Orbison's *Crying* (1961). At first I found this lack of $I \leftrightarrow III$ shuttles surprising because $I \leftrightarrow III$, $I \leftrightarrow iii$ and $I \rightarrow bIII$ are not the rarest chord changes in pop music. The only explanation I can offer for this dearth of $I \leftrightarrow III$ s in the repertoire to which I had access is that *shuttles* (\leftrightarrow), unlike the chordal *departures* just mentioned (\rightarrow), go in *two* directions and that *moving from III to I (III \rightarrow I) is as uncommon a chord change in the music under discussion as I to III (I \rightarrow III) is common. Besides, as we shall see in Chapter 14, as well as in the chapter on the 'Yes We Can chords', $I \rightarrow III$ departures usually lead 'somewhere else', typically to VI or IV before returning to I.⁵*

Supertonic shuttles ($I \leftrightarrow II$)

Table 27. Examples of shuttles to and from the second

Type	Chords	Key	Tune
I-bII	$C \leftrightarrow D_b$	C	Nacio Herb Brown: <i>Temptation</i> (1933)
	$A \leftrightarrow B_b$	A	Jefferson Airplane: <i>White Rabbit</i> (start) (1967)
	$C \leftrightarrow D_b$	C	Madness: <i>Night Boat To Cairo</i> (1979)
I-ii	$C^{\Delta 7} \leftrightarrow Dm7$	C	Tom Jones: <i>It's Not Unusual</i> (intro) (1965)
	$D \leftrightarrow Em$	D	Tymes: <i>Miss Grace</i> (1974)
	$D \leftrightarrow Em$	D	Carl Douglas: <i>Kung Fu Fighting</i> (1974)
	$C \leftrightarrow Dm$	C	Wham: <i>Wake Me Up</i> (chorus) (1984)
ii-I	$Dm7 \leftrightarrow C^{\Delta 7}$	C	Guess Who: <i>These Eyes</i> (1969)
	$Gm7 \leftrightarrow F^{\Delta 7}$	F	Lily Allan: <i>Smile</i> (2006)

As already mentioned, supertonic shuttles (Table 27) do not seem very common in the music under review here. Although widespread in the Balkans and Eastern Mediterranean,⁶ the *phrygian shuttle* $I \leftrightarrow bII$ ⁷ is quite rare in anglophone pop songs and, judging from the lyrics of relevant songs in Table 27, seems to be used to-

5. I did find a repeated techno $bIII \rightarrow I$ in Slam's *Positive Education* (1995) which, without clear bass line, was more a one-chord than two-chord shuttle. Mediantal loops are discussed on p.442, ff.

gether with notions of strangeness and mystery (temptation, drugs and Cairo).⁸ The (non phrygian) $I \leftrightarrow ii$ and $ii \leftrightarrow I$ examples sound a lot like the $IV^6 \leftrightarrow I$ of George McCrae's *Rock Me Baby* (1964, $A\flat^6 \leftrightarrow E\flat$) because ii^7 and IV^6 (e.g. Gm^7 and $B\flat^6$ in F) contain the same notes ($\hat{2} \hat{4} \hat{6} \hat{1}$: in F = g b \flat d f). All four $I \leftrightarrow ii$ shuttles, plus the McCrae example, are linked to carefree lyrics, about love in the case of Guess Who, McCrae, Tom Jones and Lily Allan, and, in the Carl Douglas hit, about the fun of watching, rather than participating in, Kung Fu fighting.

Plagal shuttles

For reasons just explained, no table exists for shuttles to and from the third. On the other hand, since shuttling to IV in the inner parts of the harmonic elaboration of single chords is such a common phenomenon (pp. 364-366), it's hardly surprising to discover that two-chord plagal shuttles are so numerous that there is only room to include some of the most striking or well-known examples in Table 28 (p. 376). These plagal shuttles are presented in two main sections, the first for straightforward examples where there is no doubt about keynote identity, the second for 'dorian' shuttles, i.e. for those whose first chord contains, or is, a minor triad and whose second contains, or is, a major triad at the fourth.

The first and last subgroups in the first section of Table 28 ($I \leftrightarrow IV$ and $IV \leftrightarrow I$) list standard major-major plagal shuttles that are an extremely common harmonic device in pop and rock music. Some of

6. For example: [1] 'Zeybek' on *Traditional Musik from Turkey* (2000); [2] 'Zaharenio hanoumaki' and 'Katsivela' on *Rebetis tis Bagdatis* (Greece, 2001); [3] intro and verse starts in Bulgarian *chalga* singer Zara's *Plennitsa* (2000); [4] Bulgarian heavy metal band Ermalak's *Bulgari* (1992). The minor subtonic triad ($bvii$) is often used as alternative to bII in phrygian shuttles in the types of popular music just mentioned (cf. example 199, p. 289).
7. Other phrygian shuttles: $i \leftrightarrow bII$, $I \leftrightarrow bvii$, $i \leftrightarrow bvii$.
8. The Bing Crosby film version of *Temptation* (*Going Hollywood*, 1933) includes some extreme close-ups of a sultry dark-eyed woman. The *White Rabbit* $I \leftrightarrow bII$ first accompanies the lyrics 'One pill makes you larger and the other one makes you small; and the pills that mother gives you don't do anything at all'.

them occur in introductions and/or at the start of verses (e.g. Spencer Davis, John Lennon, Dionne Warwick, Manfred Mann, Archies, Paul McCartney, Oasis, Clash, and both Aretha Franklin songs) while others dominate large parts of the recording (e.g. Bob Marley, Arrested Development, George McCrae). In the first instance, repeating the I↔IV shuttle, even if it's part of the tune's hook, highlights whatever eventually breaks the repetition. In the second case the shuttle constitutes either the entirety or the main part of the recording's harmonic universe. As the first part of Table 28 suggests, minor-triad variants of I↔IV are rarer: only one instance of I↔iv is listed (R. Kelly's C↔Fm) and only three of i↔iv (Anita Ward, The Valentine Brothers and Xtra Bass).

Table 28. Shuttles to and from the fourth (I↔IV, plagal)

Type	Chords	Key	Recording (Year)
<i>Simple plagal shuttles</i>			
I-IV	G↔C	G	Beatles: <i>Love Me Do</i> (1962c)
	D↔G	D	Dave Clark Five: <i>Glad All Over</i> (1963)
	A↔D	A	Floyd Cramer: <i>On The Rebound</i> (1964)
	A↔D	A	Spencer Davis: <i>Keep On Running</i> (intro) (1965)
	E↔A	E	Rolling Stones: <i>Satisfaction</i> (1965)
	C↔F	C	Manfred Mann: <i>Pretty Flamingo</i> (1966a)
	C↔F7	C	Aretha Franklin: <i>Respect</i> (1967)
	C ^Δ ↔F6	C	Dionne Warwick: <i>The Way To San José</i> (1968)
	D↔G	D	Archies: <i>Sugar Sugar</i> (1969)
	C↔F	C	John Lennon: <i>Imagine</i> (intro, verse start) (1971)
	B ^b ↔E ^b	B ^b	Aretha Franklin: <i>Think</i> (1974)
	D↔G	D	Bob Marley: <i>Lively Up Yourself</i> (1975)
	A↔D	A	Paul McCartney: <i>Mull Of Kintyre</i> (1977)
	E ^b ↔A ^{bΔ}	E ^b	Arrested Development: <i>Mr Wendal</i> (1992)
I-iv	C↔Fm	C	R. Kelly: <i>I Believe I Can Fly</i> (1996)
i-iv	Cm↔Fm	Cm	Anita Ward: <i>Ring My Bell</i> (1979)
	Bm↔Em ⁷	Bm	Valentine Brothers: <i>Money's Too Tight</i> (1982)
	Cm↔Fm	Cm	Xtra Bass: <i>Step To The Rhythm</i> (1989)

Type	Chords	Key	Recording (Year)
IV-I	A \flat 6 \leftrightarrow E \flat	E \flat	George McCrae: <i>Rock Me Baby</i> (1974)
	G \leftrightarrow D	G	Clash: <i>Should I Stay Or Should I Go</i> (1982)
	F \leftrightarrow C	C	Oasis: <i>Don't Look Back In Anger</i> (intro) (1995)
	G \flat \leftrightarrow D \flat	D \flat	Michelle McManus: <i>All This Time</i> (2004)
<i>Dorian plagal shuttles from minor to major at the fourth*</i>			
i-IV	Am \leftrightarrow D	Am	Shadows: <i>Apache</i> (1960)
	Am \leftrightarrow D	Am	Swinging Blue Jeans: <i>You're No Good</i> (1964)
	Fm7 \leftrightarrow B \flat	Fm	Classics IV: <i>Spooky</i> (1968)
	Am7 \leftrightarrow D	Am	Santana: <i>Oye como va</i> (1970)
	Gm7 \leftrightarrow C	Gm	Labelle: <i>Lady Marmalade</i> (1975)
	F \sharp m \leftrightarrow B	F \sharp m	Dead or Alive: <i>You Spin Me Around</i> (1985)
ii-V	Am7 \leftrightarrow D	G	Chiffons: <i>You're So Fine</i> (1963)
	B \flat m7 \leftrightarrow E \flat	A \flat	Edwin Hawkins Singers: <i>Oh Happy Day</i> (1969)
ii-V ?	F \sharp m \leftrightarrow B	E?	George Harrison: <i>My Sweet Lord</i> (1970)
	G \sharp m \leftrightarrow C \sharp	F \sharp ?	[later in same song]
	Gm \leftrightarrow C	?	Pink Floyd: <i>The Great Gig In The Sky</i> (1973)
	Am7 \leftrightarrow D	F	Dionne Warwick: <i>Walk On By</i> (1964)
?	F \sharp m \leftrightarrow B	A	Abba: <i>The Name Of The Game</i> (A section) (1977)

* Dorian shuttles are so called because dorian is the only 'church' mode to allow for both a minor triad on the tonic (i) and a major triad on the fourth (IV) (see p.287).

The first subgroup of dorian shuttles in Table 28 is reasonably straightforward. *Apache*, *You're No Good*, *Lady Marmalade* and *You Spin Me Around* all include clear cadences on to their tonic, even if the home keys of *Spooky* and the Santana rendering of *Oyé como va* are slightly less unequivocal. In the second subgroup (ii \leftrightarrow V), *He's So Fine* and *Oh Happy Day* start with repeated dorian plagal shuttles like the tunes just mentioned and could, without their continuation, also be construed as straight i \leftrightarrow IVs. However, the IV in the final instance of the Chiffons and Edwin Hawkins shuttles becomes V in relation to a tonic major chord whose root is situated one tone below that of the shuttle's first chord. In concrete terms, *He's So Fine's* Am7 \leftrightarrow D becomes Am7 \rightarrow D \rightarrow G and *Oh Happy Day's* B \flat m7 \leftrightarrow E \flat becomes B \flat m7 \rightarrow E \flat \rightarrow A \flat . In short, the to and fro of i \leftrightarrow IV turns into a unidirectional ii \rightarrow V \rightarrow I cadence. Things are not that simple with the Pink Floyd track *The Great Gig In The Sky*.

That Pink Floyd track (abbr. ‘Great Gig’) has a duration of 4:34 and appears on the album *Dark Side of the Moon* (1973). It’s perhaps best known as the track featuring ecstatic vocals by Clare Torry. Harmonically it starts with a minute of chordal meandering to end up clearly on B \flat . That harmonic resting point is followed at 1:07 by a 72-second stretch of Gm7 \leftrightarrow C shuttling at $\downarrow=66$ (ends at around 2:19) over which Torry improvises her wordless vocals. The Gm7 \leftrightarrow C shuttle might initially sound like $\dot{\mathbf{i}}\leftrightarrow\text{IV}$ in the relative minor of B \flat , or even like a potential $\dot{\mathbf{ii}}\leftrightarrow\text{V}$ in F major, but, with the vocal improvisation solidly locked into the harmonic universe of the shuttle, it establishes a tonal world of its own. The ten consecutive Gm7 \leftrightarrow C shuttles, each lasting seven seconds, are followed by a brief chromatic passage landing not on B \flat , Gm or F but on a held B \flat m. From that distant harmonic reference point the sequence $1\frac{1}{4}\text{ F | B}\flat\text{ | F}_{/3}\text{ | Gm7 | C | Gm7 | C7 | F}^{\Delta}\text{ | B}\flat^{\Delta}\text{ | E}\flat^{\Delta}\text{ | Cm7 | F7}$ leads back to a clear resting point at 3:24 on the initial tonic, B \flat . The last 72 seconds of harmony consist, once again, of Gm7 \leftrightarrow C, ending its final rallentando on an ‘unresolved’ Gm7. And that is the end of the original vinyl album’s side one.

The question is whether the Gm7 \leftrightarrow C heard during over half of *Great Gig*’s total duration is:⁹ [1] a $\dot{\mathbf{i}}\leftrightarrow\text{IV}$ shuttle in G minor because Gm is the track’s last chord and because G minor is relative minor to the only obvious possible tonic – B \flat ; [2] as $\mathbf{v}\leftrightarrow\text{I}$ in C, because, with the minor seventh in the G minor chord and the rallentando, the track could just as easily have ‘resolved’ on to a final C major common triad as gone back to G minor;¹⁰ [3] as $\dot{\mathbf{ii}}\leftrightarrow\text{V}$ in F, because that’s how the shuttle is treated in the modulatory sequence at 2:48; [4] as a sort of $\mathbf{vi}\leftrightarrow\text{II}$ shuttle in B \flat because the tune has full ca-

9. The track has a total duration of 4:34 of which 1:12 + 0:08 + 1:12 = 2:32 (55.5%) contain the famous shuttle.
10. I can bring to mind only one clear example of a dorian shuttle ending on the second of the two chords, i.e. as a sort of $\mathbf{v}\leftrightarrow\text{I}$. It’s a shuttle exercise I concocted myself over 20 years ago (tagg.org/audio/KnopfelerInAngolaLess128.mp3). An extremely clear $\dot{\mathbf{i}}\leftrightarrow\text{IV}$ (or $\mathbf{v}\leftrightarrow\text{I}$) ending is the BBC World News jingle which can be heard in both original and shuttled form at tagg.org/audio/BBCnewsAll.mp3.

dences in, and rests consecutively for much longer on, $B\flat$ than any other chord. Frankly speaking, the answer is at the same time all and none of the above. The weakest of the four explanations is probably the last one, even though it may appeal to those who believe in hierarchically arranged tonal centres, because the very fact that the Pink Floyd shuttle can be heard in any of the other three ways means that it either has multiple tonal implications or none at all. In fact, the track's last 72 seconds, which repeat $Gm7 \leftrightarrow C$, suggest that this shuttle is *not a process but a state or condition*. Pink Floyd's $Gm7 \leftrightarrow C$ in *Great Gig* is not a place you pass through en route to another destination: it's a tonal neighbourhood and is itself somewhere to *be*.

The Pink Floyd $Gm7 \leftrightarrow C$ as a 'place to be'? Before dismissing that notion as a sad platitude issuing from the befuddled brain of an old hippie (I was never a hippie anyhow), it's worth considering the following points. *Dark Side of the Moon* is a concept album with no silence between tracks. Since *Great Gig* is track 4 on side 1 of the LP, most listeners will have already heard track 2, *Breathe*, which contains the same dorian shuttle ($i \leftrightarrow IV$) a tone higher ($Em \leftrightarrow A$) in the same slow tempo. In fact the first Em of *Breathe's* first $i \leftrightarrow IV$ is also the first tonal sound on the whole album because track 1, *Speak To Me*, is a montage of heartbeats, a ticking clock, a cash machine, disjointed speech, a helicopter and a scream. Since *Breathe's* first $Em \leftrightarrow A$ has no prior harmonic context to which it can refer, the slow $i \leftrightarrow IV$ dorian shuttle is itself the whole album's initial tonal reference point. It is moreover squarely established by being repeated eight times (16 bars and lasting 1:45) at the start of *Breathe*, after which the four-bar sequence $|C^{\Delta} |Bm |F |G D^{+9} |$ just leads back, with a $v \rightarrow I$ movement, to the same $Em \leftrightarrow A$. It then reappears, twice more in the same track, repeated four times on each occasion.¹¹ The same $i \leftrightarrow IV$ also turns up, once again in slow tempo and six times in a row, near the end of track 3 (*Time*, at 5:54), just before 'Home, home again'. It even appears in a similar tempo as $Dm \leftrightarrow G$

11. At the words 'Breathe, breathe in the air' (2:27) and at 'Run, rabbit, run' (3:12).

in a rhythmically more active instrumental section lasting 110 seconds (1:30-3:20) in *Any Colour You Like* on the album's side two. In short, if anything had to be singled out as harmonic focal point of *Dark Side of the Moon*, it would not be the mere 'keys' of D minor, E minor or G minor in the three shuttles $Dm \leftrightarrow G$, $Em \leftrightarrow A$ and $Gm \leftrightarrow C$ but the ongoing tonal constellation of the $i \leftrightarrow IV$ dorian shuttle at any of those pitches. It is for these reasons that the famous *Great Gig* shuttle has to be understood as the whole album's most frequently stated and most characteristic *tonal place to be*.

The last 1:45 of George Harrison's *My Sweet Lord* (4:35; 1971) is in a similar sort of dorian shuttle 'place' as Pink Floyd's, fading out on its $G\#m \leftrightarrow C\#$ with no sense of a single final tonic. However, the Harrison tune starts with four $F\#m \leftrightarrow Bs$, the last of which turns out to be a $ii \rightarrow V$ to land on the tonic, E. Still, even though this $ii \rightarrow V$ pattern occurs a few times in the first part of the song (first in E, then F $\#$), the lasting harmonic impression of the Harrison recording and the chordal basis of its repeated hook line is the dorian shuttle and its state of open-endedness which occupy 70% of the song's total duration.¹² It is certainly where the song mostly wants us to be, along with the simultaneously sung 'Hare Krishna' repetitions preceding the final fade-out.

The $Am7 \leftrightarrow D$ shuttle at the start of the verses in *Walk On By* (Warwick, 1964) works differently in this Bacharach tune whose clear target tonic is F. The $Am7 \leftrightarrow D$ can be heard as lead-in to a $ii \rightarrow V \rightarrow I$ on the subsequent G minor. However, that Gm becomes one pole in a $Gm7 \leftrightarrow Am7$ shuttle ($i \leftrightarrow ii$ in Gm, $ii \leftrightarrow iii$ in F) that leads via B \flat (IV) to C (V) and the verse's end cadence in F (I). Whatever the case, the tune's initial $Am7 \leftrightarrow D$, its es and gs shuttling with ds and f $\#$ s, is clearly a different place to be than the world of song's tonic, F Δ and its shuttle with B \flat Δ .

Abba's *The Name Of The Game* (4:00; 1977) is a different kettle of fish because its $F\#m \leftrightarrow B$ constitutes the harmonic entirety of the first (A) part of the song (0:38) whose sections have an unusual order of

12. 3:11 of dorian shuttle in 4:35 = 69.4545%.

presentation: *ABCDEFDEDF*. Since the subsequent sections (*DEF*) are clearly in the key of A, it's tempting to argue that if the first (*A*) section's $F\sharp m \leftrightarrow B$ is not a sort of $vi \rightarrow II$ pointing towards the subsequent tonic, then it must be a $ii \leftrightarrow V$ in E which then completes a classic $V \rightarrow I$ gesture on to A. Well, neither argument holds because the chords of the song's second (*B*) section run $|F\sharp m |B_{/3} |C\sharp m |D|$ ($i IV v bVI$ in $F\sharp m$) which, only after repetition, finally runs into an E chord and a $V \rightarrow I$ cadence in A. Yet again, this Abba $F\sharp m \leftrightarrow B$ is 'another' place to be, a different tonal constellation.¹³ If you insist on considering this Abba shuttle in terms of conventional harmony (which it's not), it's probably least misleading to think of it as a $i \leftrightarrow IV$ dorian shuttle in the tune's relative minor.

Quintal shuttles ($I \leftrightarrow V$)

Shuttles to and from the fifth are a stylistic trait of euroclassical music of the eighteenth and nineteenth centuries. Just as rock musicians often milk a final $IV \rightarrow I$ cadence with virtuosic flourishes in live performance, euroclassical composers seem to have relished milking final cadences with $V \leftrightarrow I$ shuttles. There are, for example, six such *ionian shuttles* as episodic markers of finality in bars 305-310 of the first movement of Mozart's 41st symphony and seven in bars 405-416 at the end of the last movement of Beethoven's fifth. However, it should be remembered not only that $E \leftrightarrow A$ can be either $V \leftrightarrow I$ in A or $I \leftrightarrow IV$ in E (ex. 270 p.373) but also that 'I' and 'V' may not be at all accurate chord labels at all when discussing many types of popular music (ex. 271).

Ex. 271. Mila moja ('A' section; Serbian trad., cit. mem.)

Both two-bar sections of the Serbian song just quoted (ex. 271) start with a chord of D major and end with a chord of A major that leads

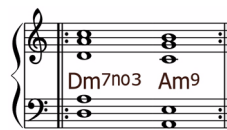
13. The shuttle is in fact an $F\sharp 5 \leftrightarrow B^5$ except for every fourth time it occurs when a $d\sharp$ is clearly stated in a full B major triad,

to the start of one of those two sections with what may seem like a $V \rightarrow I$ movement after a 'half cadence' at the end of every four-bar period. Heard like that, *Mila moja* clearly has D as its 'tonic' triad (I) and A as its 'dominant' (V). The trouble is that the recording ends squarely and without fade-out on A. Since A is the final resting point of the tune's harmony, it cannot be the dominant because dominants must, according to the rules of classical harmony, proceed to the tonic. So perhaps A is tonic instead?... That interpretation of *Mila moja's* chords as plagal movement in A (D='IV', A='I') is no more convincing because, as we just suggested, the chords lead just as much from A to D as from D to A.¹⁴ The only realistic interpretation of *Mila moja's* two chords is to view them as a simple shuttle whose function is to provide a tonal dimension to the motion and direction of both melody and accompaniment, and to consider D and A as non-hierarchical shuttle poles because both chords exhibit characteristics of the tonic, one ionian (D), the other mixolydian (A). Like Pink Floyd's $Gm7 \leftrightarrow C$, *Mila moja's* $D \leftrightarrow A$ is one integral harmonic unit, a harmonic 'state' or 'place to be'. Denoting its two chords as *either* $I \leftrightarrow V$ or $IV \leftrightarrow I$ rather than as both (or neither) is certainly misleading, but using the terms 'dominant' or 'subdominant' in such contexts is plain wrong.

Despite the conceptual problems just discussed, most of the $I \leftrightarrow V$ and $V \leftrightarrow I$ shuttles listed in Table 29 (p. 383) contain an unambiguous 'I' and 'V' in relation to each other. There is, for example, no doubt that Sandie Shaw's *Puppet On A String* (1967) is in C and that the chorus of *Every Little Thing She Does* (Police 1981) is in D. Direction from V (G and A respectively) towards those keynotes is as unequivocal as it is from E to A in the Beethoven extract referenced in the same table.

14. There is, if my memory serves me right, anacrusic quaver movement in the accompaniment leading from D to A (e.g. $d \ f\# \ g \rightarrow | a$ in the bass line).

Ex. 272. *Kylie Minogue (2001): Can't Get You Out Of My Head* →



The *i*↔*v* shuttles (both minor triads), on the other hand, have very little of the *I*↔*V* (ionian) shuttle's sense of harmonic direction, not least because a minor triad on the fifth (*v*) contains no leading note to the tonic.¹⁵ In concrete terms, the *c*↔*d* in the *Am*→*Dm* of example 272's *i*↔*v* shuttle just doesn't pack the same directional punch as the *c*↔*d* in the *A*→*D* movement of the *V*↔*I* shuttle in Police's *Don't Stand So Close To Me* (1980; ex.273, p.388). Another reason for the lack of direction in the Minogue shuttle (ex. 272) is that, as more tracks are added to the mix, the *i*↔*v*'s two chords contain more and more notes in common: two of the first chord's four different notes (the *a* and *c* in *Dm*⁷) are also included in the second chord (*Am*⁹).

Table 29. *Examples of shuttles to and from the fifth* (↓) (cont. p. 384)

Type	Chords	Key	Publication/Release (Year)
I-V	A↔E	A	Beethoven: <i>Symphony #7, 4th movement</i> , (bars 24-36) (1812) (ex. 270b)
	G↔D	G	Honeycombs: <i>Have I The Right</i> (intro) (1964)
	F↔C	F	Kinks: <i>Tired Of Waiting</i> (middle) (1965)
	G↔D	G	Kinks: <i>Tired Of Waiting</i> (middle) (1965)
	D↔A	D	Byrds: <i>Mr. Tambourine Man</i> (intro) (1965)
	C↔G	C	Sandie Shaw: <i>Puppet On A String</i> (1967)
	E↔B ¹¹	E	Fifth Dimension: <i>Stoned Soul Picnic</i> (1968)
	C↔G	C	Rod Stewart: <i>The First Cut Is Deepest</i> (intro) (1977)
<i>i</i> -V	Gm↔D	Gm	Mozart: <i>Symphony n^o 40, 1st movement</i> (last 8 bars) (1788a)
	Em↔B	Em	Rolling Stones: <i>Paint It Black</i> (1966)
	Fm↔C	Fm	All Saints: <i>Bootie Call</i> (1998)
<i>i</i> - <i>v</i> (see also I↔VII-I)	Am↔Em	Am	Kraftwerk: <i>The Model</i> (1982)
	Dm ⁷ ↔Am ⁷	Dm	Kylie Minogue: <i>Can't Get You Out Of My Head</i> (2001)
			[cont'd...]

15. *i*↔*v* shuttles are similar in this respect *i*↔*b*VII (see p.389).

Type	Chords	Key	Publication/Release (Year)
V-I	C↔F	F	Roy Orbison: <i>It's Over</i> (intro) (1963)
	Ab↔Db	Db	Unit Four Plus Two: <i>Concrete And Clay</i> (1965)
	E↔A	A	Jefferson Airplane: <i>White Rabbit</i> (B part) (1967)
	D↔G	G	Cowsills: <i>Indian Lake</i> (end of intro) (1968)
	A↔D	D	Police: <i>Every Little Thing She Does</i> (1981)
	A ⁵ ↔D ⁵	D	Tori Amos: <i>Professional Widow</i> (1996)

Kylie Minogue's electronica hit and Kraftwerk's *The Model* are interesting because their hook lines and harmonic 'places to be' — the tonal neighbourhood where the tunes spend most of their time — are in the sphere of their $i \leftrightarrow v$ shuttles. Both tunes not only start and end there: other chordal passages also aim clearly back towards that main tonal world of the song: $i \leftrightarrow v$.¹⁶ s

Submediantal shuttles (I↔vi)

Shuttles between tonic and submediant, it seems, are far from rare in anglophone pop music. The most frequently used subtype is $I \leftrightarrow vi$: major tonic to minor submediant. Although it turns up in songs from various periods in Anglo-North-American pop history,¹⁷ it is particularly common, as Table 30 shows, in US-American pop music from the late 1950s and early 1960s.¹⁸ $I \leftrightarrow vi$ may also sometimes be associated with gospel (e.g. *Shout*) but, it has, as just intimated, more obvious connotations with the doo-wop and 'shalalee' world of US teenagers around 1960, not least because $i \leftrightarrow vi$ is the first change in the even more frequently exploited $\zeta I-vi-IV/ii-V \supset$ loop hailing from the same milksap period.¹⁹ This 'historical reference' connotation of $I \leftrightarrow vi$ operates clearly in Badalmenti's

16. The Minogue song includes the passage |Bb^Δ A | G^{dim} A | Gm | A^{sus} A | which, insisting on A, including its c#, clearly leads back to Dm. The Kraftwerk alternative sequence runs C to G, then C to E (major) as V to Am.

17. For example, it occurs several times in George Harrison's *My Sweet Lord* (1970) and in the intro (D↔Bm) to The Smiths' *Rusholme Ruffians* (1987).

18. See also *Till I Kissed You* (Everly Bros., 1959), *His Latest Flame* (Presley, 1961).

19. Please see my YouTube clip *The Milksap Montage* for a demonstration of I-vi-IV/ii-V loops in every key, online at |tagg.org/Clips/MilksapAll.mov |; see also p.404, ff. For explanation of the term *doo-wop* see Glossary (p. 484).

opening theme to the TV series, *Twin Peaks* (1990-91). The recording's clean, late-1950s guitar sound à la Duane Eddy, complete with historically accurate spring reverb, shuttles slowly between I and vi to usher in the TV series' superficially idyllic but deeply disturbing small-town 'American dream', with its creepy consumerism, depraved prom queens and depressive James Dean look-alikes.

Table 30. Examples of shuttles to and from the sixth

Type	Chords	Key	Recording (Year)
I-vi	F↔Dm	F	Isley Brothers: <i>Shout</i> (1959)
	C↔Am	C	Bobby Darin: <i>Dream Lover</i> (intro) (1959)
	Bb↔Gm	Bb	Jimmy Jones: <i>Handy Man</i> (intro) (1960)
	G↔Em	G	Sam Cooke: <i>The Chain Gang</i> (intro) (1960)
	F↔Dm	F	Steve Lawrence: <i>Pretty Blue Eyes</i> (1960)
	A↔F#m	A	Johnny Preston: <i>Cradle Of Love</i> (1960)
	Ab↔Fm	Ab	Helen Shapiro: <i>Walking Back To Happiness</i> (1961)
	Ab↔Fm	Eb	Ernie K-Doe: <i>Mother-In-Law</i> (1961)
	D↔Bm	D	Ricky Nelson: <i>Travelling Man</i> (intro) (1961)
	Ab↔Fm	Gb	Dick & Dee Dee: <i>The Mountain's High</i> (1961)
	E↔C#m	E	Neil Sedaka: <i>Calendar Girl</i> (intro) (1961)
	Eb↔Cm	Eb	Little Eva: <i>The Loco-Motion</i> (1962)
	C↔Am	C	Marvelettes: <i>Playboy</i> (intro) (1962)
	Bb↔Gm	Bb	Shirelles: <i>Baby It's You</i> (intro) (1962)
	C↔Am	C	Little Peggy March: <i>I Will Follow Him</i> (1963)
	E↔C#m	E	Lulu: <i>Shout</i> (1964) (orig. Isley Brothers, 1959)
	Db↔Bbm	Db	Searchers: <i>Don't Throw Your Love Away</i> (1964)
	A↔F#m	A	Roy Orbison: <i>Pretty Woman</i> (verse start) (1964)
Eb↔Cm	Eb	Georgie Fame: <i>Yeh-Yeh</i> (1964)	
Gb↔Ebm	Gb	Angelo Badalenti: <i>Twin Peaks</i> (1990)	
I-VI	A↔F	A	David Bowie: <i>Suffragette City</i> (1972)
Aeolian shuttles			
i-bVI	Bbm↔Gb	Bbm	Chopin: <i>Marche funèbre</i> (1839)
	Am↔F	Am	Bob Dylan: <i>All Along The Watchtower</i> (1968)
	Am↔F	Am	Jimi Hendrix: <i>All Along The Watchtower</i> (1968)
	Dm↔Bb	Dm	Ten cc: <i>The Wall Street Shuffle</i> (1974)
	Am↔F	Am	Elvis Costello: <i>Watching The Detectives</i> (1977)
	Gm↔Eb	[Bb]	Irene Cara: <i>Flashdance</i> (1983)
	Am↔F	Am	Neil Young: <i>Change Your Mind</i> (1994)
?	Eb↔Gm	Gm↔	Police: <i>Don't Stand So Close To Me</i> (1980)
i-vi	Abm ⁷ ↔Fm ⁷	Abm	Doors: <i>Light My Fire</i> (1967)

Although only one example each was found of $I \leftrightarrow VI$ (Bowie)²⁰ and $i \leftrightarrow VI$ (Doors), $i \leftrightarrow bVI$ shuttles were numerous. Toing and froing between a tonic minor and a major triad on the flat submediant ($i \leftrightarrow bVI$) — the AEOLIAN SHUTTLE —, has already been mentioned in terms of its ominous, fateful or implacable connotations (p. 291). Sometimes this basic harmonic and connotative sphere includes a $bVII$ between the tonic minor (i) and bVI poles of the shuttle, like the $\zeta | Dm | Bb | C | C | \zeta$ in Dire Straits' *Sultans Of Swing* (1978). On paper that certainly looks more like a four-bar loop than a shuttle, but since the $bVII$ in any loop of the $\zeta i - bVII - bVI - bVII \zeta$ type is situated one whole-tone below the minor tonic and one whole-tone above the bVI pole, and since it is consistently followed in alternation by the poles on either side, it has, if the loop is fully repeated at least once, the character of a passing chord in a shuttle between the two chords at opposite ends of the loop.²¹ If we consider $\zeta i - bVI - bVII \zeta$, $\zeta i - bVII - bVI \zeta$ and so on as extended variants of $i \leftrightarrow bVI$, then we can add a fair number of tunes to the aeolian shuttle list, for example: [1] Derek & The Dominoes: *Layla* (1970); [2] Neil Young: *Southern Man* (1970); [3] Jeffrey Cain: *Whispering Thunder* (1972); [4] Pink Floyd: *Money* (1973); [5] David Bowie: *1984* (1974); [6] Nationalteatern: *Barn av vår tid* (1978); [7] Dire Straits: *Sultans Of Swing* (1978); [8] Flash and the Pan: *California* (1979); [9] Phil Collins: *In The Air Tonight* (1981); [10] Kim Carnes: *Voyeur* (1982); [11] Frequency X: *Hearing Things* (1989); [12] Neil Young: *Rocking In The Free World* (1989).

Without going into the verbal details of these songs, it's possible to summarise some important areas of connotation for the lyrics of each title as: [1] painful separation (*Layla*); [2] 'screaming, bullwhips cracking', 'crosses burning' (*Southern Man*); [3] distant but immanent threat (*Whispering Thunder*); [4] the absurdity of financial greed (*Money*); [5] dystopia (*1984*); [6] teenagers hardened by

20. Occurs only twice at the start of each verse but repeatedly at end (2:16-3:22).

21. See p. 433 for further explanation.

cold, grey soulless concrete tower blocks (*Barn av vår tid* = 'Child of our time'); [7] a trad jazz band playing for an inimical audience on a cold and rainy night (Dire Straits); [8] a mad US general nukes the state of California (*California*); [9] waiting for something unknown, imminent showdown (Phil Collins); [10] the loneliness and emptiness of video titillation (*Voyeur*); [11] fear of mental instability (*Hearing Things*); [12] 'better off dead' and 'garbage can' (*Rocking In The Free World*). Now let's add to those ten extra examples of aeolian shuttle connotations the basic gist of lyrics in the six $i \leftrightarrow bVII$ tunes listed in Table 30: [11] funeral (Chopin); [12] 'Outside in the cold distance a wild cat did growl... and the wind began to howl' (*All Along The Watchtower*); [13] the destructive ugliness of financial speculation (*Wall Street Shuffle*); [14] 'they beat him up until the teardrops start' (Elvis Costello); [15] 'in a world made of steel, made of stone' (*Flashdance*); [16] 'When you get weak and you need to test your will' (Neil Young: *Change Your Mind*).

Here's Alf Björnberg's conclusion (1984:382) about the connotations of aeolian shuttles:

'A remarkable number of these lyrics deal with such subjects as fascination with and fear of modern technique and civilisation, uneasiness about the future and the threat of war, alienation in general and in particular situations, static moods of waiting and premonition, historical or mystical events. As a whole the lyrics circumscribe a relatively uniform field of associations which might be characterised by such concepts as MODERNITY, COLD, WAITING, UNCERTAINTY, SADNESS, STASIS, INFINITY IN TIME AND SPACE.'

Before ending this sad aeolian story, let's not forget the poor 'young teacher, the subject of schoolgirl fantasy', the 'temptation, frustration, so bad it makes him cry', the 'hurt' and 'accusations', etc., all sung over the $bVI \leftrightarrow i$ ($Eb \leftrightarrow Gm$) verse part of *Don't Stand So Close To Me* (Police, 1980, ex.273). With chorus hook lines squarely in D major, the tune's $Eb \leftrightarrow Gm$ is a very different harmonic place to be. Calling it ' $bVI \leftrightarrow i$ in the key of the refrain's subdominant minor' or even ' $I \leftrightarrow iii$ in the key of the flat supertonic' might fool a gullible

harmony teacher but since the tune starts with repeated changes from $E\flat$ to Gm , first quietly and threateningly in the sub-bass register, then chordally with guitar and vocals, there is in reality no key of D major to which the supposed ‘subdominant minor’ or ‘flat supertonic’ can possibly be related. Moreover, the change to D major and ‘Don’t stand so close’ is entirely unprepared (first at 1:48) and the return to the world of $E\flat \leftrightarrow Gm$ is equally abrupt (bars 4–5 and bar 8 back to bar 1 in ex. 273).²²

Ex. 273. *Police: Don’t Stand So Close To Me (1980): juxtaposition of two distinct tonal spheres.*

Once again we’re dealing with synchrisis,²³ with states, conditions and tonal grooves, not with the norms of harmonic transition in euroclassical music theory. Any sense of overall tonal process, ‘narrative’ or ‘form’ in this Police song, and in countless others, derives not from modulation, nor from overriding tonal schemes, nor ‘deep structure’ à la Schenker or Riemann, but from the juxtaposition of distinct harmonic constellations and from the organisation of those different tonal states in terms of repetition, change, reprise and relative duration, as well as from the order in which the distinct elements are presented.²³ This is of course a question of diatactical ‘form’ and, structurally, of the intramusical *context* of shuttles. However, it is clear that if we don’t know how the shuttles themselves work, we won’t be able to understand how they, or the chord loops discussed in the next chapter, contribute to the overall character and identity of a recording or performance.

22. Each $E\flat \leftrightarrow Gm$ occupies 16 beats at $\text{♩}=134$: 7.6 seconds of the extended present.

23. See *synchrisis & diataxis* in Glossary (pp. 484, 501); see also Tagg (2013: 383-484).

Subtonic shuttles (I↔*b*VII)

As shown in Table 31, shuttles between tonic and subtonic can be divided into three subgroups: [1] I↔*b*VII or *mixolydian*; [2] *i*↔*b*VII, which alternates a minor-key tonic with a major chord on the flat seventh; [3] *b*VII↔I or *reverse mixolydian*. This third group also includes shuttles which, like subgroup [1] and the Righteous Brothers tune, feature two major triads a whole tone apart but which, as we shall see, can also be heard as belonging to another key (Presley), or to several potential keys (Human League).

Table 31. Examples of shuttles to and from the seventh

Type	Chords	Key	Recording (Year)
I- <i>b</i> VII	F↔E \flat	F	The Champs: <i>Tequila</i> (1958)
	G↔F	G	Shadows: <i>Wonderful Land</i> (intro) (1962)
	C↔D	D	Cliff Richard: <i>Bachelor Boy</i> (intro) (1962)
	G↔F	G	Kinks: <i>Tired Of Waiting</i> (1965)
	A↔G	A	Youngbloods: <i>Get Together</i> (1969)
	D↔C	D	Brook Benton: <i>Rainy Night In Georgia</i> (intro) (1969)
	C \sharp ↔B	C \sharp	Dexy's Midnight Runners: <i>Geno</i> (1980)
	D↔C	D	Madness: <i>House Of Fun</i> (1982)
<i>i</i> - <i>b</i> VII	Cm↔B \flat	Cm	Albion Country Band: <i>Van Diemen's Land</i> (1971)
	Am↔G	Am	Bothy Band: <i>Farewell To Erin</i> (1976)
<i>b</i> VII-I	B \flat /c↔C	C	Righteous Brothers: <i>You've Lost That Loving Feeling</i> (1964)
	D \flat ↔E \flat		Van Halen: <i>Running With The Devil</i> (1978)
IV-V ?	A \flat ↔B \flat	E \flat	Elvis Presley: <i>Return To Sender</i> (1962)
	F↔G	Am?	Human League: <i>Don't You Want Me Baby</i> (1981)

There are four obvious common denominators between the shuttles listed in Table 31: [1] there are no shuttles to or from any chord on the major seventh degree;²⁴ [2] there are no shuttles between the tonic and the *minor* subtonic because I↔*b*vii and *i*↔*b*vii (e.g. E↔Dm) are variants of the *phrygian* shuttle *i*/I↔*b*II (e.g. E↔F)

24. I couldn't find any such shuttles in the repertoire to which I had access. True, *I Remember You* (Schertzingler, 1941; Ifield, 1962) does start with an exceptional I-VII-I in A (A-G \sharp -A) but it is an unpeated change and hence no shuttle. The chords in the verses of *I Remember You* continue A7-D-Dm-A (I7 IV iv I).

where the flat supertonic ($f\sharp$), not the subtonic ($d\flat$), is the operative feature;²⁵ [3] neither $I\leftrightarrow bVII$, the mixolydian shuttle, nor $i\leftrightarrow bVII$ show any trait of classical harmony in the sense defined and used in Chapter 6 (p. 249, ff.); [4] unlike dorian shuttles ($i\leftrightarrow IV$), which could turn into $ii\leftrightarrow V$ and end as $ii\rightarrow V\rightarrow I$ cadences, neither $I\leftrightarrow bVII$ nor $i\leftrightarrow bVII$ seems to own the clear potential to lead elsewhere. Traits [3] and [4] are interrelated for the following reasons.

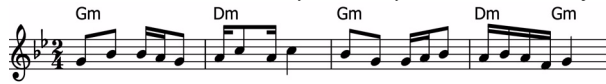
It is first of all difficult to move directly between a tonic triad and a subtonic triad without involving voice leading in parallel fifths or octaves, both of which are banned in classical harmony. Secondly, chords on the flat seventh automatically contain no leading note, no major seventh ($\Delta\hat{7}$), an essential ingredient in tonal spheres dominated by the ionian mode. In fact, the only mode in the Viennese classical tradition to include a flat seventh is the descending ‘melodic’ variant of the minor scale (same notes as the aeolian mode) whose other two variants, the ‘ascending melodic’ and the ‘harmonic’ minor, are ionianised in that both include major sevenths.²⁶ And *harmonic* minor means just what it says: that any *chord* containing scale degree seven must make that seventh major so that it produces the leading note ($\Delta\hat{7}$) to the tonic (e.g. $f\sharp\rightarrow g$ in the change from D or D7 to Gm). That’s why $i\leftrightarrow V$ (e.g. Gm \leftrightarrow D) often occurs in euroclassical music styles and why you’ll hardly ever come across $i\leftrightarrow v$ (e.g. Gm \leftrightarrow Dm), except when stylistic reference or pastiche is intended, as in example 274.²⁷ It’s also why $i\leftrightarrow bVII$ (e.g. Gm \leftrightarrow F) and $I\leftrightarrow bVII$ (G \leftrightarrow F) are usually off the conventional harmony teacher’s radar screen.

25. e.g. Am \leftrightarrow B and C \rightarrow B (in B) example 199, p. 289.

26. ‘Ionianisation’: see Glossary (p. 492) and pp.90-92.

27. Minor chords on the scale degree 5 (‘v’ in $i\leftrightarrow v$, p. 383, ff.) basically contain the same notes as major chords on flat seven ($bVII$ in $i\leftrightarrow bVII$). For example, Dm7 and F6 both contain f a c d while Dm and F triads both share a and f in common ($\hat{2}$ and $b\hat{7}$ in G minor). The Dvořák example is transcribed from aural memory.

Ex. 274. Dvořák (1893): *minor-mode 'folk tune' from New World Symphony.*



Returning to the third of our comments about oscillations between tonic and flat seventh — that none of the example shuttles listed in Table 31 seem to have much harmonic potential to lead elsewhere— it’s worth noting that three of them are only used in introductions (*Wonderful Land*, *Bachelor Boy* and *Rainy Night In Georgia*). Now, introductions are by definition episodic markers of initiation and of preparation for an imminent SOMETHING NEW, so using a shuttle without much potential to lead elsewhere means that a tonal, timbral, metric and rhythmic framework (groove) can be established while listeners wait for the tune proper to kick in. In fact, WAITING is what the lyrics and the repeated I↔bVII of the Kinks’ *Tired Of Waiting* is all about. It’s also an important element in the lyrics of the Righteous Brothers song: there’s no reciprocation of desire from the lyrics’ loved one. WAITING or FRUSTRATION AT UNFULFILLED GOALS are also key elements in Dexy’s *Geno* and Elvis’s *Return To Sender*. I↔bVII in the Madness song, too, plays a waiting game in both its intro and in the first part of verses where the story is set up for punch lines and the chorus, both in a different harmonic sphere.

WAITING and NOT GOING ANYWHERE are key issues in Human League’s *Don’t You Want Me Baby?* (1981). The key of A minor is stated from the outset in eight bars of eighties-style analogue synthesiser seriously confirming the aeolian mode. Then the male vocalist enters: ‘You were working as a waitress in a cocktail bar’. It’s with that famous line that the song’s F↔G shuttle also first kicks in to be stated eight times in a row (16 bars at ♩=116 = 0:34) before the harmony reverts to A minor and to two chordal passages that strongly reaffirm the key (♮|Am |Em |F |Dm G|♮ (×2) and |A |A#° |Bm |E7 |). The latter of those two passages leads back into another 24 bars of F↔G (chorus ‘Don’t You Want Me, Baby?’ and the subsequent verse, lasting 0:50). That long batch of shuttles is followed by

the A minor progressions just mentioned, by eight more bars of $F \leftrightarrow G$ (0:17), by a reprise of the 'serious' A minor intro and, to end, thirteen more $F \leftrightarrow G$ shuttles (26 bars = 0:54) before the final fade-out finishes, also on $F \leftrightarrow G$. $F \leftrightarrow G$ occupies in other words 2:35 (66%) of the song's total duration of 3:56.

Harmonic issues about this song are similar to those raised about Pink Floyd's *Great Gig In The Sky*. This time, however, there only seems to be one logical explanation for the harmonic relativity of the shuttle. Such an explanation would first argue that the tune's $F \leftrightarrow G$ is a $bVI \leftrightarrow bVII$ in A minor because it first appears after the unequivocal establishment of that key as the tune's harmonic starting point. Such an explanation would go on to argue that on two occasions the final instance of $F \leftrightarrow G$ becomes $F \rightarrow G \rightarrow Am$ (a $bVI \rightarrow bVII \rightarrow i$ aeolian cadence) as it runs into the first A minor chordal passage cited in the previous paragraph. The only trouble with this line of reasoning is that the $F \leftrightarrow G$ in the Human League song doesn't really sound like it's in A minor, however neat the argument just given may appear, because the shuttle has simply *no transitional function* at all. That claim is based on two observations. Firstly, since two thirds of the song's duration, including its final quarter, is harmonically occupied by $F \leftrightarrow G$ in constant repetition, nothing else can be heard as the song's harmonic centrepiece, reference point or ending. Secondly, if a continuation of $F \leftrightarrow G$ had to be imagined, it would more likely have been a transformation into a $IV \rightarrow V \rightarrow I$ in C ($F \leftrightarrow G$ becoming $F \rightarrow G \rightarrow C$). That $IV \rightarrow V \rightarrow I$ hypothesis is based on previously established instances of the same shuttle in the relevant repertoire, as shown in example 275 (p. 393).

The top line in example 275's eight-bar comparison presents the melodic line of the chorus in Elvis Presley's *Return To Sender* (1962), transposed up one tone, while the lower of the two lines shows the main hook of the Human League song (1981). There is striking similarity between the two melodic lines in the same vocal register which, in bars 1-6 of the example, follow the same basic to-and-fro movement of the same type of mixolydian shuttle (Presley in par-


allel fifths over $Bb \leftrightarrow C$, Human League in octaves over $F \leftrightarrow C$, each three times in a row). In bars 6-7 of example 275 the Presley song completes a perfect cadence, using the second chord of its shuttle, C, as a dominant chord in relation to the target key of F. Bars 7 and 8 in the lower line are fictional and are supplied to demonstrate what might have happened if Human League had followed the practice, established by Elvis and many others, of transforming a mixolydian shuttle ($bVII \leftrightarrow I$) into $IV \leftrightarrow V$ and thence into a $IV \rightarrow V \rightarrow I$ cadence. If they had done so, it would certainly not have been the first time $IV \rightarrow V \rightarrow I$ was heard in a popular song!

Ex. 275. *Elvis Presley: Return To Sender* (1962; chorus, $Bb \leftrightarrow C$ ending in F, transposed up from Eb) and *Human League: Don't You Want Me, Baby?* (1981; $F \leftrightarrow G$ shuttle ending hypothetically on I in C).

The musical score consists of two systems, each with a vocal line (treble clef) and a piano accompaniment line (bass clef).
 System 1 (Bars 1-4):
 - Bar 1: Treble clef has notes G4, A4, Bb4, A4, G4. Bass clef has notes F3, G3, A3, G3, F3. Chords: Bb (IV) and C (V).
 - Bar 2: Treble clef has notes G4, A4, Bb4, A4, G4. Bass clef has notes F3, G3, A3, G3, F3. Chords: Bb (IV) and C (V).
 - Bar 3: Treble clef has notes G4, A4, Bb4, A4, G4. Bass clef has notes F3, G3, A3, G3, F3. Chords: Bb (IV) and C (V).
 - Bar 4: Treble clef has notes G4, A4, Bb4, A4, G4. Bass clef has notes F3, G3, A3, G3, F3. Chords: Bb (IV) and C (V).
 System 2 (Bars 5-8):
 - Bar 5: Treble clef has notes G4, A4, Bb4, A4, G4. Bass clef has notes F3, G3, A3, G3, F3. Chords: Bb (IV) and C (V).
 - Bar 6: Treble clef has notes G4, A4, Bb4, A4, G4. Bass clef has notes F3, G3, A3, G3, F3. Chords: Bb (IV) and C (V).
 - Bar 7: Treble clef has notes G4, A4, Bb4, A4, G4. Bass clef has notes F3, G3, A3, G3, F3. Chords: F (I) and C (V).
 - Bar 8: Treble clef has notes G4, A4, Bb4, A4, G4. Bass clef has notes F3, G3, A3, G3, F3. Chords: F (I) and C (V).

One aim of the hypothetical substitution just proposed is to argue that harmonic devices like Human League's $F \leftrightarrow G$ have a history and that included in such history is the way in which those devices normally connect (if at all) to what follows them. That's why a continuation of the *Don't You Want Me* shuttle as $IV \rightarrow V \rightarrow I$ on to C doesn't sound totally wrong. (Try it!) The interesting thing is nevertheless that there's not a single chord of C in the whole tune and that listeners familiar with songs like *Return To Sender* will never hear the continuation they may have been unconsciously expecting. Now, that interpretation might square nicely with the waiting, frustration and the unfinished business of the relationship presented in the song's lyrics but that hypothesis is at best no more

than intelligent speculation. Besides, the song could just as easily end on a final F or G, as well as on C or Am. In fact, the *main* point of this discussion is that *theoretical* destinations of the F↔G shuttle are only of interest to the extent that they help us understand why and how it in practice *goes nowhere*. Its overriding presence in the recording and its protraction into the final fade-out mean once again that, like the Police and Pink Floyd shuttles, we are dealing with a state, not a process, and with a situation, not a transition.

Tequila's mixolydian shuttle (1958) is similar to the one in *Don't You Want Me Baby?* in that it occupies the majority of the recording's total duration. In fact *Tequila's* proportion of main shuttle to other harmonic material beats both Human League (66%) and Pink Floyd (70%) hands down with its score of 83% (1:49 of 2:11). However, there is no doubt at all that *Tequila* is in F mixolydian and it has neither the potential nor the intention of going anywhere else, except for the very short B section which ends with an unambiguous II⁷→V⁷ (the G⁷→C⁷ at 0:51 and 1:34:  break: 'Tequila') that points listeners straight back with a V→I into the familiar I↔bVII shuttle (G⁷→C⁷→F↔E^b). Although this quality of unambiguous tonic may be one reason why the tune's F↔E^b creates no connotations of waiting or suspension, it is more likely that the shuttle's lively accompaniment patterns and the lead sax's downbeat anticipations, all executed in brisk *alla breve* tempo (the groove), provide the recording with its ongoing forward drive.

Ex. 276. *The Champs: Tequila* (1958) – *mixolydian shuttle in F*.



The musical notation shows a sequence of four measures in 4/4 time. The tempo is marked as ♩=176 and the drum pattern as ♩=88. Above the notes, chord symbols and fingering are indicated: Measure 1: F (1), Eb (2), Eb (3), F (4); Measure 2: F (1), Eb (2), Eb (3), F (4); Measure 3: F (1), Eb (2), Eb (3), F (4); Measure 4: F (1), Eb (2), Eb (3), F (4). The notes are: Measure 1: F4, Eb4, Eb4, F4; Measure 2: F4, Eb4, Eb4, F4; Measure 3: F4, Eb4, Eb4, F4; Measure 4: F4, Eb4, Eb4, F4.

Strictly speaking this F↔E^b, which lasts less than 1½ seconds each time it occurs, is too short to qualify as a proper shuttle (1 per bar in ex. 276). It has more the character of a single-chord tonal expansion, especially given that the recording's acoustic bass, when it enters, plays C, not E^b, each time the guitar switches to E^b, using the

familiar one-five oom-pa shuttle trick to vary what might otherwise have been an intervallically static bass line. In so doing the bass player creates a $I \leftrightarrow v$ ($F \leftrightarrow Cm7$) shuttle which, as we already mentioned, is tonally very close to $I \leftrightarrow bVII$.²⁸ Whatever the case, doubt remains as to whether the *Tequila* $F \leftrightarrow Eb$ is in fact a two-chord shuttle, not just because each unit is so short (only 1.36 seconds) but also because the amount of time spent on each chord is not exactly equal. The point here is that although the two chords are equidurational in the first three repeated units (bars 1-3), in each fourth unit only the first of eight quavers is spent on F, the remaining seven being assigned to lively strumming on Eb. That kind of insistence and increased rhythmic surface rate on the counterpoise chord has an anacrustic function similar to that of pick-up notes in the bass running from V back up to I (e.g. $c \text{ eb } e\text{#} | f$ in F) or to that of a drum fill on toms before kicking into 'one' on the ensuing downbeat (or its anticipation). Such anacrustic devices are frequently used as episodic markers of borders between musical phrases, i.e. to signal that a shuttle, loop or groove is about to restart or that the music is about to go elsewhere. The devices are in both instances syntactic (like punctuation) and propulsive (driving forward). Tonal variation in accompanying instruments, including variations of relative duration assigned to chords in a shuttle or loop, play a significant part in creating such propulsion, as will become clearer in our discussion of the final subgroup of flat-seven shuttles. In fact, the unit of present time in *Tequila* is, thanks to that episodic marker, more likely to be the whole length of the period shown in example 276, i.e. the full four bars of $I \leftrightarrow bVII$ shuttling or $5\frac{1}{2}$ seconds (16 beats at $\text{♩}=176$ or 8 beats at $\text{♩}=88$).

28. See footnote 27, p.390.

Shuttle or counterpoise sandwich?

Ex. 277. What Shall We Do With The Drunken Sailor? (*Eng. trad., cit. mem.*)

What shall we do with the drunk-en sail - or? What shall we do with the drunk-en sail - or?

What shall we do with the drunk-en sail - or earl - y in the morn - ing?

Like mixolydian melodies, minor-mode tunes with flat sevenths (dorian, aeolian, la-hexatonic, etc.) are, as we saw earlier,²⁹ very common in the popular song repertoire of pre-industrial Britain, Ireland and Appalachia.³⁰ Indeed, as examples 277 and 278 suggest, harmonising tunes in those modes almost always involves changes between I and \flat VII (or $i \leftrightarrow \flat$ VII, or $i \leftrightarrow v$). The question here is whether the chord changes presented qualify as shuttles because, as with *Tequila*, the time spent on each of the two chords is neither consistent nor equal. One obvious reason for such ‘inconsistency’ is that, as explained in the counterpoise section of Chapter 10 (pp. 336-347), if the first and last chords in a period covering an even number of bars both need to be on the tonic — as in bars 1 and 8 of the *Drunken Sailor*, or in bars 1 and 4, or 5 and 8, or 13 and 16 of *The Tailor and the Mouse* (ex. 278) —, then no consistent chord alternation is possible because the final bar in the phrase will inevitably land on the wrong chord (or the first one will in the case of a reverse shuttle). This simple arithmetic means that the shuttle, consisting by definition of *two* chords, must be adjusted in some way if it is to fit into the remaining *odd* number of bars (1-7 in ex.277; 1-3, 5-7 and 13-15 in ex.278). One trick is to *halve* the duration of the counterpoise chord on its final appearance in the phrase (the C in bar 7 of ex.277), another to employ the sandwich technique illustrated in example 278.

29. See chapters 4, 9, 10, examples 79-85, 99-107, 196, 201, 239-248.

30. This footnote should have contained titles of mixolydian tunes (I \leftrightarrow \flat VII). The list is so long that it’s given only once in this book — footnote 32 (p. 104).

Ex. 278. *The Tailor And The Mouse* (Eng. trad. quoted from memory)³¹

1. There was a tai - lor had a mouse. They lived to - geth - er in one house.
 2. The tai - lor thought his mouse would die. Hi - did - le - um - cum feed - le. So he baked him in an ap - ple pie.
 3. The tai - lor found his mouse was dead. So he bought anoth - er one in - stead.

Hi - did - le - um - cum feed - le. Hi - did - le - um - cum ta - rum tan - tum through the town of Rams - ey,

Hi - did - le - um - cum ov - er the lea, Hi - did - le - um - cum feed - le. 2,3. The feed - le.

The harmonic sandwich occurs three times in example 278 and involves putting the counterpoise chord ‘filling’ (‘v’ or Dm in bars 2-4, 6-7, 14-15) between a ‘slice’ of tonic-chord ‘bread’ at each end of the phrase (‘i’ or Gm in bars 1, 4, 5, 8, 13, 16). These four- or eight-bar sandwiches are also extremely common in the ionian mode, I-V-V-I being a stock formula of harmonic progression in, for example, *valse chantée*.³² A third strategy, and the opposite of the *Drunken Sailor* trick, is to increase the duration of the counterpoise chord by placing it a beat or two before it is expected in a regular shuttle. That trick, used in *Tequila*, also works well when harmonising minor-mode traditional tunes like *Farewell To Erin* (ex. 241, p. 339) or *The Wraggle-Taggle Gypsies* (Reel Thing, 1998). However, when it comes to harmonising songs originally conceived without accompaniment, chord shuttles, as we have treated them in this chapter, can be virtually impossible to apply.

In example 279 (p. 398) there are really only two tonal poles: one on the keynote (c), the other on the tune’s counterpoise (bb).³³ The melody switches irregularly between those two poles: the first consists of three dotted crotchet beats on c (1½ bars of 6/8 metre = 3 × ♩.), followed by five on bb and so on. The complete pattern of rate

31. Harmony for *The Tailor and the Mouse* is discussed in detail under on p. 344, ff.

32. See discussion of *L’hirondelle du faubourg* (ex. 253, p. 361). See also other songs in *Les plus belles chansons de 1900 à 1948*.

33. *Counterpoise*: see pp. 345-347 and Glossary, p. 483.

of change between those tonal poles for the song is in fact 3 5 | 3 1 1 1 2 | 2 2 4 | 3 2 1 2 1 |, where '1' = $1 \times \downarrow$. and '1' denotes end of phrase. If you harmonise this version of *Van Diemen's Land* using just Cm and B \flat , you will certainly be alternating between i and bVII but you will definitely *not* be performing a i↔bVII chord shuttle.

Ex. 279. *Van Diemen's Land*, transcribed from version by Albion Country Band (1971, arr. Hutchings) with addition of pitch pole markings (tonic = c, counterpoise = b \flat).

Shirley Collins

As I lay on the deck last night a-dreaming of my home, I
 dreamed I was in Ar-bur-y the fields and woods a-mong. With
 my true-love be-side me and a jug of ale in hand, But I
 woke quite broken heart-ed out in Van Die-men's land.

Having flown off the radar screen of euroclassical harmony many pages ago, we now risk disappearing from our own because, although chordal alternation is the subject of this chapter, questions of periodicity and harmonic rhythm are peripheral to the issue of chord shuttles. However, we may have cause to revisit them in part of the next chapter when we try to come to grips with some fundamental questions of tonality in everyday life. For example, how come the ubiquitous *La Bamba* chord loop $\text{C}\flat\text{-G-C-D-D}\flat$ is heard as $\text{C}\flat\text{-I-IV-V}\flat$ in G while the well-known mixolydian rock loop $\text{C}\flat\text{-D-C-G-G}\flat$ in *Sweet Home Alabama* is heard as a $\text{C}\flat\text{-I-bVII-IV}\flat$ pattern in D? And does it really matter?

Summary in 16 points

[1] The observations listed below are, like the rest of this chapter, based on widely disseminated recordings of English-language popular song released between 1955 and 2005 (p. 372).

[2] A CHORD SHUTTLE involves ongoing oscillation between two chords. Each of the two chords occupies a duration of between one and four beats of the music's underlying pulse.

[3] The *two chords in a shuttle* are normally of *equal duration and importance*. The duration of a single chord shuttle does not exceed that of the *extended present*.

[4] Many chord shuttles have an identifiable TONIC (e.g. the aeolian $i \leftrightarrow \flat VI$: §13, below) but others do not (see §10 and §14, below).

[5] The *tonic* in shuttles consisting of the same two chords *can vary* according to tonal idiom, e.g. $E \leftrightarrow A$ as $I \leftrightarrow IV$ in *Satisfaction* but as $V \leftrightarrow I$ in Beethoven's 7th symphony (ex. 270, p. 373).

[6] The most COMMON general types of chord shuttle are PLAGAL ($I \leftrightarrow IV$, $i \leftrightarrow IV$, $i \leftrightarrow iv$, $IV \leftrightarrow I$, etc.) QUINTAL ($I \leftrightarrow V$, $i \leftrightarrow v$, $i \leftrightarrow V$, $V \leftrightarrow I$, etc.), SUBMEDIANTAL ($I \leftrightarrow \flat vi$, $i \leftrightarrow \flat VI$, etc.), and SUBTONIC ($I \leftrightarrow \flat VII$, $i \leftrightarrow \flat VII$, $\flat VII \leftrightarrow I$, etc.).

[7] SUPERTONIC SHUTTLES are not very common. The supertonic shuttle $I \leftrightarrow ii$ is plagal in character. PHRYGIAN SHUTTLES ($I/i \leftrightarrow \flat II$) are quite rare in and have exotic connotations (pp. 374-375).³⁴

[8] MEDIANTAL SHUTTLES ($I \leftrightarrow III$, etc.) are extremely rare. While $I \leftrightarrow III$ works well as a harmonic departure, $III \rightarrow I$ is highly unlikely to mark a return (p. 374).

[9] PLAGAL SHUTTLES are very common and of three main types: simple ($I \leftrightarrow IV$), reverse ($IV \leftrightarrow I$) and dorian ($i \leftrightarrow IV$).

[10] Many DORIAN SHUTTLES have a clear minor tonic triad ($i \leftrightarrow IV$), while others act as a repeated $ii \leftrightarrow V$ culminating in a final $ii \rightarrow V \rightarrow I$

34. See also 'Maqamat, flat twos and foreignness', p. 114, ff.

with I outside the shuttle. However, it is sometimes impossible, as in the case of Pink Floyd's *Dark Side of the Moon* (1973), to identify any tonic in a dorian shuttle which, like all chord shuttles, functions as an ongoing tonal state or 'place to be' rather than as a tonal process leading anywhere in particular (pp. 378-380; see also §15).

[11] QUINTAL SHUTTLES ($I \leftrightarrow V$, $V \leftrightarrow I$) are common in *euroclassical music*, most notably in *final cadences*. While by no means rare in rock music, they are much less common than plagal shuttles. Quintal shuttles seem to be absent from gospel, soul and blues-related styles (pp. 381-384).

[12] There are two main types of SUBMEDIANTAL SHUTTLE — $I \leftrightarrow vi$ and $i \leftrightarrow bVI$, the aeolian shuttle. $I \leftrightarrow vi$ is common in pop music of the milksap era. It also turns up in 1960s gospel music (p. 384).

[13] AEOLIAN SHUTTLES ($i \leftrightarrow bVI$) in rock music are often linked to things *ominous, fateful, painful* and *implacable*; or to *modernity, cold, waiting, uncertainty, sadness, stasis, infinity in time and space*, etc. (pp. 386-388).

[14] SUBTONIC SHUTTLES — $bVII \leftrightarrow I$ or $I \leftrightarrow bVII$ — are basically *mixolydian*. They are quite common in postwar English-language popular song. If repeated several times in succession, they may well be associated with waiting (p. 389-395).

[15] Some apparently SUBTONIC SHUTTLES, like the $F \leftrightarrow G$ in Human League's *Don't You Want Me Baby?*, have, like some dorian shuttles (see §10), no clear tonic (pp. 391-394).

[16] PARTIAL SHUTTLES can be found in harmonisations of traditional melody from the British Isles but they do not fit tunes that return to the first of the shuttle's two chords at the end of each verse. They function instead as COUNTERPOISE SANDWICHES (pp. 396-398).

13. Chord loops 1

Circular motion

Vamp, matrix, formula, pattern, changes, turnaround, loop, etc... These words –and probably several others– have all been used to denote the same thing: *a short sequence of chords, usually three or four, repeated several times in succession.* There are several reasons for choosing CHORD LOOP as label for such a common phenomenon.

The first reason is that LOOP is a short word whose meaning, transferred to denoting repeated circular motion, is widely understood, not just by computer programmers writing DO WHILE loops¹ but also by anyone old enough to have worked creatively with audio tape. Indeed, the ninth meaning of *loop* in the *Oxford Concise English Dictionary* (1995) is ‘an endless strip of film or tape allowing continuous repetition’. Since the mid 1990s, short, digitally stored sequences have replaced audiotape loops to become one of most widely used building blocks in music making. Indeed, the audio software I bought in 2007 came with a small repertoire of such loops which I can, time and money permitting, expand by downloading thousands more from sites like Acid Loops, Freeloops, Fruity Loops, Loopasonic or Loop Galaxy. In other words, since *loop* already means a short sequence of sound, rarely longer than a second or two, that can be repeated consecutively once or *ad infinitum*, it is no great leap of semantic faith to use *chord loop* to mean a short sequence of chords, usually three or four, repeated several times in succession.

The second reason for using *loop* rather than, say, *formula, matrix, pattern* or *progression* is that these other four words do not necessarily imply repetition or circularity, and that of those four only *progression* unequivocally involves motion. *Loops*, on the other hand, go round and round (and round...) through at least three chordal points until the music exits the loop, or goes elsewhere, perhaps to

1. DO WHILE LOOP: see  en.wikipedia.org/wiki/Do_while_loop [140405].

a different loop, or until it fades out or just stops. *Rundgång*, literally ‘a going round’, is what Swedish musicians call chord loops: it’s a very brief ‘round trip’ where you pass a few different points (chords) before starting again round the same circuit for another lap. It’s a bit like a race track event compared to a swimming competition: swimmers swim lengths to and fro (shuttles) while runners run laps (loops).

The third reason concerns *TURNAROUND*, a word clearly implying both motion (*turn*) and circularity (*around*). It has often been used in the same sense as *chord loop* but its original meaning is *a short progression of chords played at the end of one section in a song or instrumental number and whose purpose is to facilitate recapitulation of the complete harmonic sequence of that section*. Example 280 shows a typical piano turnaround for a slow twelve-bar blues in F whose basic chords run, for example F B \flat F F B \flat B \flat F F C B \flat F F. So as to avoid harmonic stasis and to drive tonal motion back into the initial F of bar 1, the final F in bars 11-12 can be replaced with a progression of the type shown as example 280: F F $7/a$ B \flat B \dim | F $7/c$ D $\flat 9$ C 7 . This turnaround increases the rate of harmonic change in motion towards a final C chord (bar 12) which, in its turn, leads back to the F of bar 1, creating in the process a highlighted V \rightarrow I cadence and an effect of continuity over the join between the two periods.

Ex. 280. Typical piano turnaround for a slow 12-bar blues in F, bars 11-12.

A turnaround is in other words an episodic device joining the end of a larger harmonic cycle back to its start. It’s only the *end* part of that cycle, not its entirety. Now, observant readers objecting that example 280 (I \rightarrow I 3 \rightarrow IV \rightarrow +iv $^\circ$ \rightarrow I 5 \rightarrow [bVI] V in relative terms) can on its own be convincingly repeated and treated as a chord loop are of course right. Ray Charles, for one, uses a simplified variant

of this turnaround sequence as loop in *Hallelujah I Love Her So* (1957) $\hookrightarrow \text{I-I3-IV-V} \hookrightarrow (= \hookrightarrow \text{Bb Bb}^3 \text{Eb F} \hookrightarrow \text{in Bb})$ which, further simplified, would turn into a *La Bamba* loop ($\hookrightarrow \text{I IV V} \hookrightarrow$; p.421, ff.). On its third appearance in each verse of the same Ray Charles song, however, the loop is left behind, becoming more like the blues turnaround in example 280: $\text{I} \rightarrow \text{I}_3 \rightarrow \text{IV} \rightarrow +\text{iv}^\circ \rightarrow \text{I}_5 \rightarrow (\text{Bb Bb}_{/d} \text{Eb Edim})$. That leads into the vamp progression $\text{I}^{(5)} \rightarrow \text{VI} \rightarrow \text{II} \rightarrow \text{V} \rightarrow \text{I}$ signalling END OF VERSE. This ability of turnarounds to become loops and vice versa highlights the need to distinguish between the two related concepts. Both loops and turnarounds can have the same dual function: they can either be repeated as loops or propel tonal movement towards something else.² *Vamp* is the clearest embodiment of such dual function and the fourth reason for preferring *loop* to the other labels for ‘a short sequence of chords, usually three or four, recurring consecutively...’

The $\text{VI} \rightarrow \text{II} \rightarrow \text{V} \rightarrow \text{I}$ progression in the Ray Charles song just mentioned is directional and cadential in accordance with the norms of classical harmony in general and in particular with the tenet of anticlockwise movement round the circle of fifths (see pp. 252-264). However, the widespread instruction *VAMP UNTIL READY*, which also often involves repeating some kind of VI-II-V- I progression, suggests neither direction nor closure. As Monty Ashley wrote on his website in 2002:³

‘[M]y favourite phrase in all of music is “Vamp until ready”. That’s basically an instruction to the band to stall. To fill time. To keep doing the same thing in an attempt to trick the audience into thinking something’s about to happen... I would have thought vamping instructions would be sort of complicated, but it’s usually only a few bars.’

Now, it’s true that a vamp doesn’t have to be based on ‘some kind of VI-II-V- I progression’; however, since *VAMP UNTIL READY* ap-

2. The same applies to some shuttles, e.g. $\text{i} \leftrightarrow \text{IV}$ becoming $\text{ii} \rightarrow \text{V} \rightarrow [\text{I}]$ (p.377, ff.).

3. montykins.com/mkins/000092.html [090615]. Google lists 135,000 sites including the phrase ‘vamp until ready’ [140714].

peared so often in sheet music for songs from musicals and since some kind of $\text{♯I VI II V} \curvearrowright$ loop was either written out or expected from the musicians following the instruction, *vamp* will in what follows denote *any chord sequence of the type* $[\text{I}] \text{ VI II V } [\text{I}]$. The ‘[I]’ of course implies that not only does the tonic chord cadentially follow the V that precedes it; it also means that it is followed by a tertial chord based on degree six of the scale. That in turn means that the sequence can function as a loop: $\text{♯I VI II V} \curvearrowright$. *Vamp* will in other words be used to designate that *particular type of chord sequence as a class of chord loops, not as a generic term for all chord loops.*

Vamps

Loops and turnarounds

Performance of jazz standards in AABA form often feature *vamp turnarounds* before each recurrence of the ‘A’ section.⁴ Table 32 (p. 405) shows chord changes for the ten-bar ‘A’ section of a UK World War II hit. Note first how, in bars 7-9, the tune’s hook line is set to a cadential $[\text{I-}] \text{vi-ii-V-I}$ sequence. Then, instead of sticking to that Eb tonic through bars 9 and 10 into the first two beats of the repeat’s bar 1, another $\text{I-vi} \rightarrow \text{ii} \rightarrow \text{V}$ (Eb Cm7 Fm7 Bb7) is inserted, this time as a turnaround which can be exchanged for its chromatically descending tritone substitution variant if you want to impress jazz chord connoisseurs (see p. 45).

4. This type of ‘jazz standard’ would in its original theatrical context consist of two main parts: [1] an introductory, partially recitativo, section linking on-stage action to the song itself, frozen in narrative time; [2] the song itself. Section [1] is, in some ways confusingly, called *verse* and section [2] *chorus*. The ‘verse’ is often forgotten, almost always omitted in jazz performance and rarely included in other renderings of the song outside its original context in a musical. The chorus or ‘the song itself’ is usually in AABA form, ‘A’ and ‘B’ normally occupying 8 bars, that pattern of periodicity giving rise to the form label *32-bar evergreen*. The ‘B’ section is usually called the *bridge* in North America while UK musicians tend to refer to it as the *middle eight*. Sherwin and Strachey’s *Nightingale* is unusual because its ‘A’ section contains ten bars, not eight. However, even though its ‘chorus’ runs to 38 bars (10 + 10 + 8 + 10) instead of 32 (4 × 8), it still has the basic form of a 32-bar evergreen.

Table 32. A Nightingale Sang In Berkeley Square (*Sherwin & Strachey, 1940*): viable chord changes for ‘A’ section of chorus in AABA form.⁵

1	2	3	4	5
E♭ [♮] Cm7	Gm7 E♭9	A♭D G7	Cm7 D♭9	E♭ [♮] A♭ [♮]
6	7	8	9	10
E♭ [♮] A♭ [♮]	E♭ [♮] Cm7	F9 B♭-9	E♭6 E♭6	E♭6 E♭6
Vamp turnaround for reprise →			Cm7	Fm7 B♭7
Partial TRITONE SUBSTITUTION of turnaround →			G♭13	Fm9 E9♭5

Table 33. Blue Moon (*Rodgers, 1934*): vamp loops and turnarounds in a 32-bar jazz standard;⁶ bar n^s in italics; each vamp occupies two bars.

[A ¹] 1	2	3	4	5	6	7	8
E♭ Cm	Fm B♭	E♭ Cm	Fm B♭	E♭ Cm	Fm B♭	E♭ Cm	Fm B♭
I vi	ii V	I vi	ii V	I vi	ii V	I vi	ii V
[A ²] 9	10	11	12	13	14	15	16
E♭ Cm	Fm B♭	E♭ Cm	Fm B♭	E♭ Cm	Fm B♭	E♭ A♭	E♭ Cm
I vi	ii V	I vi	ii V	I vi	ii V	I IV	I vi
[B] 17	18	19	20	21	22	23	24
Fm B♭	E♭ Cm	Fm B♭	E♭ Cm	A♭m D♭	G♭	B♭ ₅ F	B♭
ii V	I vi	ii V	I vi	i v [♭VII]	[♭III]	V II	V
		→ in G♭ →		ii V	I	[III] back in E♭	
[A ³] 25	26	27	28	29	30	31	32
E♭ Cm	Fm B♭	E♭ Cm	Fm B♭	E♭ Cm	Fm B♭	E♭ A♭	E♭
I vi	ii V	I vi	ii V	I vi	ii V	I IV	I

In several jazz standards — *Blue Moon* (Rodgers, 1934) and *At Last* (Warren, 1940) to name just two— the harmony of the entire ‘A’ section, not just its turnaround, consists of the same four-chord vamp. As shown in Table 33, the ‘chorus’ of *Blue Moon* starts by running a I-vi-ii-V pattern four times in a row (bars 1-8), the first three times as a loop (b. 1-6), the last time as a turnaround leading back to a repeat of the ‘A’ section ‘[A²]’ containing three more vamp loops (b. 9-14) and to a final, plagally extended tonic (E♭ A♭ E♭, b. 15-16).⁷ That final E♭ (b. 16) also initiates, with a one-bar de-

5. To segue into the song’s G major bridge (‘B’), the last two bars of ‘A’ need to be something like |E♭⁶ A♭m6 | Am7^{b5} D-9 || → Gadd9 (etc.).

6. See footnote 4, p. 404 for explanation of 32-bar jazz standard form. N.B. Chord designation is simplified in Table 33, e.g. ‘Cm Fm B♭’ replaces ‘Cm7 Fm7 B♭7’.

lay, two more instances of I-vi-ii-V and the first four bars of the song's 'B' section until it faces the middle eight's obligatory modulation to a quickly accessible but not necessarily neighbouring tonal centre (bars 21-22). In *Blue Moon's* case the target foreign key is G \flat which is prepared by inserting a minor variant of IV (Abm \flat ⁷) as a pivot chord doubling as ii in a ii \rightarrow V \rightarrow I cadence (Abm \rightarrow D \flat ⁷ \rightarrow G \flat).⁸ Shifting back to Eb even quicker than we left it, another three instances of ζ I-vi-ii-V \supset (bars 25-30) lead to the end of this 'standard' in classic 32-bar form, 24 ($\frac{3}{4}$) of which house the I-vi-ii-V vamp sequence as loop or as turnaround, and another two the ii \rightarrow V \rightarrow I in G \flat . That means the harmony of *Blue Moon* spends over 80% of its time going flatwards round the circle of fifths.

With their anticlockwise movement three steps flatwards round the key clock (VI \rightarrow II \rightarrow V \rightarrow I), vamp sequences have a long history that dates back through jazz and the euroclassical period to chains of seventh chords produced by composers like Corelli and Vivaldi in the Baroque era (p.264); but it's not easy to find examples of vamp *loops* before the heyday of Broadway shows and big bands.⁹ It is on that tradition and its VAMP UNTIL READY practices that US pop song writers drew to provide harmony for a disproportionate number of teenage-oriented hits released between 1957 and 1963, in the gap between the initial impact of rock'n'roll and the breakthrough of British bands in the 1960s.

7. The plagally (Ab) extended tonic is my interpretation. I could have used Abm \flat ⁶ or a bVII chord (D \flat ⁹) instead. The sheet music shows just Eb for bars 15-16.
8. The 'other keys' in jazz-standard middle eights can be simple dominants, subdominants and relative minors, for example the dominant minor (Gm) in the 'B' section of Arlen's *Over The Rainbow* (1939) in Eb, but they will just as often modulate to the mediant's major key: *Blue Moon* modulates to bIII (G \flat), while, for example, *A Nightingale Sang In Berkeley Square* (Eb to G; Sherwin & Strachey, 1940), *Once In A While* (Eb to G; M. Edwards, 1937) and *Stars Fell On Alabama* (C to E; Perkins, 1934) all modulate to III. Modulation in such cases is usually via ii \rightarrow V \rightarrow I in the target key.
9. There's a ζ I-vi-ii \supset -V \supset (ζ C Am Dm \supset ⁷ G \supset) at the end of the 'Ladies of the Night' trio in the introduction to Mozart's *Magic Flute*. There's another at the end of the statement of the second theme (in C major) of Mozart's Piano sonata in A minor. Thanks to François De Médicis for these references.

Vamp loops of the 1957-1963 pop period can be heard as the harmonic epitome of the DOOWOP-SHALALA culture alluded to in conjunction with the I↔vi shuttle (pp.385-385). Those loops are the chordal signature of what Jerry Lee Lewis is reported to have called ‘milksap’ sung by ‘all those goddam Bobbies’.¹⁰ But it wasn’t so often $\zeta I \text{ vi } ii \text{ V } I \supset$ that accompanied Bobby Darin, Bobby Rydell, Bobby Vee, Bobby Vinton and their soundalikes as $\zeta I \text{ vi } IV \text{ V } I \supset$. Can $\zeta I \text{ vi } ii \text{ V } I \supset$ and $\zeta I \text{ vi } IV \text{ V } I \supset$ really be considered the same thing? The short answer is, as we shall see next, ‘yes and no, but much more “yes” than “no”’.

Leaving the interwar big-band-friendly key of Eb behind and moving to C as characteristic keynote for much music of the milksap era (I-vi-IV-V = C-Am-F-G in C), the answer to the question just posed should be: ‘yes, they are the same thing except for a difference of one note in one of the four chords’ because 11 of 12 notes are identical in the sequence.¹¹ As shown in example 66, the only difference between ii and IV is between the d in Dm (ii) and the c in F (IV). At the same time, example 66b shows that a seventh chord on the second degree in C (Dm7, ii) contains exactly the same four notes (d f a c) as an added sixth chord on the fourth degree (F6, IV) and that the only difference between them is the choice of root note, i.e. whether d or f is in the bass. Example 66b also shows that the same principle applies to Fm7 and Dm7^{b5}, all depending on whether f or d is the root of the same chord containing d f a^b and c. Although these aspects of interchangeability between II and IV are particularly striking when sevenths are also included in other chords of the same vamp, as in the performance of jazz standards (ex. 45, p. 270), they do explain why it is possible to consider *both I-vi-ii -V and I-vi-IV-V as vamp variants* rather than as distinct categories of loopable chord changes.

10. I have neither Lewis’s original quote nor source. My secondary source is a Swedish Radio series, *Rockens Roll*, on the history of rock by Tommy Rander and Håkan Sandbladh (c.1974). *Milksap* should probably read *milksop*, spoken with a North American accent.
11. 3 notes per each of the 4 triads (=12) of which only one has one different note.

Fig. 66. (a) I vi ii/IV V in C; (b) interchangeability of II and IV in C.¹²

	I C	vi Am	ii or IV Dm or F	V G	I C
(a)					
	5 g 5 3 e 3 1 c 1	6 a 1 3 e 5 1 c 3	6 a 5 4 f 3 or 4 f 1 2 d 1	5 g 1 2 d 5 7 b 3	5 g 5 3 e 3 1 c 1
(b)	Dm F	Dm ⁷ F ⁶	Fm	Fm ⁶ Dm ^{7b5}	D D ⁷
	ii IV	ii ⁷ IV ⁶	iv	iv ⁺⁶ ii ^{7b5}	II II ⁷

As stated earlier, $\text{C} \rightarrow \text{I-vi-IV-V} \rightarrow \text{C}$ loops are the harmonic epitome of milksap music emanating from both major and minor record labels in the USA between about 1957 and 1963. When researching that repertoire for intertextual purposes relating to the semiotic analysis of the I-vi-ii-V sequence in Abba's *Fernando* (1975), I found 137 relevant tunes on the Billboard hot 100. To give a rough idea of that kind of repertoire I've listed 57 of those recordings in Table 34.¹³

12. The figures under the chords in Figure 66(a) are in three rows (vertical), each of which presents three different ways of designating the three notes in each triad (yes, $3 \times 3 = 9$ characters per chord). Row 1 ('5 g 5', '6 a 1', etc.) refers to the top note in each triad as shown, row 2 to its middle note and row 3 to its lowest note. The three characters listed horizontally for each triad designate each note in the relevant chord: [1] its scale degree in reference to the key of C; [2] its actual note name; [3] in italics, its intervallic distance upwards not from the keynote (C) but from the root of the chord in question. Focussing on the issue of interchangeability between ii and IV, the D minor triad appearing as example 66(a)'s third chord contains, in descending order: [1] scale degree 6 in C = the note *a* = 5 scale degrees above the chord's root, hence '6 a 5'; [2] scale degree 4 in C = *f* = the 3rd in the D minor triad, hence '4 f 3'; [3] scale degree 2 in C = *d* = the no. 1 (root) note of Dm, hence '2 d 1'.
13. [1] To popularise that study of Abba's *Fernando* (Tagg, 2000b), I posted 'The Milksap Montage' video (Tagg, 2007). The audio side of the montage consists of brief extracts from 52 I-vi-IV-V milksap melodies. [2] None of the tunes listed in Table 34 are included in the Reference Appendix unless they are also mentioned in the main body of text. To hear any of the recordings enumerated, please follow the advice under 'Accessing and using musical sources' on page 29. [3] I apologise if I-vi-IV-I tunes readers know aren't in Table 34. Perhaps your tune was released before 1957 (e.g. *Sh'Boom* by The Crew Cuts (1954) and *Why Do Fools Fall In Love?* (Frankie Lymon & The Teenagers (1956)), or after 1963, e.g. *This Boy* (Beatles, 1963d).

The duration of vamp sequences in the songs listed in Table 34 ranges from very short (e.g. 3" for *Lollipop* by The Chordettes (1958)) to well beyond the limits of present time (e.g. c.15" for *There Goes My Baby* by The Drifters (1959)). One vamp progression from 1962 was intentionally omitted from the list because it lasts for 23 seconds, the first half of which appears as example 281.

Table 34. Sample of I-vi-IV-V ‘milkcap’ recordings (USA 1957-63).

1957	1961
Tab Hunter: <i>Young Love</i>	Chubby Checker: <i>Let's Twist Again</i>
Ricky Nelson: <i>Teenager's Romance</i>	Dion: <i>Runaround Sue</i>
The Rays: <i>Silhouettes</i>	Ben E King: <i>Stand By Me</i>
Paul Anka: <i>Diana</i>	Barry Mann: <i>Who Put The Bomp</i>
1958	The Marcels: <i>Blue Moon</i>
Chordettes: <i>Lollipop</i>	Ricky Nelson: <i>Travelling Man</i>
Danny & the Juniors: <i>At The Hop</i>	Elvis Presley: <i>His Latest Flame</i>
Everly Brothers: <i>Dream</i>	Rosie & Originals: <i>Angel Baby</i>
Monotones: <i>The Book Of Love</i>	Bobby Rydell: <i>Good Time Baby</i>
Ricky Nelson: <i>Poor Little Fool</i>	1961
1959	Neil Sedaka: <i>Happy Birthday Sweet 16</i>
Paul Anka: <i>Put Your Head On My Shoulder</i>	Bobby Vee: <i>Take Good Care Of My Baby</i>
Bobby Darin: <i>Dream Lover</i>	Del Shannon: <i>Runaway</i>
Dion & Belmonts: <i>A Teenager In Love</i>	Linda Scott: <i>Don't Bet Money, Honey</i>
Drifters: <i>There Goes My Baby</i>	1962
Connie Francis: <i>Lipstick On Your Collar</i>	Gene Chandler: <i>The Duke Of Earl</i>
Ritchie Valens: <i>Donna</i>	Sam Cooke: <i>Having A Party</i>
Jackie Wilson: <i>Lonely Teardrops</i>	Four Seasons: <i>Sherry Baby</i>
1960	Shirelles: <i>Baby It's You</i>
Bobby Rydell: <i>Little Bitty Girl</i>	1963
Mark Dinning: <i>Teen Angel</i>	Cascades: <i>Rhythm of the Rain</i>
Percy Faith: <i>A Summer Place</i>	Elvis Presley: <i>The Devil In Disguise</i>
Jimmy Jones: <i>Handy Man</i>	Paul & Paula: <i>Hey Paula!</i>
Sam Cooke: <i>What A Wonderful World This Could Be</i>	Del Shannon: <i>Little Town Flirt</i>
Bobby Vee: <i>Devil Or Angel</i>	Little Peggy March: <i>I Will Follow Him</i>
Johnny Tillotson: <i>Poetry In Motion</i>	Ronettes: <i>Be My Baby</i>
	Doris Troy: <i>Just One Look</i>

I started Chapter 9 by arguing that Chuck Berry's *Memphis Tennessee* didn't qualify as a shuttle because it took too long (24") to alternate between its two chords. The same reservation applies in terms of a loop to Ketty Lester's *Love Letters* (ex. 281, p. 411): even if its Bb-Gm-Eb-F (I-vi-IV-V) is repeated consecutively, each occurrence of

the progression occupies an entire verse lasting 23 seconds, a duration equivalent to that of a twelve-bar blues in $\frac{4}{4}$ at $\text{♩} = 120$.¹⁴ Of course, the twelve-bar blues, like the chaconne or passacaglia, is by definition a tonal format that is repeated consecutively, but if each cycle in the format exceeds the duration of the extended present by a factor greater than two, which it almost always does in the case of a 12-bar blues, it's impossible to hear it as a loop — as a cyclical harmonic matrix, yes, but not as a loop. On the other hand, if the cycle in question has a duration of no more than two 'nows' — a 'this bit' and a 'that bit' with just one caesura and no third or fourth 'bits', so to speak — then it can still be heard as a loop. That's one reason why the repeated 12½-second mixolydian chord formula at the end of *Hey Jude* (Beatles, 1968a; see p. 426, ff.) can be heard as a *single-caesura loop* in the same way as longer milksap vamp loop durations like the 15 seconds in *There Goes My Baby* (Drifters, 1959) or the 14½ seconds in *Oh Carol!* (Sedaka, 1959). On the other hand, the *Love Letters* vamp includes four bouts of present time, the first two of which are shown in example 281.¹⁵

14. 12 bars with 4 beats per bar = 48 beats at 2 per second, i.e. 24 seconds. To be exact, *Love Letters* verses last 23.2 seconds ($[16 \times 3 \text{ beats} = 48] \div [(122/60)]$). If a twelve-bar blues consists of three phrases, each occupying four bars (=8"), then the 23.2 seconds of the 16-bar verse in *Love Letters* can also be subdivided into phrases. One division clearly occurs at the halfway point (bars 8-9) but even just half the verse, shown in ex.281 with its duration of 11.6", marginally exceeds the normal limit of present time. It is more realistic to think of the vamp chord sequence in *Love Letters* as consisting of four phrases or four units of 'now time', the first containing the lyrics 'Love letters straight from the heart' over B \flat and the change to Gm (bars 1-5), the second consisting of the gospel-style piano comments in G minor (bars 5-8). A similar call-and-response pattern then follows in bars 9-16.
15. See also footnote 14. When investigating I-vi-ii/IV-V sequences for the study mentioned in footnote 13 (p.408), I didn't at first even consider the Kitty Lester recording despite having previously had to record a faithful piano backing track for the tune and consequently knowing it quite well. In fact, it was only when I sat down at the keyboard to find out if my hands could help trigger memories of vamps in B \flat from the milksap period, and only when I radically slowed down the harmonic rhythm, that the verse of *Love Letters* eventually came to mind as a vamp sequence. The tune simply hadn't registered in my brain as a loop belonging to the same category as *Lollipop* (3") or *Oh Carol* (14½").

Ex. 281. *Ketty Lester: Love Letters (1962): start of first verse*

(seconds) 1" 5" 8" 10"

♩=124 B♭ Gm *piano* Eb (-F) etc.

Love lett-ers straight from the heart

I vi IV (-V)

The discussion so far can be summed up in six points.

[1] A simple loop without caesura lasts for between about 3 and 8 seconds, the approximate duration of the extended present;

[2] A single-caesura loop usually lasts for between roughly 8 and 18 seconds, the equivalent of two bouts of present time;

[3] Consecutively repeated chord progressions each of which lasts longer than around 18 seconds are much more likely to be heard as cyclical matrices. Loops may even be included within such cycles, as in the first statement of the 'A' section of *A Nightingale Sang In Berkeley Square* (bars 7-10 in example 32, p. 405).

[4] Loops and turnarounds can consist of the same sequence of chords so that loops can become turnarounds and vice versa. However, while loops go round and round within themselves, turnarounds have a specific episodic function in that they simultaneously signal the end of the ongoing harmonic cycle and propel tonal motion towards the start of the next one.

[5] The most common variants of the I-VI-II-V vamp sequence in English-language popular song are I-vi-ii-V and I-vi-IV-V. Both sequences usually occur as loops. ♮I-vi-IV-V♮ became a style indicator of teenage-orientated pop hits released in the USA between 1957 and 1963 ('milksap').

[6] Vamp sequences take three steps anticlockwise (flatwards) round the circle of fifths (vi→ii→V→I) and have a history in both jazz and classical harmony.

Vamp, blues and rock

On page 406 I mentioned that the period between 1957 and 1963 coincides with the gap between the initial impact of rock'n'roll (c.1955-7) and the global influence of British bands like The Beatles

and The Rolling Stones (c.1963-70).¹⁶ It is worth considering this gap historically for both harmonic and ideological reasons. As we shall see, chords, one aspect of ‘everyday tonality’, aren’t just a matter of musical theory or practice: they also have to do with attitudes and values.

‘Classic’ rock’n’roll: IV-I

Bill Haley’s *Rock Around The Clock* (1955) and *See You Later Alligator* (1954), Elvis Presley’s recordings of *That’s Alright Mama* (1954) and *Hound Dog* (1956), many of Little Richard’s early recordings (*Tutti Frutti*, *Lucille*, *Long Tall Sally*, etc., 1956-57), Jerry Lee Lewis’s *Great Balls Of Fire* and *Whole Lotta Shakin’* (1957), not to mention Chuck Berry’s *Maybellene* (1956) and *Johnny B Goode* (1958) are all generally considered classics of early rock’n’roll. Numerous historians of the genre have interpreted such songs as representing some sort of social and behavioural paradigm shift, drawing attention to qualities like youthful energy and abandon, corporeal self-celebration, and pointing to musical traits like loudness, brisk tempo, plenty of percussive elements, energetic guitar strumming, relatively unrestrained vocal delivery and so on. Any mention of the music’s tonal elements is usually restricted to comments about the use of ‘blue notes’ or to the notion that the harmonies of rock’n’roll are simple. What most commentators tend to omit is that a large proportion of rock’n’roll hits from the mid 1950s, including all those just enumerated, follow the basic twelve-bar blues format | I | I | I | I | IV | IV | I | I | V | IV | I | I |. That sequence performed loud and up-tempo had immediate forerunners in the music of jump bands, boogie-woogie trios and other small combos in the milieu of jive and jitterbug that until the end of World War II had been the territory of riffing big bands. It was first with the initial

16. Many theories have been put forward to explain the disappearance of rollicking rock’n’roll from the US charts in the late 1950s, the most common being that Elvis joined the army, Little Richard the Christian ministry, that Chuck Berry went to prison for illegally accompanying a minor across a state boundary and that Jerry Lee Lewis became persona non grata for marrying his very young cousin.

breakthrough of rock'n'roll in the mid 1950s that those loud, up-tempo renderings of the twelve-bar blues format entered the mainstream en masse. That breakthrough has considerable harmonic and historical significance.

First of all you don't have to be a musicology professor to work out that the basic blues format contains not a single $V \rightarrow I$ progression, not a single 'perfect' cadence. Even though the V in bar 9 may occasionally be repeated in bar 10, and even though turnarounds ending on V in bar 12 are far from uncommon in slower blues recordings, the basic harmonic matrix contains *no steps anticlockwise round the circle of fifths*.¹⁷ Of course, many jazz versions of the twelve-bar blues replace the $I-V-IV-I$ of bars 8-11 with a vamp-related progression similar to that shown in the bebop example on page 353, but that is *jazz, not rock*. 1950s rock'n'roll usage of the format usually adheres to the $V-IV-I-I$ pattern in bars 9-12. So, what's the big deal?

A small but important part of the answer has already been intimated: that the closing change in a basic twelve-bar blues cycle is $IV \rightarrow I$, not $V \rightarrow I$ such as you are bound to find in classical harmony or in music using a vamp sequence. The 'Amen' change ($IV-I$) in bars 10-11 of the twelve-bar format is in other words plagal, one step *clockwise* (sharpwards) round the key clock. But the question is whether we are in fact dealing with harmonic direction at all when rock, pop and Country musicians use the $V-IV-I$ end changes so familiar from bars 9-11 of a twelve-bar blues.

The intro to an Eddy Cochran hit from 1958 is cited as example 282 (p. 414) for three reasons: [1] it includes the $V-IV-I$ end change from the twelve-bar blues format so popular in rock'n'roll circles at the time the tune was recorded; [2] it contains no $V \rightarrow I$ change and little or no $V \rightarrow I$ directionality; [3] the bass anacrusis in bar 4 works

17. Although the initial change from I to IV constitutes indeed one step flatwards round the circle of fifths, it is not followed by a second, let alone a third such step, as in a vamp progression. More importantly, since the very position of the change in the twelve-bar period defines it as a *departure* it can in no way be considered, like $vi \rightarrow ii$ or $ii \rightarrow V$ or $V \rightarrow I$ as part of a process towards closure.

like a miniature turnaround: it propels motion back to the start of the intro loop both rhythmically ($\text{♩} \text{♩} \text{♩} \text{♩}$) and tonally ($\hat{5} \text{ b}\hat{7} \hat{5} \text{ b}\hat{7} \rightarrow \hat{8} = \text{b d b d} \rightarrow \text{e}$).¹⁸ This third point will be useful in the discussion of factors determining the home key of certain types of chord loop.

Ex. 282. *Eddie Cochran: C'mon Everybody (1958): 5½" ionian intro pattern.*

♩=88 I IV V IV I
♩=176 E A B A E

12-string acoustic guitar, full strum [break] bass

Here, though, we need to focus first on the second point because it represents a radical shift in the accompaniment of English-language popular song away from euroclassical ii-V- I directionality. The Cochran tune's chords are simply I, IV and V in E, *but* V (B) is no dominant and IV (A) no subdominant for two reasons: [1] return to the tonic (E) is not from a supposed 'dominant' on B (V-I) but from IV; [2] the Cochran B (V) chord occupies only two of the loop's 16 beats while A (IV) occupies six and E eight. This means that in terms of both duration and cadential function IV (A) is more 'dominant' and V (B) more 'subdominant', so to speak. Still, switching the meaning of those two terms of euroclassical theory to cater for other harmonic realities, although illustrating a valid point, would cause even more confusion. It's therefore advisable to abandon both terms in the discussion of most types of non-euroclassical harmony and to propose a more adequate type of theorisation.

Outgoing, medial and incoming chords

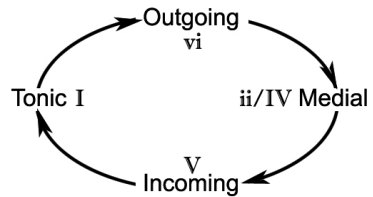
The solution suggested for a theory of chord loops in anglophone pop/rock music is to replace concepts like 'dominant' and 'subdominant' with the following: OUTGOING CHORD, MEDIAL CHORD, INCOMING CHORD, and TURNAROUND CHORD (Fig. 67, p. 415). In the Cochran intro, in E, IV (A) is both its outgoing *and* incoming chord because its first change is I-IV and its final change IV-I. V (B) is the intro's medial chord simply because it occurs in the middle of the loop. Since the loop both starts and ends on the same chord (E)

18. The same $\text{♩} \text{♩} \text{♩} \text{♩}$ figure also prominently features as a recurrent $\hat{5} \text{ b}\hat{7} \hat{5} \text{ b}\hat{7}$ bass anacrusis in Led Zeppelin's *Whole Lotta Love* (1969).

it contains no turnaround chord in bar 4 and has to be supplied with the monophonic bass-line anacrusis shown in example 282.¹⁹ In vamps, on the other hand, the outgoing chord is *vi*, the medial chord *ii* or *IV*, followed by *V* which is both the incoming chord and turnaround chord towards *I* as the loop repeats. Of course, in both these cases the tonic (*I*) is of primary importance, being both starting point and destination of the loop, at least as long as it is in operation.

Fig. 67. Chord positions/functions inside loop with vamp as example.

(note: in 3-chord loops medial and incoming are usually on the same chord, e.g. *I-IV-V-V* for La Bamba).



With artists like Elvis, Little Richard, Jerry Lee Lewis and Eddie Cochran out of action not long after the initial impact of rock'n'roll,²⁰ recordings of energetic twelve-bar blues formats with their *V-IV-I* endings made less frequent appearances on the mainstream sales charts.²¹ That space was soon filled with manufactured teenage idols and their *VAMP UNTIL READY I-vi-IV-V* loops. It was almost as if the shift towards non-classical harmony had been a passing fad. The historical point, which I cannot discuss here in any detail, is that a prewar harmonic model was dusted off and dressed up as a teenager with moody good looks and all the superficial attributes of youthful musical energy: guitar strumming, prominent bass and drum parts, etc. However, like parlour song,

19. For a basic explanation of non-classical tertial harmony, see pp. 273-292.

20. In 1960 Cochran was killed by a UK drunk driver. For the reasons usually given for the public disappearance of the other artists, see footnote 16 (p.412).

21. e.g. the Billboard Hot 100, not the R&B or Country charts. Although a few New York-based professional songwriters like Jerry Leiber & Mike Stoller or Doc Pomus & Mort Shuman continued to use the 12-bar-blues format as basis for some of their work, most of them wrote in the milksap vein. Particularly well-known in that sphere are the three Brill Building songwriting duos Howard Greenfield & Neil Sedaka, Gerry Goffin & Carole King, and Barry Mann & Cynthia Weil.

polkas, waltzes and jazz standards, the milksap records, based on vamp loops or not, usually cadenced V→I. Rather than profit from the obvious popularity of recent recordings featuring non-classical major-key harmony (*Tutti Frutti*, *Hound Dog*, *C'mon Everybody*, etc.), professional songwriters of the milksap era stuck to the familiar and well-trodden (ii/IV→) V→I paths of popular harmony from before the war and, in the lyrics, to teenage-oriented variants of LOVE AND MARRIAGE topics that were usually absent in the up-tempo rock'n'roll recordings. Now, there may be interesting parallels to draw between this reversion to older harmonic models and attempts at the same time to contain changes in social and sexual values within previously established rules of order and decency, but that is not the subject of this book.²² Whatever the case, if such hypotheses were to be tested, you would need viable theoretical tools to sort out the harmonic side of the issue. And that is definitely relevant to the title of this book.

Beatles harmony: bridging the gap

After the temporary re-emergence of vamps around 1960, non-classical harmony — mainly ionian, dorian, mixolydian and aeolian — became an increasingly common trait in music that was eventually labelled *rock* or *rock and roll* rather than *rock'n'roll*.[†] At the same time, many aspects of classical harmony remained an integral part in recordings of English-language popular song. For example, The Beatles, at their numerous gigs in Hamburg (1960-62),

22. One of several reasons for the mainstream breakthrough of rock'n'roll had been the relative desegregation, for purely logistical reasons, of music market target groups during World War II (Gillett, 1983). Like women who, having worked in industry during the war years, were expected to revert to a solely domestic existence, pop music seems to have temporarily reverted to prewar harmonic and economic norms. There is an entire book waiting to be written about the links between, *on the one hand*, those anomalies plus McCarthyism vs. the anti-Vietnam war movement, plus NO SEX BEFORE MARRIAGE vs. the Kinsey Report, plus resumed racial segregation vs. Little Rock, Rosa Parks and the civil rights movement, and, *on the other hand*, changes in the means of musical expression, including harmony, appearing in the US mainstream between 1945 and the late 1960s.

had to provide the demographically heterogeneous audience with an equally heterogeneous mixture of popular music styles. Early Beatles recordings (1962a/b, 1963a/c, 1964c/e) exhibit an eclecticism that includes everything from old-style I-IV-V-I classical-harmony-based singalongs (e.g. *My Bonnie*; *When The Saints Go Marching In*), through AABA 32-bar standards (e.g. *Sweet Georgia Brown*; *Till There Was You*) to ‘fast, loud twelve-bar blues formats and V-IV-I endings’ (e.g. *Long Tall Sally*; *Kansas City*). Furthermore, even though they covered at least one vamp loop tune in their repertoire (*Please Mr. Postman*; Marvelettes, 1961), they also drew on harmony associated with ‘folk song’ from the British Isles (e.g. *A Taste Of Honey*, 1963a). That ‘folk’ influence turns up more often in later recordings like *And I Love Her* and *Things We Said Today* (aeolian, 1964a), *Norwegian Wood* (mixolydian, 1965b) and *Eleanor Rigby* (dorian/aeolian, 1966). Add to all these harmonic influences Harrison’s interest in Indian rāga music (e.g. *Within You Without You*, 1967b) plus experimentation with *musique concrète* and other avant-garde techniques (e.g. *Tomorrow Never Knows*, 1966) and you have a respectable number of tonal territories regularly occupied by the band. In addition to all that there are several Beatles idiosyncrasies whose harmonic origins I’ve failed to clearly identify but which seem to have influenced other bands.²³ One such idiosyncrasy is what Mellers (1973: 54) calls the band’s ‘familiar mediant transitions’, as in *She Loves You* (1963b), *Help!* (1965a) or *She’s Leaving Home* (1967b), but which I prefer to think of as multi-functional ways of treating the major key’s minor triads ii, iii and vi.²⁴ For instance, apart from the mediantal transitions just mentioned you’ll find a regular submediant shuttle (I↔vi in G) running into an aeolian cadence on vi (E minor) in *Not A Second Time* (1963c) and a reverse mediantal shuttle (vi↔I) with an unusual continuation in *It Won’t Be Long* (1963c).²⁵ One final minor-triad-related Beatles idiosyncrasy is worth mentioning: starting songs on vi (e.g. *She*

23. See section on mediantal loops, p. 442, ff.

24. *She Loves You*: G-Bm-Em-D (I-vi-iii-V); *Help!*: A-C#m-F#m-G-A (I-iii-vi-bVII-I); *She’s Leaving Home*: E-D-F#m7-C#m-F#-B11-B (I-bVII-ii-vi-V).

Loves You; It Won't Be Long); or on iii (*Can't Buy Me Love*, 1964a); or on ii (e.g. *All My Loving*, 1963c; *No Reply*, 1964c; *Help!*, 1965a; *You Never Give Me Your Money*, 1969a).²⁶

Devoting one page to Beatles harmony may seem excessive to some readers, totally inadequate to others. Whatever the case, my aim was neither to aggrandise nor belittle the band's importance but to present their use of harmony as eclectic and aggregative in a particular historical context. Their ability to assimilate a wide range of (then) contemporary harmonic idioms into a body of work in which none of those constituent idioms is hegemonic may partly explain their continued popularity across generational and other demographic gaps, but that is not really the point I wanted to make. More relevant to this chapter on chord loops is the fact that The Beatles helped expand the harmonic repertoire of popular music making so that it could include I-IV-V-I singalongs, twelve-bar blues sequences, ii→V→I directionality and mediantal progressions, as well as various types of non-ianian tonality. In short, while we shall see in what follows that there is often correlation between particular types of loop conceived in particular harmonic idioms and particular styles of music, that variety of idiom in the pop mainstream was made possible by musicians who bridged the old stylistic gaps, in particular by The Beatles.

Like shuttles, chord loops often play a central role in the creation of popular song in recording and performance. They work as the tonal ingredient of groove and, like shuttles, are best regarded as ongoing states, conditions or 'places to be', not as transitions or parts of an overarching tonal scheme or process. Many songs are harmonically based on a single loop (e.g. *La Bamba*) but more use

25. i.e. *Not A Second Time* finishes with a bVII-i cadence in E minor, rather than with a 'V→vi' (p.435). The reverse mediantal shuttle (vi↔I in E) in *It Won't Be Long* runs into an altered plagal (aeolian-type) cadence: C#m-A-Am⁶-E.
26. The chords in the intro to *Help!* run Bm-G-E-A, i.e. ii-bVII-V-I. 'You Never Give Me Your Money' is at the start of *Abbey Road's* track 9 which runs without pause into 'The Sun King', 'Mean Mr Mustard', 'Polythene Pam' and 'She Came In Through The Bathroom Window'.

one loop for just one section of the song and move elsewhere for other sections. Having already dealt in some detail with the vamp, perhaps the best known of all chord loops, and with its vi-ii/IV-V-I directionality, most of the chord loops presented in the next chapter rely on a decidedly less euroclassical type of tonality.

Summary in 8 points

[1] A CHORD LOOP is a cyclical sequence consisting of typically three or four chords that is repeated consecutively at least once.

[2] The DURATION OF A SINGLE CHORD LOOP occurrence is normally that of the extended present. It can, however, also cover two bouts of the extended present if the boundary between its constituent parts is marked by a some sort of caesura (typically between two melodic phrases).

[3] Consecutively repeated chord progressions each of which lasts longer than around eighteen seconds are much more likely to be heard as cyclical matrices than as loops (e.g. a twelve-bar blues).

[4] A TURNAROUND is a chord progression played at the end of one section and whose purpose is to facilitate recapitulation of the complete harmonic sequence of that section (e.g. bars 11-12 in a twelve-bar blues). Turnarounds can also function as chord loops, e.g. $\hookrightarrow I-vi-ii/IV-V \hookrightarrow$ (e.g. *Blue Moon*).

[5] $\hookrightarrow I-vi-ii-V \hookrightarrow$ or $\hookrightarrow I-vi-IV-V \hookrightarrow$ are two common variants of the VAMP LOOP (ii⁷ and IV⁶ contain the same notes). $\hookrightarrow I-VI^7-II^7-V^7 \hookrightarrow$ and $\hookrightarrow I-VI^7\flat^5-\flat VI^7\flat^5-V^+9 \hookrightarrow$ are just two of numerous other vamp variants.

[6] VAMP sequences are intrinsically ionian and tertial. Their root notes proceed anti-clockwise (flatwards) round the key clock by falling fifths towards the tonic and include the V→I cadence of classical harmony – VI→II→V→I. They were commonly used in English-language popular song during the inter-war years, as well as during the ‘milkshap’ era (USA, c. 1958-1963).

[7] During the 'classical' ROCK'N'ROLL period (c. 1955-58) and after the breakthrough of BRITISH BANDS (1963, ff.) CLOCKWISE (sharpward) movement round the key clock became increasingly common in popular music that drew on the blues and/or on folk music rather than on jazz standards.

[8] THE BEATLES helped expand the harmonic repertoire of popular music making so as to include vamps, mediantal progressions, as well as both anticlockwise (flatward) and clockwise (sharpward) movement round the circle of fifths.

14. Chord loops & bimodality

Ionian or mixolydian?

Since the vamp loop discussed in the previous chapter is built on unaltered tertial triads of the major scale's constituent notes it is by definition ionian. However, it is, with its three flatward steps round the key clock ($vi \rightarrow ii/IV \rightarrow V \rightarrow I$, e.g. Am-Dm/F-G-C), a rare bird in the ionian menagerie. Even the *La Bamba* loop ($\text{C}I\text{-}IV\text{-}V\text{C}$, e.g. C-F-G), whose V leads back into I, is, for reasons explained on page 275, unlikely to follow the voice-leading principles of classical harmony.

Table 35 (p. 422) lists a selection of tunes featuring ionian loops that contain the three chords which first-year students of classical harmony students are expected to learn in their first term: I, IV and V. To make things easier, I have restricted the first batch of loops examined to those starting on I ('one', the tonic). One reason for starting this chapter with those loops is that they link directly back to the passage about Eddy Cochran's *C'mon Everybody* (p. 414, ff.) and to the necessity of abandoning notions of 'dominant', 'subdominant' and 'perfect cadence' when dealing with a large part of everyday harmonic reality. Another reason is that by dealing exclusively first with major triads in what most Europeans and many North Americans will doubtless think of as 'the major scale', I can hopefully exploit familiarity with how those 'easy' chords sound to explain the range of modal and connotative variety that different configurations of I, IV and V can produce.

The first subgroup in Table 35 (p. 422) lists examples of $\text{C}I\text{-}IV\text{-}V\text{C}$ loops whose final V chord always leads back to I, while the second category consists of a selection of loops whose turnaround change is plagal (IV as incoming chord to I). The first part of section (a) in the table mentions two Latin-American tunes (*La Bamba* and *Guan-tanamera*), two happily energetic dance numbers (*Do You Love Me?* and *Twist And Shout*), and the celebratory singalong chorus of an

otherwise pretty psychedelic Beatles track. The I-V-IV-V loops listed in the second part of section (a) all accompany tunes best qualified in terms of carefree singalong.¹

Table 35. Selection of ionian chord loops consisting of only I, IV and V

Type	Tune (Artist, Year: chords; [detail])
	(a) ionian loops with V-I turnaround
I-IV-V <i>La Bamba</i> loops	<ul style="list-style-type: none"> • <i>La bamba</i> (Richie Valens, 1958: C F G G) • <i>Do You Love Me</i> (Brian Poole & the Tremoloes, 1963b: D G A A) • <i>Guantanamera</i> (Trini Lopez, 1963: E A B B) • <i>Twist and Shout</i> (Isley Brothers, 1962: F B♭ C C) • <i>Lucy In The Sky With Diamonds</i> (Beatles, 1967b: A D E E)
I-V-IV-V	<ul style="list-style-type: none"> • <i>I Don't Want To Know</i> (Fleetwood Mac 1977: B F# E F#; hook) • <i>I Walk The Hill</i> (Big Country, 1986: D A G A) • <i>From Under The Covers</i> (Beautiful South, 1989: F C B♭ C; verses)
	(b) ionian loops with plagal turnaround (IV-I)
I-IV-V-IV <i>Wild Thing</i> loops	<ul style="list-style-type: none"> • <i>C'mon Everybody</i> (Eddy Cochran 1958: E A B A) • <i>Sweets For My Sweet</i> (Searchers 1964: D G A G) • <i>Wild Thing</i> (Troggs 1966: A D E D) • <i>Hang On Sloopy</i> (McCoys 1965: G C D C) • <i>Name of the Game</i> (Abba 1977: A D E D; hook line/chorus) • <i>Congratulations</i> (Traveling Wilburys 1988: C F G F)
I-V-IV	<ul style="list-style-type: none"> • <i>Knocking On Heaven's Door</i> (Bob Dylan 1973: G D C C [Am × 2]) • <i>Already Gone</i> (Eagles 1974: G D C C) • <i>Helpless</i> (Neil Young 1977: D A G G)

'Carefree singalong' applies also quite well to the first batch of plagal loops (I-IV-V-IV), even if the light-hearted familiarity in *Congratulations* is verbally ironic and paced quite slowly. But the general mood of the $\text{C}\text{I-V-IV-IV}\text{C}$ songs in section (b) of the table is quite different. The Eagles track is in moderately brisk tempo and

- [1] The Fleetwood Mac song from *Rumours*, with its light-hearted lyrics, is the cheeriest track on the album. [2] The lyrics to Big Country's *I Walk The Hill* contain plenty of hope and brightness. [3] Beautiful South were known for the familiar EVERYDAY KITCHEN SINK DRAMA character of their lyrics. Singable tunes with well-trying chordal patterns can be useful in creating a sense of familiarity and light-heartedness. A quick listen through Beatles tunes containing plenty of V→I substantiates this observation: *Twist And Shout* (1963a), *Obladee Obladah* (1968a) and *Maxwell's Silver Hammer* (1969a), for example, are hardly the most Angst-ridden Beatles songs.

has lyrics about showing courage in the face of difficulty, but the Dylan and Neil Young recordings move much more slowly.² The words of *Knocking On Heaven's Door* are about facing death and being weary of violence, those of *Helpless* about hopelessness with a faint promise of consolation. The lyrics of all three songs are reflective first-person narratives sung by a solo male vocalist. They are musically presented as Country-influenced ballads in a partially folk-rock vein, not exactly a startling stylistic choice for serious singer-songwriters like Dylan or Young. We are a long way from the CAREFREE SINGALONG of tunes in Table 35's other subgroups.

One reason for such clear connotative differences between the ζ I-V-IV-IV \supset songs and the others listed in Table 35 is obviously tempo, another melodic profile and register, yet another vocal timbre and so on; but none of this means that harmony has no bearing on the issue. One reason is that the lyrics of the Eagles song, although set in a quicker tempo than both *Hang On Sloopy* and *Wild Thing*, have at least some qualities of narrative reflection that the majority of tunes in the first three subgroups lack. In fact it's as hard to find loops from songs in the first three subgroups linked to reflection about serious things as it is to find ζ I-V-IV-IV \supset in a cheerful, familiar-sounding or carefree singalong. Although extensive research would be necessary to test the validity of that observation, it is not unreasonable to hypothesise that the relative duration of I, IV and V, as well as their functions in the loop (incoming, medial, etc.),³ may be factors affecting the connotative charge of the chord loop in question. If that is so, how can the three simplest chord functions known to harmony students give rise to even the slightest connotative difference in the space of just a few seconds? One reason is that conventional harmony can only see V as 'domi-

2. The Dylan song actually alternates between two very similar loops: first ζ G-D-Am-Am \supset (I-V-ii-ii) then ζ G-D-C-C \supset (I-V-IV-IV). It should be remembered that A is relative minor to C and that ii and IV are often interchangeable (see pp.407-408).
3. For *outgoing*, *medial* and *incoming* chords, see pp. 414-416.

nant' leading to I and cannot entertain the notion that V can be directly followed by IV, as in the $\zeta I-V-IV-IV \supset$ loops. According to those norms, IV can, if no parallel fifths or octaves are involved, proceed to V (and thence to I) but V 'cannot' go to IV, and thence possibly also to I. 'Thence to one' is an important observation because the most common incoming and turnaround chord in ionian, dorian and mixolydian loops is, at least in rock-related contexts, IV or, failing that, another chord whose root note is situated flatward of the tonic in the circle of fifths. Under such circumstances movement to the target tonic proceeds in a clockwise direction. Indeed, plagal cadences are probably more rule than exception in those musical styles.

Since the loops in Table 35 only contain the three chords I, IV and V, both IV and V can have more than one function. For example, the V in $\zeta I-V-IV-V \supset$ and the IV in $\zeta I-IV-V-IV \supset$ function as both outgoing and incoming chords whereas the IV in $\zeta I-V-IV-V \supset$ and the V in $\zeta I-IV-V-IV \supset$ have an exclusively medial function. With $\zeta I-IV-V-V \supset$ and $\zeta I-V-IV-IV \supset$, on the other hand, V is the medial and incoming chord functions that combine and the outgoing that stays single. One simple rule of thumb in determining the character of these chord loops is that the more functions a chord fulfils, the more important it is. Another general guideline is that the medial chord often works like the opposite pole of a chord shuttle and can, as such, have particular importance as 'the other place to be inside the loop' (counterpoise), especially if the outgoing chord is both produced and heard as a logical step towards that pole and if the incoming chord is produced and heard as a logical link back between the medial and primary chords in the loop. Such links, explained in the next paragraph, can occur either as scalar motion in the root notes involved or as steps in one direction or the other round the circle of fifths.

In a $\zeta I-vi-ii-V \supset$ vamp in C, for example, the outgoing chord, vi (Am in C), takes one step flatwards to arrive at the medial chord ii (Dm), then another step flatwards to the incoming chord V (G)

which takes a final single step flatwards back to I (C). *La bamba* loops, on the other hand, start with one step flatwards to the outgoing chord, IV, which then uses a scalar root-note progression (usually barré with parallel fifths and octaves) to reach the medial halfway house, V. That medial is then prolonged into an incoming chord function which completes the loop with a predictable single step flatwards to the tonic. It is clear that V, in its medial position, is where the outgoing IV was heading, even clearer that it is the incoming chord to I. In short, V carries more weight than IV in a *La bamba* loop. It is for the very same reasons that the reverse applies to the I-V-IV-IV loops (Dylan, The Eagles and Neil Young), where IV occupies the dual function of medial and (plagal) incoming chord, and where V, as outgoing chord, acts only as scalar link down to IV. In those V-IV-IV loops, IV carries much more weight than V, not so much because it occupies more time as because it is both where the V leads (medial position) and what points the loop back to its primary point on I (incoming function).

Things are not so clear cut with the two subgroups in the middle of Table 35. In the I-V-IV-V loops (Fleetwood Mac, etc.) V acts first as outgoing chord that leads by scalar descent to IV which is clearly the medial chord, the most obviously different 'place to be' inside the loop, as in the Dylan and Neil Young tunes. Then, with a one-step scalar ascent, the medial chord returns to V which then acts as incoming chord and makes an expected V-I change back to the tonic. V has a dual function in the loop and occupies half of its duration, but IV is the medial chord, the opposite pole (Fig. 67, p. 415). The same applies in reverse to the I-IV-V-IV loops: I've labelled them 'plagal' because: [1] the final step sharpwards from incoming or turnaround chord to tonic is IV→I; [2] because the outgoing chord is also IV; and [3] because IV occupies half the loop's duration. However, given the medial function of V, do the I-IV-V-IV loops really sound more plagal than those in the I-V-IV-V subgroup or do they both straddle a kind of tonal no-man's land between IV and V in relation to I? The only honest answer I can

give is that I don't know. What's more I think the question is irrelevant unless I insist on hearing the V in the Dylan and Neil Young I-V-IV-IV loops as a 'dominant' demanding the tonic, which it patently neither is nor does.

Spot the key

Before putting to rest the misconceptions of conventional harmony in this chapter, there's the thorny issue of identifying the tonic ('keynote', 'I', 'one') in chord loops. I may have had difficulty sorting out issues of relative importance for IV and V but the identification of a tonic is not always an easy or necessarily possible task.

Example 283 (below) contains only three triads: D, C and G. Repeat marks indicate that each of the four sequences is a loop. Loops 1a and 1b are identical (\hookrightarrow D-C-G \hookrightarrow), as are 2a and 2b which are retro-grades of 1a and 1b (\hookrightarrow G-C-D \hookrightarrow). The only differences between the four loops are in the roman numerals identifying the tonic as first chord in loops 1b and 2a and as last chord in 1a and 2b.

Ex. 283. Same three chords, two different tonics

1a 1b 2a 2b

D C G D C G G C D G C D

♯ G: V IV I D: I ♭VII IV G: I IV V D: IV ♭VII I

Two modes are in evidence in example 283 because the tonic G (I) in loop 1a becomes, in identical loop 1b, a medial and incoming IV to D (I). The same goes for the shift of tonic from G to D in loops 2a and 2b. The difference between the two pairs of identical chordal twins is one of mode: I on G, IV on C and V on D means ionian because, according to Table 21 (p. 276), that's the only heptatonic diatonic mode with major triads on scale degrees $\hat{1}$, $\hat{4}$ and $\hat{5}$ — I, IV, V —, while the only mode with major triads on $\hat{1}$, $\flat\hat{7}$ and $\hat{5}$ — I, \flat VII, IV — is the mixolydian. So, if it's not possible to spot the tonic chord unequivocally from its position in the loop, what other clues can help us identify it? Here are some suggestions.

[1] Is the loop preceded or followed by other material that can put it in a larger tonal context?

[2] Does the performance containing the loop end without fade on a particular chord that might be heard as a tonal resting place?

[3] Is any chord immediately preceded by another in the loop which includes, or concurs with, anacrustic patterns highlighting and propelling motion towards that subsequent chord?

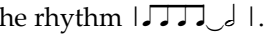
[4] Does one of the chords in the loop have two functions of which one is either first or last in the sequence?

[5] Is the music in which the loop occurs part of a tradition in which some tonal configurations are more common than others?

Let's test these tips using two famous loop tunes: [1] *La bamba*, usually in C or D but here transposed to G to facilitate comparison, and its I-IV-V-V loop (♮G C D D♮), shown as '2a' in example 283; [2] *Sweet Home Alabama* (Lynyrd Skynyrd, 1974) and its I-♭VII-IV-IV loop, labelled '1b', also in example 283 (♮D C G G♮). How can we tell that, using the same chords, the *La bamba* loop is in G and *Sweet Home Alabama* in D?

The first tip (what comes before and after the loop) is no help because the harmony of each song consists entirely of a single loop.⁴ Tip no. 2 is not much better in the case of *La bamba* because, although the Trini Lopez version culminates in an abrupt stop on the first chord of the loop (I), my Ritchie Valens and Los Lobos recordings of the song both end in fade-out. The widely distributed studio version of *Sweet Home Alabama* (1974) fades out too but the band seemed to be in no doubt that live performance of the tune demanded a final rock-show flourish on D (1977). As noted previously on several occasions, loops, like shuttles, are much more 'places to be' than 'means to an end'. If a finality marker is necessary in live performance, the tune's last chord could well be the last chord of the loop, as in several versions of *Guantanamera* (see be-

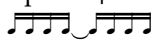





4. 100% of *La bamba* is ♮I-IV-V♮. *Sweet Home Alabama* replaces G-G-D with F-C-D on two occasions. That accounts for 1.7% (1 bar of common time at ♩=100 = 2.4" on two occasions = 4.8" in all) of the studio version's total duration of 4:40 (=280"). The remaining 98.3% of the song consists harmonically of ♮D-C-G♮ mixolydian.

low). And even if Lynyrd Skynyrd's live performances of *Sweet Home Alabama* end on D as mixolydian I, the tune can also be finished just as convincingly on a plagally extended IV (G G C G) set to the rhythm |  |.

As for live-performance markers of harmonic finality in Latin American songs based on I-IV-V loops, the choice seems more open-ended.⁵ Different versions of the popular Cuban song *Guantanamera* and its basic $\text{C}\text{I-IV-V}\text{C}$ loop pattern serve to illustrate this point. Joséito Fernández's iconic recording (1967) ends on V, as do Pete Seeger versions of the song (e.g. 1963), whereas Célia Cruz and Tito Puente (1992) opt for a big-band flourish on I – the 'gringo ending' –, while The Sandpipers, in their 1966 global hit recording of the song, just fade out over the I-IV-V loop.⁶ In fact, the fade-out is in one sense the most convincing *Guantanamera* ending because it implicitly acknowledges $\text{C}\text{I-IV-V}\text{C}$ as the song's 'home key' and 'place to be'.⁷ This kind of Latin-American music displays, as Manuel (2002) puts it, a 'dual tonicity' (\approx double tonic), a phenomenon conceptualised by Carlos Vega (1944: 160) in terms of bimodality and discussed later in this chapter (pp. 433-442). The main point here is that if musicians can opt to end on either what

5. Combing through recordings to discover what final chords, if any, are tacked on to Latin-American I-IV-V loops was time consuming and produced conflicting results, an interesting result in itself that suggests it may be common to add a I to the end of a live performance but that a significant minority end on V (see also footnote 6: [1] & [2]). As in the case of *Mila moja* (p.381), ending on V doesn't make unequivocal keynote identification any easier.
6. [1] Those four versions are in the video montage *Guantanamera Endings* (Tagg, 2011b). [2] The expression 'gringo ending' is from Manuel (2002); thanks to Sue Miller for the reference. [3] For origins of *Guantanamera*, see Gómez (2006). [4] For history of *Guantanamera* recordings, see Cino (2009). [5] 'Pete Seeger's version of the Cuban song *Guantanamera* was released on his album *We Shall Overcome*, recorded live at Carnegie Hall in 1963, in the year after the Cuban Missile Crisis. Seeger later urged American audiences to 'sing *Guantanamera* in the original Spanish and not in translation "to hasten the day" that "the USA... is some sort of bilingual country".' (*Billboard*, 2014-28-01).
7. See also discussion of shuttles in *Great Gig In The Sky* (Pink Floyd, 1973) and *Don't You Want Me Baby?* (Human League, 1981) as dynamic states rather than as processes (pp. 378-380; 391-394).

they perceive as the tonic or on the last chord of the loop in question, then the harmonic finality marker in live performance is not necessarily the loop's tonic. So, let's try the third of the five tips listed on page 427: it involves determining if any chord in the loop is immediately preceded by another which includes anacrustic patterns highlighting that subsequent chord by introducing propulsive motion towards it?

Example 284 (p. 430) shows two representative lead guitar licks for the mixolydian loop in *Sweet Home Alabama*. Like the upbeat | ♯ ♯ | ♯ ♯ | (♯) figure at the end of example 282 (p. 414), the  ending of the *Sweet Home Alabama* loop (ex. 284) is anacrustic. This anacrusis has both rhythmic and tonal aspects. Rhythmically, the music's surface rate increases from  to , an action which, so to speak, hurries the music on, propelling movement towards whatever immediately follows, in this case to the D chord at the start of the loop.⁸ Tonally the anacrusis contains the repeated rising pentatonic pattern $\hat{5}\hat{6}\hat{1}$ (a/b/d) so familiar as pickup figure in Motown recordings as well as in soul, gospel and funk, or as melodic upbeats in music of British or Irish origin.⁹ Lynyrd Skynyrd use other anacrustic devices in the chorus – |   | on toms and a tutti |  ♯ *sfz* ♯. | – to veritably hurl us at the ensuing tonic on D.¹⁰

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8. In semiotic terms it's an episodic marker of the 'propulsive reiteration' type (Tagg, 2013: 518-520).
 9. See start of *Baby, Now That I've Found You* (Foundations, 1967); the bass line in example 260 (*Watermelon Man*, p.364), or ex.262 (*Living For The City*, p.365), or in the intro to *Substitute* (The Who, 1966), or, as downbeat 'pun', ex. 267 (*Shaft*, p.367); see also doh-pentatonic blues scale (Fig. 26 [3], p. 159). For the British Isles melodic connection, see upbeats to first and last phrases of 'St. Patrick's Hymn' (*Reel Thing*, 1998; also ex. 75, p. 154); even psalmody tone 2 (ex. 71, p. 152 and ex. 287, p. 435) starts with a $\hat{5}\hat{6}$ anacrusis to $\hat{1}$ (sol la doh).
 10. A demonstration of this anacrustic procedure is in the *Mixolydian Mini-Montage* posted on YouTube™ |youtube.com/watch?v=FVitoZVVs-gj [090629].

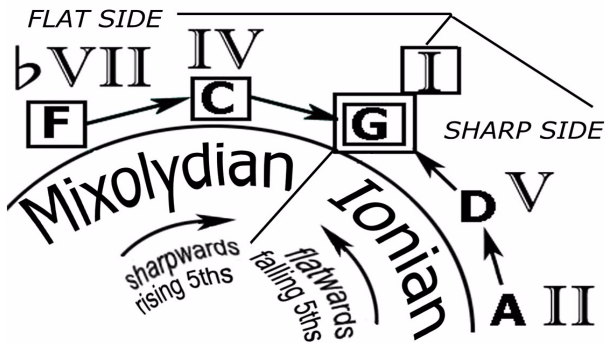
Table 36. Examples of songs containing simple three-chord mixolydian loops

Type	Key	Song (Artist, Year)
\flat VII- -IV-I	E E A C	<ul style="list-style-type: none"> • <i>With A Little Help From My Friends</i> (Beatles, 1967b: hook) • <i>Polythene Pam</i> (Beatles, 1969a: start of verses) • <i>20th Century Man</i> (Kinks, 1971) • <i>Gimme All Your Lovin'</i> (Z.Z. Top, 1983: hook)
I- \flat VII- -IV-I	G G	<ul style="list-style-type: none"> • <i>Hey Jude</i> (Beatles, 1968b; end) • <i>Fortunate Son</i> (Creedence Clearwater Revival, 1970)
I- \flat VII- -IV-IV	B F# A D C	<ul style="list-style-type: none"> • <i>The Midnight Rambler</i> (Rolling Stones, 1969) • <i>Where Do We Go From Here Now?</i> (The Band, 1971) • <i>20th Century Man</i> (Kinks, 1971) • <i>Sweet Home Alabama</i> (Lynyrd Skynyrd, 1974) • <i>Sharp Dressed Man</i> (Z.Z. Top, 1983: verse starts)
I-I- - \flat VII-IV	B E A	<ul style="list-style-type: none"> • <i>Soul Finger</i> (Bar Kays, 1967) • <i>Traveler In Time</i> (Uriah Heep, 1972) • <i>You Ain't Seen Nothing Yet</i> (Bachman Turner, 1974)

All these mixolydian loops contain two consecutive steps of a rising fifth or falling fourth: from \flat VII to IV and from IV to I (Figure 68, p. 432). We know that we've arrived on the tonic at that point because that's where the process stops and a single two-step jump in the opposite direction, *flatwards* from I back to \flat VII, is needed for the sharpwards process to repeat. In fact it's the exact opposite of classical harmony's II→V→I directionality with its *anticlockwise* steps *flatwards* ending on I, where a single two-step jump *sharpwards* (from I to II) is required for the process to repeat. The tonic can therefore sometimes be identified as the culmination point of a process in one direction or the other round the key clock.

13. Except for *Hey Jude*, the Uriah Heep track and the two Z.Z. Top numbers, relevant extracts from all other tunes listed in Table 36 are included in the demonstration clip *Mixolydian Mini-Montage* (Tagg, 2009b). The two Kinks extracts are at 3:51 and 4:06 respectively in that montage. The relevant section from *Hey Jude* can be seen and heard, with Sir Paul McCartney leading the audience from the piano at the Queen's jubilee celebrations from Buckingham Palace in 2002, at 1:55 in a teaching clip I posted at [|youtube.com/watch?v=F8mloXf07-I090701](https://www.youtube.com/watch?v=F8mloXf07-I090701).

Fig. 68. Basic mixolydian and ionian directionality towards tonic in G

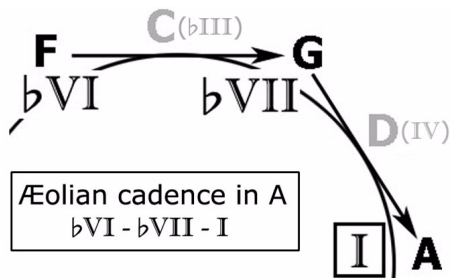


It's also worth noting that longer rising-fifth progressions can occur in rock music, for example the final $F \rightarrow C \rightarrow G \rightarrow A$ cadence in *20th Century Man* (Kinks, 1971)¹⁴ or the famous loop $C \rightarrow G \rightarrow D \rightarrow A \rightarrow E \rightarrow C$ ($\hookrightarrow bVI \rightarrow bIII \rightarrow bVII \rightarrow IV \rightarrow I \hookrightarrow$) in *Hey Joe* (Hendrix, 1967a). In any case, all the short mixolydian chord loops listed in Table 36 (p.431) establish the tonic as culmination of stepwise chordal movement sharpwards (clockwise) round the circle of fifths. That is certainly true for *Sweet Home Alabama* ($C \rightarrow G \rightarrow D = bVII \ IV \ I$) but how can it apply in reverse to *La Bamba's* ionian loop (still in G) which arrives on G as tonic not from A (II) or Am (ii) and D (V), as suggested in Figure 68, but from C (IV) and D (V)? For two reasons: [1] as we've already seen (pp. 407-408), since IV^6 and ii^7 contain the same notes, IV and ii often serve the same purpose as chords preceding V in standard flatwards sequences towards the tonic; [2] the single *scalar* step from IV to V can provide a viable alternative to the single circle-of-fifths step from ii to V in projecting tonal movement towards V and thence to I.

14. At 4:14 in the *Mixolydian Mini-Montage* (Tagg, 2009b). Yes, G is missing from the Kinks cadence: it 'should have been' $F \rightarrow C \rightarrow G \rightarrow D \rightarrow A$. Still, the sequence only contains clockwise steps round the key clock and A is definitely the I ending that harmonic movement $bVI \rightarrow bIII \rightarrow bVII \rightarrow [IV] \rightarrow I$.

Aeolian and phrygian

Fig. 69. *Aeolian directionality*



Chord progressions based on both scalar and circle-of-fifths motion combine to create considerable directionality in aeolian shuttles, loops and cadences. Remembering that the aeolian mode is alone with its major triads on the flat sixth and flat seventh degrees (**bVI**, **bVII**), the scalar aspect of aeolian chord sequences is obvious: **bVI**→**bVII**→**I/i** (**F-G-A/Am**), as in Figure 69.¹⁵ Like the mixolydian loops, the motion of aeolian harmony towards the tonic also proceeds sharpwards round the key clock, the main difference being that aeolian harmony uses *double* consecutive steps clockwise to progress from its flatward pole (**bVI**) to the tonic (Fig. 69).

At the same time, aeolian harmony's scalar aspect means that it is, if the tonic triad contains no Picardy third, eminently reversible in terms not of tonal centre but of the conjunct motion of the chords' root notes (**b6̂-b7̂-8̂-b7̂-b6̂-b7̂-8̂**, etc.). It is this type of reversibility that motivated the general categorisation of aeolian loops like $\subset i$ **bVII bVI bVII** \supset as aeolian *shuttles*: $i \leftrightarrow bVI$ via **bVII**, so to speak, as in *Sultans Of Swing* (Dire Straits, 1978: **Dm** via **C** to **Bb** and back via **C** to **Dm**; see pp.386-388). However, if the tonic triad is major the sequence is usually unidirectional and turns into the much used aeolian cadence with Picardy third, as in The Beatles' *P.S. I Love You* (1963a) and *Lady Madonna* (1968a).¹⁶

15. The tonic triad can be either major or minor. See page 276 for explanation of the permanent Picardy third in the harmony of minor modes.

Another aeolian device in English-language pop music is the *uninterrupted cadence* discussed earlier (pp. 260-261) and exemplified by *Um Um Um Um Um Um* (ex. 285, below). Its loop $\text{C} \text{I} \text{I} \text{ii} \text{vi} \text{C}$ — **A-A-Bm-F#m**— runs throughout both the Major Lance (1962) and Wayne Fontana (1964) versions of the song and, as also noted earlier, has **F#m** as its final harmonic resting place. Heard in the key of **F# minor** rather than its relative major (**A**), roman numerals for the same loop would be $\text{C} \flat\text{III} \text{-} \flat\text{III} \text{-} \text{iv} \text{-} \text{i}$ and its final cadence plagal aeolian — plagal because the final step is from **iv** (**Bm**) to **i** (**F#m**) and aeolian because that's the only 'church' mode featuring both $\flat\text{III}$ and **iv** but neither $\flat\text{II}$ nor $\flat\text{vii}$.¹⁷ However, uninterrupted cadences heard in the major key are more often of the **V-vi** type ($\flat\text{VII-i}$ if you hear **vi** as **i**) and which serve to harmonically complete the phrases quoted as examples 141(a), (b) and (c) on page 191. They also turn up in Beatles tunes like *Not A Second Time* (example 286).

Ex. 285. *Wayne Fontana and the Mindbenders: Um Um Um Um Um Um* (1964);
uninterrupted final plagal aeolian cadence

16. The connotations of aeolian shuttles are discussed on pages 386-388. An aeolian $\flat\text{VI}$ can be inserted as alternative to **IV** or **vi** if the tune ends on the tonic and there is a need to prolong the final chord for dramatic purposes, as in Brian May's rendering of *God Save The Queen* at the start of the 2002 jubilee celebrations at Buckingham Palace (see teaching clip posted at [|youtube.com/watch?v=F8mloXf07-I](https://www.youtube.com/watch?v=F8mloXf07-I) [090701]).
17. Recap: the aeolian mode is, except for the phrygian, alone in featuring a major triad on its third degree and a minor triad on its fourth. But the progression can't be phrygian because it contains neither $\flat\text{vii}$ nor $\flat\text{II}$, either of which is essential to phrygian harmony due to presence of flat two ($\flat 2$) in both chords, e.g. $\flat 4$ in both **Dm** ($\flat\text{vii}$) and **F** ($\flat\text{II}$) in phrygian **E**.

Ex. 286. *Beatles: Not A Second Time (1963c); uninterrupted aeolian cadence*

♩=124

^{bIII} I G ⁱ vi Em ^{iv} ii Am ^v iii Bm ^{bVII} D7 ⁱ vi Em

I'm wond'ring why. You hurt me then, you're back again. No, no, no. not a second time.

Times critic William Mann's qualification (1963) of this Beatles cadence as aeolian may have caused the young Lennon understandable mirth but it is quite accurate. It is also a cadence that may have caused a few eyebrows of to be raised in 1963, when there was little or no established alternative to the precepts of classical harmony in institutions of musical learning, but it should, half a century later after decades of mediantal folk rock and other types of rock tonality, cause no surprise at all. And yet it does: several of my pop music analysis seminar participants, all fed on a strict diet of V-I directionality, have found such cadences incomplete. Such surprise is all the more surprising given the continued existence today of tonality using other modes than the ionian and established a millennium before the rise to power of the ionian mode in euroclassical music. What can possibly be incomplete about completing a final 'Amen' on $b\hat{7}$ and $\hat{8}$ ($\hat{1}$) if you hear example 287 in D minor or on $\hat{5}$ and $\hat{6}$ if you hear it in F?¹⁸

Ex. 287. *Psalm tone 2 (end of final 'Gloria patri et filio'...)*

sic - ut erat in principio et nunc et sem - per et in sæculi sæculor-um. A - men.

The question just asked is rhetorical because it's hard to think of musical events more final than a final 'Amen'. The problem of course lies in the particular type of tonal monocentricity with which our music students are still brainwashed. Having two possible tonal poles, like Psalm tone 2, *Um Um Um Um Um* or *Not A Second Time*, need be no problem unless you uncritically accept the argorogations of conventional harmony teaching, or unless you've

18. To hear concrete evidence of this statement, please listen to the short audio montage at tagg.org/audio/Uninterrupteds.mp3 | [090717].

somehow managed to entirely miss the tonal idioms of rock, droned ‘folk’ harmonisations, bimodal popular music from Latin America, music by composers of the Tudor era, the *toni* of Roman psalmody, and so on and so forth.

Carlos Vega (1944:160), referring to *criollo* song, noted with customary acuity that ‘[t]here are no major tunes and minor tunes. There are just bimodal tunes’.¹⁹ The examples of uninterrupted cadences just presented are in Vega’s sense bimodal since they can be heard as first in a major mode, then in a minor mode (*Um Um Um* in A then F#m, *Not A Second Time* in G then Em, psalmody tone 2 in first F then in Dm). If you still insist on tonal monocentricity for such short musical statements, you’ll have to determine whether you’re hearing first I and then vi or first bIII then i. My advice is to convert to a more catholic²⁰ view that allows for the existence of both bimodal and monomodal notions of tonality. Although these considerations may not be directly relevant to the discussion of V-vi, a relatively rare change inside the chord loops of post-war English-language popular music, the notion of bimodality is essential to understanding the workings of another, extremely common type of aeolian loop: $\zeta i-iv-V\zeta$.

The $\zeta F\#m Bm C\#\zeta$ of example 289 (p. 438) contains an aeolian loop that can be understood as the harmonic minor equivalent of the ionian *La Bamba* pattern. With v altered to V, it basically runs $\zeta i-iv-V-V\zeta$ (e.g. Am Dm E; F#m Bm C#; Dm Gm A) and is widely used in Latin America. It’s certainly common in Cuban *son* and *bolero* styles, not least with artists like Compay Segundo and Carlos Puebla.²¹ This harmonic minor loop has a close relative in the $\zeta iv i V i\zeta$ patterns (e.g. Dm Am E Am) that also often occur in popular music from Iberia and Latin America. Apart from running throughout substantial sections of several traditional Cuban *son*

19. ‘No hay melodías en mayor y melodías en menor: hay simplemente melodías bimodales’. Please note that in Argentina *criollo* means not *créole* but white with *mestizo* elements.

20. *Catholic* in its original sense of general, all-embracing; etym. Gk. καθολικός, from κατὰ (≈ over, covering) and ὅλος/holos (= whole, entire, complete, all).

dally, is heard as I in tune's final four-bar phrase because F#m-E-D-C# is iv-bIII-bII-I in C# and because a falling [iv-] bIII-bII-I progression is a standard finality marker in phrygian harmony — the 'Andalusian' cadence.²⁶ After all, that's how the four-bar introductions to each verse of *¡Hasta siempre! (Comandante Che Guevara)* run (ex.197, p. 288) and, more importantly, that's how Puebla's performance of the entire piece ends, complete with *ritardando* and a break in the accompanying instrumental rhythm (bars 15-16).

Ex. 289. *Carlos Puebla: ¡Hasta siempre! (Che Guevara): aeolian and phrygian.*

As already noted, maestro flamenquista Sabicas also ends his *malaqueña* performances with the same cadence and it's certainly how Greek songwriter Stavros Kouyioumtzis chose to finish the tune quoted as example 199 on page 289. But the *malaqueña* and the Kouyioumtzis song are more unambiguously phrygian (actually Hijaz)²⁷ than Puebla's Guevara ode, whose twenty-bar full cycle (4

24. i.e. they don't always function as loops as defined in Chapter 13. However, 'El antechispa' and the third 'Motivo andino' do contain bVI-bIII-V-i as a loop while the tracks 'La Tinya', 'Huayra Muyhoj', 'El pajarillo' and 'Carnaval salt-eño' make prominent use of the same basic sequence but not as a loop. The huayno group Atacama (1971) use bVI-bIII-V-i as a loop in the cueca 'La tarjena', as well as in 'El burrito' (*trote*) and 'Puna' (*carnavalito*). It occurs in non-loop guise on most other tracks on the same album, notably in the lively cueca 'Caliche'. In any case, when asked to write a Chile solidarity song in 1974, I went without thinking for hemiola-style 6/8 metre and $\text{C}_b\text{VI-bIII-V-i} \rightarrow \text{C}_b$ tagg.org/audio/Kapellet/ChileSolidXtr1.mp3 [090717].
25. Due to the popularity of this Carlos Puebla song I have taken the liberty of calling $\text{C}_i\text{-iv-V} \rightarrow$ 'the Che Guevara loop'.
26. For 'Andalusian' or 'flamenco' cadence, see pp. 130-132.

bars instrumental plus 16 bars verse) consists of twelve bars in the aeolian-harmonic-minor mode (60% or the total duration) and eight bars (40%) of phrygian-mode descent. That descent takes us from what was *i* (F♯m) but now becomes *iv*, down through an Andalusian cadence via *b*III and *b*II to the phrygian tonic with its Picardy third (Hijaz).²⁸ And Puebla isn't alone in working bimodally between aeolian-harmonic-minor and phrygian/Hijaz: you only need to check traditional Cuban songs like *Decimas a un niño* and *Tonada de corte andaluz* to find the same bimodal pattern. The pattern is schematised in Figure 70, using the chord sequences of example 289 by way of illustration.²⁹

Fig. 70. *Aeolian (harmonic minor) in F♯ to phrygian (Hijaz) in C♯: bimodal harmony in Puebla's Comandante Che Guevara (ex. 289).*

27. For details about Hijaz and phrygian, see Chapter 3, esp. pp. 120-136.
28. The pivot point at which aeolian becomes definitely phrygian/Hijaz is as the F♯m chord just after the 'i=iv, V=I' in Figure 70, moves down to E (*b*III).
29. Relevant extracts can be heard at tagg.org/audio/FFabBkExx.htm [140730]. Laura Jordan (Montréal & Valparaíso) drew my attention to a piece of popular Chilean bimodality by Los Trukeros ('the truckers'). It's an essentially phrygian *cueca* whose eight-bar period runs | $\frac{3}{4}$ G|F|E|E|E|E|Am| with a clear V-i cadence in A. However, not only does the start of each period establish its phrygian harmony with the *b*III-*b*II-I descent G-F-E; at the end of the last verse, instead of finishing on Am, as in all the other verses, Los Trukeros go to F and end with a clearly underlined phrygian cadence: |F|G|F|E|.
- Another odd case of mistaken modal identity is the notion that Barber's *Adagio for Strings* (1938) is in B♭ minor when the piece's most common chord change, including the final cadence, is E♭m7→F, identified by Sapp (2005: 18) as *iv*7-V but in my ears an obvious phrygian *b*vii7→I, as shown in example 199 (p. 289). Not wishing to offend scholars of Renaissance music theory (see footnote 48, p. 113), I will not suggest that it may be possible to interpret the phrygian passages just mentioned as hypoaolian. Applied to example 289 and Figure 70, it would mean that the descent F♯m→E→D→C♯, though registrally bounded both melodically and harmonically by the final C♯, can be heard more as a variant of its aeolian precedent than as phrygian.

This is where the notion of hypomodes might have come in handy because it underlines the importance of the *finalis* (last note) in identifying the mode of a melody and there is no doubting the Puebla recording's melodic and harmonic finality on C#/C#. Moreover, finality in an Andalusian cadence (iv→bIII→bII→I) is tonally emphasised not by only one single leading note (as with $\hat{7}\hat{7}\hat{8}$ in V→I), nor by just two ($\Delta\hat{7}\hat{7}\hat{8}$ and $\hat{4}\hat{4}\hat{3}$ in V7→I), but by *three* leading notes ($b\hat{6}\hat{5}$, $\hat{4}\hat{3}$, $b\hat{2}\hat{1}$), as in the final bII→I between D and C# in example 70.³⁰ Given such conspicuous semitonal directionality it's hard to understand why many musicians feel compelled to tack an extra iv chord to the end of a final phrygian cadence, as if that addition could somehow more conclusively finalise what had already been brought to an final conclusion on phrygian I/ $\hat{1}$.³¹

However, as already noted in the discussion of potential keynote identifiers (p. 426, ff.), the *finalis* is not necessarily the tonic of what precedes it. In fact the potential value of hypomodes for popular music studies seems to lie in the fact that they link modes, whose tonal centres are a fourth or fifth apart, together in pairs: the ionian with the mixolydian, the mixolydian with the dorian and, as we've just seen, the aeolian with the phrygian (Table 37, p.441). Another way of understanding these bimodal pairings is to identify the two harmonic poles involved and to reverse the sequence between them. For instance, turning the C# phrygian sequence F#m E D C# in example 70 into [C#] D E F#m creates an immediately recognisable bVI-bVII-i aeolian cadence, while reversing the example's F# aeolian i-iv-V into $\mid \downarrow C\# \downarrow Bm \downarrow F\#m \mid$ produces the unequivocally phrygian effect I-bvii-iv. Similarly, reversing *La Bamba's* $\curvearrowright I-IV-V \curvearrowright$ in ionian G from G-C-D to D-C-G leads, with appropriate metric

30. *Leading note*: see esp. pp. 252-254; also fnt. 14 (p. 55) and pp. 72-74, 91-92.

31. It's this inability to hear a final phrygian/Hijaz cadence that gives rise to the false notion of the 'phrygian dominant' (see pp. 129, 132-133). I was surprised that The Gipsy Kings, on *Mosaïque* (1989), ended the tracks *Camino* and *Trista Pena* on an aeolian tonic. Still, one track on the album, *Viento de la arena*, seemed so Andalusian that it just had to have a bII→I ending. It did: Gm→F→Eb→D in D phrygian. See also 'Phrygian tertial harmony', pp. 288-289.

and anacrusic treatment, to the ζ I- \flat VII-IV \supset of *Sweet Home Alabama* in mixolydian D.

Nevertheless, as shown in the bottom row of Table 37, modes don't have to be 'hypo-linked' in pairs at the fifth or fourth. Euroclassical music theory's pairing of relative major and minor keys (p. 255, ff.) suggests that the ionian and aeolian also make a great modal couple. For example, switching between ionian and aeolian (where I \rightarrow vi ionian equals \flat III \rightarrow i aeolian) was mentioned in connection with the *Flûte indienne* example on page 437, whose \flat VI- \flat III-V-i in E (C-G-B7-Em) consists of an ionian IV-I (C G) followed by an aeolian V-i (B7-Em).³² Although that sequence can be only partially reversed (Em-B7-C-G, Em-B7-C-D-G, etc.), it's clear that the straight reversal of aeolian progressions like the [un]interrupted cadence formulae G-D-Em and G-C-D-Em (I-[IV]-V-vi or \flat III \rightarrow \flat VI- \flat VII-i) will turn them both into ionian cadences, one 'perfect' (vi-V-I / Em-D-G), the other plagal (vi-V-IV-I / Em-D-C-G).

Table 37. *Bimodal reversibility of progressions (examples only)*

<i>lydian</i> F G C = I II V [I]	\leftrightarrow	<i>ionian</i> C G F F = I V IV [I]
<i>ionian</i> C F G = I IV V [I]	\leftrightarrow	<i>mixolydian</i> G F C = I \flat VII IV [I]
<i>mixolydian</i> G C F Dm = I IV \flat VII v [I]	\leftrightarrow	<i>dorian</i> Dm F C G = i \flat III \flat VII IV [I]
<i>dorian</i> Dm F G Am = i \flat III IV v [I]	\leftrightarrow	<i>aeolian</i> Am G F Dm = i \flat VII \flat VI v [I]
<i>aeolian</i> Am Dm E = i iv V [I]* <i>aeolian</i> E F G Am = V \flat VI \flat VII i*	\leftrightarrow	<i>phrygian</i> E Dm Am = I \flat vii iv [I]* <i>phrygian</i> Am G F E = iv \flat III \flat II I*
<i>ionian</i> Am G C = vi V I	\leftrightarrow	<i>aeolian</i> C G Am = \flat III \flat VII i

* Phrygian i is normally altered to Hijaz I, so aeolian v is altered here to V.

It should in short be understood that the V-I cadence does not trump all others in non-classical tonality and that reversal, partial or total, of harmonic direction, as in the Carlos Puebla example, can establish two modes, each with its own tonic, inside the same

32. See footnote 19, p. 436.

short piece of music. With that simple awareness of bimodality, of harmonic reversibility, and of non-classical tertial harmony's relative independence from the unidirectional and tonally monocentric tyranny of V-I 'perfect' cadences, it's much easier to understand, accept and enjoy tunes like *Mila Moja* (ex. 271, p.381). No longer do we need to hear it ending with an 'imperfect cadence' on an irrelevant 'dominant' which we frustratingly and meaninglessly expect to be 'resolved' on to *the* tonic, in the presumptuous belief that a tune so short and simple cannot possibly have two tonal poles of equal value. Put in more colourful terms, if we Westerners no longer accuse Buddhists of disrespect because they wear white instead of black at funerals, surely we can also learn to hear, understand, respect and enjoy *music* that doesn't follow the same culturally specific rules as those *we've* been brought up to follow.

Mediantal loops

Table 38. Mediantal chord loops (selection)

Type	Tune (Artist, Year: chords [detail])
(a) I→III- -IV- rock- dorian loop	<ul style="list-style-type: none"> • AC/DC: <i>Shoot To Thrill</i> (1980: A C D ...) • Alice Cooper: <i>Under My Wheels</i> (1971: A C D ...) • Booker T and the MGs: <i>Green Onions</i> (1962: F A^b B^b) • J. J. Cale: <i>After Midnight</i> (1971: E G A E) • Canned Heat: <i>On The Road Again</i> (1968: E×6 G A) • Everly Brothers: <i>The Girl Sang The Blues</i> (1963: E G A E/A C D A) • Led Zeppelin: <i>Bron-yr-Aur Stomp</i> (1970: G B^b C) • Led Zeppelin: <i>Candy Store Rock</i> (1976: E A G short riff) • Mission: <i>Sacrilege</i> (1986: D×6 F G) • Slade: <i>Shape Of Things To Come</i> (1970: A C D F) • Talking Heads: <i>Take Me To The River</i> (1978: E E G A) • Tina Turner: <i>Steamy Windows</i> (1989: E×6 A G) • Johnny Winter: <i>Rock and Roll Hoochie Coo</i> (1972: E A G) • Stevie Wonder: <i>Higher Ground</i> (1973; E G A) • Z. Z. Top: <i>La Grange</i> (1973: E E G A)
(b) I-III→	<ul style="list-style-type: none"> • Pink Floyd: <i>Nobody Home</i> (1979: C C E F C) • Radiohead: <i>Creep</i> (1992: G B C Cm) • Otis Redding: <i>Sitting On The Dock Of The Bay</i> (1967; G B C A) • Will.i.am: <i>Yes We Can</i> (2008: G B Em C) (see Chapter 15)

Type	Tune (Artist, Year: chords [detail])
(c) I-iii-IV→ ionian mediantal narrative	<ul style="list-style-type: none"> • Abba: <i>Knowing Me, Knowing You</i> (1975c; A C#m D E: interludes) • The Band: <i>The Weight</i> (1968; A C#m D A) • Beach Boys: <i>I Can Hear Music</i> (1969: D F#m G A; verse starts) • David Bowie: <i>Rock And Roll Suicide</i> (1979; C Em F G Am) • David Bowie: <i>Ziggy Stardust</i> (1979; G Bm C C) • Dexy's Midnight Runners: <i>Come On, Eileen</i> (1989; C Em F C G) • Eric Clapton: <i>Easy Now</i> (1970b: D♭ Fm G♭ A♭) • Housemartins: <i>Happy Hour</i> (1986: B♭ Dm E♭ F; hook) • Manfred Mann: <i>Just Like A Woman</i> (Dylan) (1966b: G Bm C D) • Marmalade: <i>Make It Soon</i> (1969: G Bm C D: chorus) • Small Faces: <i>Itchycoo Park</i> (1967: A C#m G D)
(d) i-♭III-IV→ 'folk' dorian	<ul style="list-style-type: none"> • Dead or Alive: <i>You Spin Me Round</i> (1993: F#m A B) • Smiths: <i>What Difference Does It Make</i> (1984; Bm D E D: intro.) • Wishbone Ash: <i>The King Will Come</i> (1972; Dm F G: instrumentals) • Yardbirds: <i>For Your Love</i> (1965: Em G A Am)

I tried to explain earlier (p. 374) why I found so few I↔III shuttles in English-language popular song, given that harmonic departures from I to iii or III, or from either I or i to ♭III are not at all uncommon in the repertoire (Table 38). The reason was, I argued, that, however normal it might be to depart *from I to III*, the process is not reversible without introducing at least one intervening chord on the way back *from III to I*. If that observation has any validity, it can help explain why mediantal *shuttles* are so rare while mediantal *loops* are quite common.³³

Rock dorian and I-III

As mentioned earlier (pp.286-287), pop use of dorian harmony falls into two categories: those with and those without a permanent Picardy third on the tonic. Blues-based rock progressions starting I-♭III-IV, as in Alice Cooper's *Under My Wheels* (1971) or AC/DC's *Shoot To Thrill* (1980), belong to the first type, 'folk' ballads like *Greenback Dollar* (Kingston Trio, 1962: i-♭III-♭VI-♭III) or Paul Simon's *Scarborough Fair* (1968: i-♭VII-i-♭III-IV-i) to the second. Since none of these four progressions occur as loops, they don't appear in the 'rock dorian' (a) or "'folk' dorian' (d) sections

33. *Mediant* and *mediantal* are explained in the glossary (p. 494).

of Table 38 but other, loopable, progressions do. The label *rock dorian* for group (a) of mediantal loops is, I think, reasonably unproblematic because the thirteen songs listed are all clearly qualifiable as rock and because nine of those thirteen are in the rock-guitar-friendly key of E, another two in D or A and only two in flat-side keys.³⁴ As the number of recordings in that group suggests, rock dorian loops are quite common.

However, loops in group (b) that start with a I-III departure are very rare, nor do they seem to return to the tonic in exactly the same way. One reason for their scarcity as loops may be that departing to III in classical and jazz harmony involves passing through VI, II and V before returning to I, a total of five chords that are not easily crammed into the extended present of a two- or four-bar loop. Indeed, as noted in the discussion of ζ I-vi-ii/IV-V \supset (pp. 404-411), even the mere four chords of a vamp can sometimes extend over durations too long to function as loops. Another reason may be that the initial change I-III, which I call the ‘Charleston departure’ because that’s how *The Charleston* (Mack & Johnson, 1923) starts,³⁵ is too closely associated with old-style jazz hits for its use in soul- or rock-influenced music to be considered stylistically appropriate. In fact it’s interesting to note that although one of the tunes listed in group (b), *Yes We Can*, proceeds in ‘classical’ fashion from III to vi, the other three do not. More importantly, none of the four return to the tonic via anything resembling a ‘dominant’ but all pass through IV on their way back, a harmonic trait that suggests how sharpwards rather than flatwards directionality pervades many types of post-war English-language popular song. Be that as it may, since the I-III departure is discussed at some length in the final chapter about the *Yes We Can* chords, we’ll turn next to group (c) in Table 38 after dealing briefly with an as yet unexamined chord loop phenomenon: the *double shuttle*.

34. *Flat side*: see Glossary, p. 488. The link between dorian harmony of this type and blues-based styles — major triads on all of the la-pentatonic mode’s five notes — is explained on pages 279-284.

35. For further explanation of the Charleston departure, see Glossary (p. 481).

Double shuttle excursion

Apart from a short middle section, the whole of Otis Redding's *Sitting On The Dock Of The Bay* is based on the mediantal loop $\zeta G-B-C-A^{\flat}$ ($\zeta I-III-IV-II^{\flat}$). I hear the first change from G to B, four steps sharpward, mirrored in the third change from C to A, three steps sharpward. There is a to-and-fro not only inside each of these changes but also, at half speed, between G and C. The half-speed change from B to A creates a parallel scalar pattern that returns the loop to its initial G. *Dock Of The Bay* includes in other words two shuttles ($G \leftrightarrow B$ and $C \leftrightarrow A$) contained within a third ($G \leftrightarrow C$).³⁶

Double shuttles don't have to be mediantal: they can also be bimodal. The *Quiquenita* loop, for example, $\zeta F-C-E^7-Am^{\flat}$ (ex. 288, p. 437), shuttles between an ionian IV-I in C and an altered aeolian V-i in A minor. Both those changes are repeatable as individual shuttles in popular Andean styles or they can be contained within one loop as a double shuttle. I even hear Solomon Burke's *Everybody Needs Somebody* ($\zeta E-A-D-A^{\flat} = \zeta I-IV-bVII-IV^{\flat}$) as a mixolydian double shuttle, consisting of a I-IV in E and a I-V in D, all inside the larger shuttle $E \leftrightarrow D$.³⁷

Ionian mediantal 'narrative' and 'folk' dorian

There's no really clear stylistic common denominator for tunes listed in Table 38's group (c). Except for *The Weight*, possibly categorisable as 'folk rock', most of tunes are qualifiable as pop rather than rock, including the Eric Clapton and Bowie recordings. Given that either II or vii must be present for tertial harmony to qualify as lydian, and that neither mixolydian, nor dorian, nor aeolian, nor phrygian modes feature the three tertial triads I, iii and IV, the

36. The whole loop consists of shuttles within a shuttle and can be abbreviated $\zeta G [G-B]-C[C-A]^{\flat}$ or $[G-B] \leftrightarrow [C-A]$.

37. The Rolling Stones and Wilson Pickett versions are in E. The Blues Brothers film rendering is in C#, while Burke himself declaimed it in G from his throne when his *Everybody Needs Somebody* was n° 2 on BBC's *Top of the Pops* in 2003. I also hear the Fine Young Cannibals' dorian (and mediantal) $\zeta D-F-Am-G^{\flat}$ ($\zeta I-bIII-v-IV^{\flat}$) in *Good Thing* (1987) as a double shuttle.

group (c) loops must be given the modal label ionian.³⁸ That would explain the lack of rock citations but it says very little about the I-iii-IV loop's connotations. Nevertheless, the lyrics to all tunes in the group except *I Hear Music* (a blissful love song) involve some degree of worry, concern or reflection: the Abba song about the hardships of breaking up, *The Weight* about everyone else thrusting their problems on to you, *Rock and Roll Suicide* about a psychologically unstable friend or lover, and so on.³⁹ As we shall see in Chapter 15 (pp. 470-471), I-iii, continuing usually to either IV or vi, is quite a common departure in popular song, more often with acoustic than electric accompaniment, in which singable ionian 'folk-type' melodies give space to lyrical narrative. It is for this reason that I've dubbed the group (c) loops 'ionian mediantal narrative'. However, since chordal loops, not departures, are the subject of this chapter, the 'narrative' label may be a symptom of excessive interpretative license on my part, especially given that the sample of songs listed in the group is so small. The problem with group (d), "'folk" dorian', is similar.

A few pages back I warned that 'folk' ballads like *Greenback Dollar* (Kingston Trio, 1962) and Paul Simon's *Scarborough Fair* (1968) would not be listed in Table 38 because their i-bIII... changes do not occur in loops. Nor do the any of the numerous i-bIIIIs heard in harmonisations of rural popular music in the dorian or aeolian mode from the British Isles.⁴⁰ Nor, even, does *The House Of The Ris-*

38. *Itchycoo Park* is the exception in Table 38 since its loop contains bVII (G in A).

39. To continue: [1] *Ziggy Stardust* is a very odd rock and roll fantasy character who 'took it all too far but... could play guitar'; [2] Dexy's *Eileen* is an object of desire but the scene is set among old people with references to olden times; [3] Eric Clapton begs 'her' not to leave because it will hurt; [4] In *Happy Hour* the Housemartins ask 'is this a good place to be? Don't believe it!', the answer because 'they all open their wallets and they all close their minds'; [5] the Dylan lyrics performed by Manfred Mann talk of the woman who 'takes' and 'aches' but 'who breaks just like a little girl'; [6] Marmalade (UK MoR group) is missing 'her' and ask 'her' to please write and to come home soon; [7] even The Small Faces who go to the park to get high have to cry because 'it's all too beautiful'.

ing Sun (Animals, 1964) because its well-known Am-C-D-F (i-bIII-IV-bVI) works not as a loop but as an anaphora leading in both eight-bar periods to a different cadence pattern: [1] Am-C-E-E (bars 5-8); [2] Am-E-Am-Am (bars 13-16). The simple truth is that ‘folk’ tunes don’t tend to be harmonisable as loops whereas pop and rock, as well as some Latin American styles, use them frequently. And that’s why the tunes listed in Table 38’s category (d) are such a motley bunch: one glam-synth-pop offering (Dead or Alive), one disturbingly existential piece of kitchen-sink pop (The Smiths), one slightly Tolkienesque prog rock recording (Wishbone Ash) and one attempt by The Yardbirds to produce something to sound as successful and as similar as possible to *House Of The Rising Sun*. In short, it’s clearly impossible to draw any conclusions about the connotations or stylistic home ground of *loops* in group (d), even though ‘folk dorian’ may not be an altogether unreasonable name to give chord *sequences* starting i-bIII-IV.

Mediants may be midway between a tonic and its fifth but, as already suggested, by moving from I to a major-key-specific III or iii, that tertial triad on the mediant becomes a *mediator*, an intermediary step between the tonic and another harmony elsewhere. Indeed, the considerable irreversibility of I-III means, as argued earlier, that mediantal *shuttles* are probably too few to be counted. Moreover, I’ve racked my brain and other musical resources to find a single III or iii acting as incoming chord in a three- or four-chord loop: outgoing (departure), yes, as in Table 38, sections (b) and (c); medial, yes, as in the verses of *She Loves You* (Beatles, 1963b: $\hookrightarrow G-Em-Bm-D^{\flat} = \hookrightarrow I-vi-iii-V^{\flat}$); but incoming (arrival), no, not a single one.⁴¹

This all means that mediantal harmony cannot be satisfactorily dealt with in a book whose harmonic scope has for practical reasons had to be limited to shuttles, loops and one-chord changes.

40. See, for example, *The Lowlands Of Holland* and *The Blacksmith* (Steeleye Span, 1970).

medial can be extended and lead straight back into the tonic chord, as in *La Bamba*: I (tonic), IV (outgoing), V (medial), V (incoming). If the process is reversed to V-IV-I-I, and if that initial V is preceded by a clear anacrusis, the V becomes I (see §§2-3) and the descending, rather than ascending, loop becomes more prominent. It then functions as I- \flat VII-IV-IV. That's the harmonic difference between *La Bamba* (ionian) and *Sweet Home Alabama* (mixolydian). This simply observable mechanism can be called BIMODAL REVERSIBILITY.

[5] MIXOLYDIAN LOOPS run \curvearrowright I- \flat VII-IV-IV \curvearrowleft (e.g. *Sweet Home Alabama*), or \curvearrowleft I- \flat VII-IV-I \curvearrowright (e.g. *Hey Jude*), or \curvearrowright \flat VII-IV-I-I \curvearrowleft (e.g. *Gimme All Your Lovin'*), or \curvearrowleft I-I- \flat VII-IV \curvearrowright (e.g. *Soul Finger*). They are extremely common in English-language rock and pop music.

[6] While IONIAN loops run *anticlockwise* (flatward, in falling fifths) round the circle of fifths, MIXOLYDIAN LOOPS run *clockwise* (sharpward, in rising fifths), moving one key-clock hour at a time (e.g. C-G-D as \flat VII-IV-I in D).

[7] V (major triad on $\hat{5}$) is a possible alternative to v but it is *not intrinsic* to the MIXOLYDIAN, DORIAN, AEOLIAN or PHRYGIAN modes. *Notions of 'dominant', 'subdominant', etc.* can therefore be *extremely problematic* when discussing such tonality.

[8] AEOLIAN LOOPS, like their mixolydian cousins, also progress *clockwise* (sharpward) round the circle of fifths, but they move *two key-clock hours* at a time between their constituent chords, e.g. F-G-Am as \flat VI- \flat VII-i (or I, if a Picardy third is present) in A minor. This sequence, one variant of the AEOLIAN CADENCE, is *highly directional* because root notes progress in whole-tone steps upwards (in pitch) and sharpwards, in increments of two hours each round the key clock, towards the tonic.

[9] AEOLIAN CADENCES can be BIMODAL when phrases, periods, or entire songs establish a clear major tonic chord (I) but END on the common triad of the RELATIVE MINOR (vi). Such cadences, called 'interrupted' in conventional music theory, are demonstrably *final* and *uninterrupted* in certain types of popular music, so that what was vi is heard as i, implying that what was I has become \flat III.

This sort of tonality, found in popular music from both the Andes and the anglophone world, was qualified as BIMODAL by Argentinian musicologist Carlos Vega.

[10] If ionian sequences can become mixolydian through BIMODAL REVERSIBILITY, a similar process applies to AEOLIAN AND PHRYGIAN HARMONY. For example, the ‘minor *La Bamba*’ or ‘*Che Guevara*’ ASCENT from *i* via *iv* up to *V* (e.g. *Am Dm E*) can be *pitch reversed* into a DESCENT from *i* down to *V* via *bVII* and *bVI*. If that *V* is *finalis*, as is often the case in Latin American popular music, it is easily heard as PHRYGIAN/HIJAZ I, thanks to the fact that *i-bVII-bVI-V — Am G F E* in A, for example— is exactly the same progression as the familiar Andlusian cadence in E— *Am G F E*, i.e. *iv-bIII-bII-I*.

[11] Some chord loops can be thought of as DOUBLE SHUTTLES, for example the popular HUAYNO loop *bVI-bIII-V-i* which, in C major/A minor, runs *F C E Am* and consists of a *IV-I* in C and a *V-i* in A minor. Such loops are clearly bimodal.

[12] There are two common types of DORIAN CHORD LOOP —‘ROCK DORIAN’ and ‘FOLK DORIAN’— in anglophone popular music produced since the 1960s. ROCK DORIAN sequences tend to feature *I-bIII-IV...* (or *I⁵-bIII⁵-IV⁵...*), while FOLK DORIAN progressions use the minor tonic triad (*i*) along with *bIII*, *IV*, *bVII* etc.

[13] MEDIANTAL LOOPS are normally IONIAN. They are often characterised by the departure *I→iii* which usually leads to *IV* or *vi*. In anglophone pop and rock music, mediantal loops are often linked to lyrics of a narrative character.

[14] Loops starting *I→III*, relatively *uncommon* in the anglophone pop/rock repertoire, are discussed at length in Chapter 15.

15. *The Yes We Can chords*

This chapter started as a simple reply to a simple question sent by Carol Vernallis to the IASPM¹ online list in January 2009. She asked list subscribers: ‘does anyone have thoughts on the chord progression of *Yes We Can* or on the music as well as the pop songs it might be echoing?’ Good question! By ‘*Yes We Can*’ Carol was referring to the Obama presidential campaign video of the same name (Adams 2008).² IASPM list responses to Carol’s question can be summarised in the following six points.

[1] Mike Daley and Allan Moore reflected on the GOING SOMEWHERE ELSE potential of the B major chord and on the relative COMFORT AND SECURITY aspect of the plagal turnaround change (the chord loop ends on IV to be followed by I as the first chord in the loop). [2] Allan Moore suggested similar progressions in recordings like ELO’s *Jungle* (1973), Jimmy Ruffin’s *What Becomes Of The Brokenhearted* (1966) and Neil Young’s *Southern Man* (1970).³ [3] Barbara Bradby referred to Otis Redding’s *Dock Of The Bay* (1968), an intertextual similarity noted by several of my Montréal students. Bradby also observed melodic similarity between the phrase sung at 0:31 in *Yes We Can* and the initial ‘When the night’ phrase of Ben E King’s *Stand By Me* (1961). [4] Matthew Bannister pointed to similarities with Bob Marley and The Wailers’ *No Woman No Cry* (1974), another connection noted by my students, and to possible anthemic connotations in *Another Girl Another Planet* by The Only Ones (1978). [5] Danilo Orozco suggested similarities to harmonic matrices of Spanish origin in Latin America. [6] David Uskovich referred to Journey’s *Don’t Stop Believing* (1981).⁴

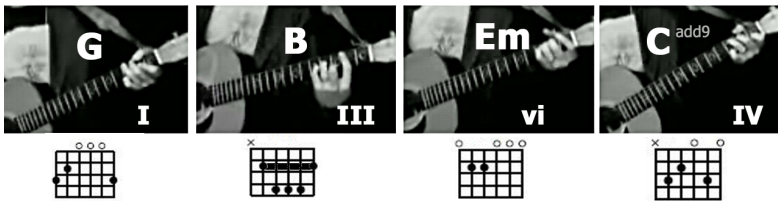
1. International Association for the Study of Popular Music, see iaspm.net |.
2. The video, which was never officially sanctioned by the Obama campaign, went online in February 2008 and had by the following July been watched over 21 million times. The video, by ‘will.i.am’ (stage name for William Adams), was directed by Jesse (son of Bob) Dylan. Source: [\[en.wikipedia.org/wiki/Will.i.am\]](http://en.wikipedia.org/wiki/Will.i.am) [090315].
3. *Southern Man*’s chord loop $\text{C Am}^{\flat} / \text{C Em Em}^{\flat} \text{ C Am}^{\flat}$ will not be discussed in this chapter. It is really a variant of the aeolian shuttle (p.386, ff.).
4. My own comments were sent to the IASPM list on 19 January 2009.

This list of intertextual associations adds up to a fair set of IOCM,[†] such as can be generated in a good popular music analysis seminar where all references are relevant, but some more so than others.

The four chords

Before starting on any musematic discussion, I need to be clear in structural terms about the harmonic progression we're dealing with. Like my IASPM colleagues, I heard a four-chord loop covering four bars of 4/4, as shown in Figure 71: ♪G|B|Em|C♪ or, in relative terms, ♪I|III|vi|IV♪.⁵

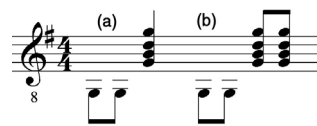
Fig. 71. *The four Yes We Can chords captured from YouTube (Adams 2008)*



The sequence runs at ♩=100, lasts 9.6 seconds, and is heard at the rate of one chord per 4-bar for the first 2:28 of the song's total duration of 4:26.6. All four chords in the *Yes We Can* sequence are rhythmically articulated

in ways similar to that shown in Figure 72 for the tonic (I, G). The root of each chord is usually sounded as two quavers, the second slightly muffled, followed by the chord's remaining notes as either one (♪) or two strummed downstrokes (♪♪) covering three or four of the guitar's upper strings: for example, the top g in the chords just shown is not always audible. The sequence is played on an acoustic guitar with six metal (not nylon) strings. Apart from the B

Fig. 72. *Generic Yes We Can guitar accomp. pattern*



5. I'm assuming the keynote of the piece to be G (I) even though the matrix and the entire recording actually end on C (IV).
6. 4×4 bars = 16 beats; $60'' \div 100$ bpm = 0.6 beats per second; $16 \times 0.6 = 9.6''$. The loop is in other words equivalent to two 4.6'' bouts of the extended present, with the caesura between B and Em. For loop durations, see pp. 409-411.

chord (III) in bar 2, taken as an A barré on the second fret, all chords are played in first position. With the exception of the C chord, whose higher c (first fret on the B string) is replaced by a d (third fret) to create a ‘droned’ C^{add9} effect, no chord contains notes extraneous to the common (tertial) triad in question.⁷

In 2009 neither I, nor my students, nor IASPM list members were able to think of another piece of music answering exactly to *all* the traits just described. Our intertextual references – IOCM – all exhibited some common structural traits but, as we shall see, some comparison pieces were more apposite than others.

Late renaissance and Andean bimodality

Orozco’s reference to harmonic matrices like that of *Guardame las vacas* (Table 39) is interesting because it highlights, as argued below, bimodal traits also found in Andean (*Huayno*) chord matrices.

Table 39. *Guardame las vacas chord matrix in Em/G*⁸

bars		1	2	3	4	5	6	7	8	
chords	↺	G	D	Em	B	G	D	Em - B	Em	↻
in Em	↺	♭III	♭VII	i	V	♭III	♭VII	i - v	i	↻
in G	↺	<i>I</i>	<i>V</i>	<i>vi</i>	<i>III</i>	<i>I</i>	<i>V</i>	<i>vi - III</i>	<i>vi</i>	↻

If the *finalis*, E minor (Em), in the eight-bar matrix of Table 39 is regarded as the main tonic (i), its relative chord functions will be those of the middle line just shown. If, on the other hand, you hear the matrix in G major (the key of the *initialis*), the italicised line may be more apt. Or will it? Not really, because the matrix ends with a V→i (B→Em) perfect cadence. Besides, with *Guardame las vacas*, E minor is preceded or followed only by major triads – D

7. The C chord at the start of the Dixie Chicks’ *Not Ready To Make Nice* (2006) uses the same add9 effect. See [youtube.com/watch?v=IHH8bfPhusM](https://www.youtube.com/watch?v=IHH8bfPhusM) [090206].
 8. Transposed to Em/G from Segovia’s 1979 Am/C performance at the White House (Narvaez, 1538). Numerous renditions of *Guardame las vacas* (1538) are available on YouTube. For Vega on bimodality, see p.437, ff. There are of course also similarities between the *Guardame las vacas* and the *La folia* matrix, whose ubiquity throughout Europe in the late Renaissance is probably comparable to that of the twelve-bar blues in mid-twentieth-century USA.

(\flat VII) or B (V), both of which are, in terms of European classical harmony, dominantal to E, especially the V (B, altered to include the key's sharp seventh, $d\sharp$, instead of the key-specific triads Bm and D with their $d\flat$). Moreover, there is at the turnaround point no cadential relationship, neither plagal nor dominantal, between the *finalis* (Em) and the following *initialis* (C). The same goes for many *Huayno*-style chord loops, for example $\hookrightarrow C-G-B-Em \curvearrowright$ in Los Calchakis' version of *Quiquenita* (*La flûte indienne*, 1966; ex.288, p. 437). I'm unable to hear the totality of that progression in G ($\hookrightarrow IV-I-III-vi \curvearrowright$): it always sounds to me more like $\hookrightarrow \flat VI-\flat III-V-i \curvearrowright$, i.e. as principally, though not exclusively, in E minor.⁹

The long and short of this brief excursion into Renaissance and Andean harmonic matrices is that, unlike the *Yes We Can* chords, they: [1] end with clear dominantal cadences in the minor key (V \rightarrow i); [2] start on a triad of the relative major or relative subdominant major; [3] are often twice as long. Considering other parameters of musical expression associated with the *Yes We Can* chords, it is worth remembering that: [4] the Andean/late Renaissance IOCM's tempo is more often than not noticeably faster than the *Yes We Can* tempo ($\text{♩}=100$); [5] that their metre is not usually 4/4 but either 3/4 or 6/8 or a hemiola mixture of the two; [6] that any strumming of stringed chordal instruments is much quicker; [7] that the timbre of a steel-stringed acoustic guitar is unusual, while that of a gut or nylon-stringed guitar is less unusual (a 'Spanish' guitar sound), and that of a more trebly, jangly sound of a bandola, tiple or charango much

9. In fact, when producing a Chile solidarity song for our band (*Solidaritetssång för Chiles folk*, Röda Kapellet, 1974), I opted, without at the time reflecting why, for the matrix $\hookrightarrow \flat VI-\flat III-V-i \curvearrowright$ ($\hookrightarrow F-C-E-Am \curvearrowright$). All musicians involved in its performance, plus Pedro van der Lee (Argentinian/Swedish musicologist and huayno performer), assumed the piece to be in A minor, not C major. The other tunes mentioned by Orozco exhibit similar traits. *Polo Margariteño* is also bimodal — G D (B) Em Am B Em — and *Rio Manzanares* runs, a bit like *Quiquenita* — G C E Am ($\flat VII-\flat III-V-i$; see p.437, ff.). The Elida Nuñez version of *Uruchaqina* referred to by Orozco is melodically bimodal but the performance contains no real harmonic change. There is a kind of permanent flux between Am and C. See footnote 8, p. 453 for Vega's comment on bimodality.

more common. It's for these reasons that while it may be interesting to speculate in a possible general commonality of divergence from the tertial sonic image of classical harmony and the sort of NINETEENTH-CENTURY URBAN EUROPEANNESS that goes with it, I don't think those structural similarities are striking enough to make a case for further interobjective comparison in this direction. In what follows, I will therefore try to restrict comparisons to material that more closely resembles the *Yes We Can* chords on as many counts as possible.

Four chords, four changes

Investigating the meaning of a chord sequence means trying to find intertextual instances of all its chord changes. Tautologous though this may sound, it's worth remembering that, unless the matrix starts and ends on the same chord, a three-chord sequence contains three changes, a four-chord sequence four and so on. This truism *has* to be stated because it's easy to overlook one of the chord loop's most important tonal points: the *turnaround change* from the last chord back to the first one. In *Yes We Can* it's the plagal (IV→I) move from C to G. In fact, it's that change, rather than the III→vi (B→Em as V→I in E minor) in the middle of the loop, that owns any real finality potential.¹⁰

As observed earlier,¹¹ plagal movement sharpwards round the circle of fifths is arguably as common in styles like gospel, country, folk rock and blues-based rock as it is uncommon in the flatwards circle-of-fifths world of Corelli trio sonatas, Wagner operas, Victorian parlour song, jazz standards and so on.¹² *Yes We Can's* plagal turnaround change may in fact be one reason why we are more

10. The B to E minor change may be more dominantly directional (as a sort of interrupted cadence) but it occurs so clearly midway through the sequence that it has more the character of temporary tonal progression than of finality.

11. See pp. 412-416; also pp. 262 and 375.

12. For example, Hendrix's *Hey Joe*: ♭CGDAE♭ (plagal) compared to *Sweet Georgia Brown*: (B)EADG (dominant). Some types of post-bop jazz establish other tonal rules but almost all other jazz relies on V→I, not IV→I, directionality.

likely to hear the tune as popular and North American rather than classical and European. We may even hear some AMEN, gospel or major pentatonic folk song references in that sort of change, but it's difficult to be more connotatively precise about IV→I as a chord change in those styles because it is such an idiomatically common harmonic step. It can also be the preferred harmonic finality marker for many songs in the broad range of English-language popular song traditions just mentioned.¹³ So let's investigate the first change in the sequence instead. It is after all less usual than IV→I.

First impressions: from zero to I

It is said that you never get a second chance to make a first impression. That adage certainly applies to harmonic departures because the second chord in any sequence is the one creating that first impression of harmonic change or direction. However, before discussing *Yes We Can's* I→III departure, it's worth considering the *very first* change, the change taking listeners from musical nothing to something, i.e. from before and outside the music to the first sound of the song. The first-position acoustic guitar G chord in *Yes We Can* is important because its sound creates the song's *truly first impression*.

Initial first-position G chords, strummed or simply picked on a metal six-string acoustic guitar at an easy or moderate tempo, occur at the start of the following Bob Dylan recordings: *The Times They Are A-Changing* (1964a), *It Ain't Me Babe* (1964b), *John Wesley Harding* (1968), *George Jackson* (1971) and *Knockin' On Heaven's Door* (1973).¹⁴ They also occur as first-chord tonics in a fair number of Woody Guthrie songs, for example in *Oklahoma Hills* (1937), *Grand*

13. The Dixie Chicks end both *Not Ready To Make Nice* and *Taking The Long Way Round* (2006) V-IV[-I], a more idiomatic sequence than V-I. The ionian mode and V-I are not uncommon in some forms of Country music but their absence is also far from unusual. This tonal trait may derive from the relative preponderance, in traditional Afro- and British-American musics, of modes without leading note (4⁷).

Coulee Dam (1945) and *Two Good Men* (1946?).¹⁵ The first sound in *Yes We Can* is in other words virtually identical to the first sound in several popular songs by well-known US singer-songwriters associated with progressive politics and social change. Whether such allusions were intended or not in *Yes We Can*, the new US president's election promises of change and social justice could certainly have been linked to much less appropriate figures of the nation's popular music traditions than Woody Guthrie or Bob Dylan. Just imagine the sights, sounds and words of artists like Alice Cooper, Charlie Daniels or Barry White as musical accompaniment for an election platform of responsible government!¹⁶ Obviously, there's much more resonance, both lyrically and sonically, between Obama's 'It's time for a change' and *The Times They Are A-Changing*.

Another significant point about *Yes We Can*'s initial G chord, with its four open strings and doubled third (b \sharp on the A and B strings), is that, like the other two first-position chords in the loop (Em and C), it's easy for any party or camp-fire amateur guitarist to produce. G, Em and C are all chords about which millions of North Americans (and Europeans) could say 'Yes we can'. Nor does *Yes We Can*'s second chord, B, taken as a standard A major shape with a barré on the second fret, present any major technical challenge to the semi-skilled amateur.¹⁷ But it's not so much that poietic accessibility in itself that is semiotically important as its meaning to the non-guitar-playing majority. Thanks to the fact that those easy

14. G major is clearly one of Dylan's preferred keys. The following songs are also all in G, though articulated differently than in *The Times They Are A-Changing* or *Yes We Can*: *I Pity The Poor Immigrant* (in 3/4, 1968), *I Shall Be Released* (swung), *Lay, Lady, Lay* (with organ and steel guitar, 1969), *Don't Think Twice* (systematic picking, 1963) and *It's All Over Now Baby Blue* (G played using capo, 1965).

15. A first-position tonic G also marks the start of other Guthrie songs like *All You Fascists Are Bound To Lose* (1944a) and *Hey Lolly Lolly* (1944b). Even Guthrie's ever popular *This Land Is Your Land* (1944c), sung at Obama's inauguration festivities, starts on an open G even though the tune is in D with its chord loop G|D|A|D \ominus .

16. For example, *School's Out* (Cooper 1972), *A Few More Rednecks* (Daniels 1989), *I Can't Get Enough Of Your Love Babe* (White 1974).

chords are within the capabilities of a significant guitar playing minority, the majority have through repeated exposure to such chords played in a simple way on guitar, learnt to associate them with the words, ideas and situations they accompany.

Harmonic departure: from I to III

Spanish-language bull's-eyes

Let me start with an apparent bull's-eye of IOCM, not just for I→III but for the entire *Yes We Can* chord sequence I→III-vi-IV[-I]. It's a central element in five Spanish-language pop/rock recordings brought to my attention by Diego García Peinazo. The five songs were *Grita* (Jarabe de Palo, 1996:), *Flaca* (Calamaro, 1997), *Somos mar y arena* (Maná, 2006), *El secreto de las tortugas* (abbr. *Las tortugas*; Maldita Nerea, 2007) and *Tú, sólo tú* (Calle París, 2009).¹⁸ In addition to those bull's-eyes of harmonic IOCM, three of the five songs were in the same key as *Yes We Can* (G) and four of them had a similar tempo.¹⁹ So, what else did they have in common and, if anything, were those similarities also found in *Yes We Can*?

On closer inspection it became clear that there were, compared to *Yes We Can* and with the exception of *Grita* (see below), significant differences of surface rate, harmonic rhythm, periodicity/diataxis, instrumentation and vocal delivery. The most important general

17. The easiest guitar chords to produce in first position are E, Em, G, A, Am, C, D and Dm. Nor is the barré B a major technical problem. I cannot bring to mind a single popular 'protest' song in the English-language folk or folk rock traditions that isn't in E (major or minor), G, A or A minor, C, D (or D minor). G and D major are among the most common keys for such music.

18. Jarabe de Palo: *grupo español de rock latino/pop latino*; Andres Calamaro: *cantante, compositor... argentino*; Maldita Nerea: *grupo musical español de pop (Murcia)*; Maná: *grupo mexicano de rock en español*; Calle París: *dúo musical... de Madrid (Wikipedia español, 140804 & 150802)*.

19. *Las tortugas* is not in G, but even that recording runs the I-III-vi-IV sequence in closely pitched keys: F#-A#-D#m-B then Ab-C-Fm-Db. *Tú, sólo tú* is pitched in A but played with a capo on the second fret, i.e. with the chord shapes of G. It also has a more acoustic 'live' sound than the other Spanish recordings. However, it moves at a very brisk $J=142$, compared to *Yes We Can* and *Grita* ($J=100$), *Mar y arena* ($J=98$), *Flaca* ($J=110$) and *Las tortugas* ($J=86$).

difference was that all four recordings were by pop/rock bands and featured much livelier accompanimental patterns, electrically amplified instruments and full drumkit, all absent in *Yes We Can*.²⁰ Another significant difference, obvious to the point of tautology, is that the vocals were in Spanish. As noted in Chapter 5 under ‘Dynamics and mode of articulation’:

‘The... character of a melody [is] also determined by... which language and what kind of accent and diction are used —just imagine Big Mama Thornton’s *Hound Dog* with Italian lyrics’... (§4, p. 187).

The simple fact is that singing in Spanish sounds different to singing in English. More precisely, many anglophone listeners, due to their unfamiliarity with lyrics in languages other than English, are liable to hear ‘foreign’ or ‘Hispanic’ connotations if the singing is in Spanish. But things may not be that simple with *Grita*, because of its striking similarity to *Yes We Can* on six different musical-structural counts: [1] it’s also in G; [2] it also runs at ♩=100; [3] it also changes chord once every $\frac{4}{4}$ bar; [4] its harmonic departure is also I→III; [5] its first seven chords are also |G |B7 | Em C | G |B7 |Em; [6] —and most significantly— its first verse starts with simple strumming in first position on a metal-string acoustic guitar (see pp. 456-458). Another interesting similarity with *Yes We Can* is the OVERCOMING HARDSHIP narrative of the lyrics, a topic addressed later in this chapter (pp. 472-478).²¹ So, what about English-language I→III IOCM?

English-language misses

I→III (G to B in *Yes We Can*) is neither the most usual nor unusual harmonic departure in English-language popular music: I→IV,

20. Also: [1] *Mar y arena* changed chords twice as fast as *Yes We Can* (|G B|Em C|, not |G |B |Em |C |) and featured a happy cumbia-style groove; [2] *Flaca, Grita* and *Las tortugas* contained ‘B’ sections with different chords; [3] I→III is very common in *Tú, sólo tú* but ♯|I|III|vi|IV|♯ occurs only as intro and ritornello.

21. The singer sees his loved one unhappy. He says: ‘If I run away, grab me by the collar. If I don’t listen, shout! If I give you my hand, take my whole arm. And if you want more still, just yell!’ (*Si salgo corriendo, tu me agarras por el cuello y si no te eschucho, grita! Te tiendo la mano, tu agarras todo el brazo. Y si quieres más, grita!*).

I→V, I→vi, probably also I→ii and I→iii are probably all more common than I→III which, perhaps, may even be less usual than I→II, I→♭III or I→♭VII, but probably more common than I→♭VI (see Moore, 1992).²²

Whatever the case, the number of pieces, or sections of pieces, that have come to my attention from an at least partially relevant repertoire and which start I→III is not very impressive. The eleven songs are, in alphabetical order: [1] *Abilene* (George Hamilton IV 1963); [2] *Bell-Bottom Blues* (Eric Clapton 1970a); [3] *The Charleston* (Golden Gate Orchestra 1925); [4] *Crazy* (Patsy Cline 1961); [5] *Creep* (Radiohead 1992); [6] *Jungle* (Electric Light Orchestra 1979); [7] *Nobody Knows You When You're Down And Out* (Bessie Smith 1929);²³ [8] *Sitting On The Dock Of The Bay* (Otis Redding 1968); [9] *Who's Sorry Now* (Connie Francis, 1957); [10] *Woman Is The Nigger Of The World* (John Lennon 1975); [11] *A World Without Love* (Peter & Gordon 1964).²⁴ Without initially knowing why, I found that only three of those eleven pieces sounded enough like *Yes We Can* to be used as convincing IOCM for the chord sequence under analysis. Since that sort of 'intuition' is not much use in itself, I'll try to identify and explain *differences* in parameters of musical expression operative in connection with the I→III departure shared by both *Yes We Can* and the eleven comparison pieces. That process of elimination ought to sharpen focus on the most salient features of the *Yes We Can* chord loop.

First of all there are two strictly harmonic features that seem to make a semiotic difference to the character of the I→III departure:

22. Jacopo Conti informed me by email (2012-06-11) that the guitar introduction to *Under The Bridge* (Red Hot Chili Peppers 1992) is a I↔III shuttle (D↔F#).

23. See also versions by Clapton (1971, 1992) and Winwood (1967).

24. It would have been nice to include the I-III-IV in the IV-V-I-III-IV-V-I at the end of John Lennon's *Imagine* (1971): [IV] 'You may [V] say I'm a [I] dreamer [III - IV] but I'm [V] not the only [I] one; [IV] I hope some [V] day you'll [I] join us [III - IV] and the [V] world will [I] live as one'. Regrettably, I had to exclude that reference because its III is neither a first departure, nor followed by vi.

bass lines and continuations. Bass notes in the *Yes We Can* loop are all on the root of the triad whereas Clapton's *Bell-Bottom Blues* (1970a) uses a conjunct descending bass line so that the chords actually run I-III₅-vi-[I₅]-IV (the bass notes in G would be g f# e [d] c, the chords G-D_{##}-E_m-G_d-C), a progression containing two chords in inversion. Now, thanks to famous precedents like *Whiter Shade Of Pale* and Bach's *Air* (I-V₃-vi-I; see ex. 186, p. 269), chord inversions in conjunct bass lines are quite a reliable pop sign of 'classicalness'. It's a device which takes the tune in question out of the popular participation sphere of things like *Yes We Can*'s strum-along guitar and root-position triads, and which, by using both conjunct bass lines and inverted triads, gentrifies the piece. That's just one reason for treating an obvious structural similarity like a shared I→III departure with caution. The second harmonic reason for doubting the relevance of some I→III comparison material is *continuation*. For example, only two of the eleven IOCM pieces (*Dock Of The Bay* and *Creep*) feature I→III *at the start of a four-chord loop*. Many of the others go on to include chains of flatward circle-of-fifths changes incompatible with the overall tonal idiom of *Yes We Can*. Moreover, parameters like tempo, accompaniment pattern and instrumentation can also make some I→III changes sound quite unlike *Yes We Can*'s.

The Charleston (♩=96) and *Who's Sorry Now* (♩=88), for example, although performed at a tempo similar to *Yes We Can* (♩=100), are very different in terms of instrumentation, rhythmisation and harmonic continuation. The trad jazz band orchestration of *The Charleston*, not to mention its lo-fi 78 rpm recording sound, and, in *Who's Sorry Now*, the half-electrified 1950s pop combo, complete with constant piano triplets reminiscent of Stan Freberg's 'clink-clink-clink jazz',²⁵ are both a far cry from *Yes We Can*'s simply played acoustic guitar notes and triads. The continuation of I-III in *The Charleston* and *Who's Sorry Now*? into a string of dominant

25. See Freberg's parody (1956) of The Platters' *The Great Pretender* (1955).

falling fifths (I-III-VI-II-V-I in the brass-and-sax-friendly keys of B♭ and E♭) are other obvious indications of musical styles and connotations on a distant planet from those of *Yes We Can*. The two Country numbers (*Abilene* and *Crazy*) can also be eliminated from the IOCM for similar reasons of incompatibility of instrumentation, accompanimental pattern and continuation.²⁶

When You're Down and Out (♩.=90, 12/8), *Sitting on the Dock of the Bay* (♩.=103, 4/4) and *Creep* (♩.=92, 4/4), on the other hand, all go at a similar pace to *Yes We Can* and are all part of the international, Anglo-American, post-1955 pop repertoire. Although none of these three songs feature simply strummed acoustic guitar they do bear more resemblance to *Yes We Can* than do *The Charleston*, *Who's Sorry Now?*, *Abilene* and *Crazy*. Nevertheless, there are several important points of structural difference between the three tunes under discussion (*Down And Out*; *Dock Of The Bay*; *Creep*) and, on the other hand, *Yes We Can*. For example, all recordings of *Down and Out*, whether at ♩.=90, as by Bessie Smith (1929) or Eric Clapton (1992), or, much slower, as by Clapton (1970) or Stevie Winwood (1966), all feature a slow blues shuffle accompaniment (♩♩ even if notated ♩♩) using either cornet, piano and tuba accompaniment (Bessie Smith), or electric guitar, Hammond organ and drumkit (Clapton and Winwood), while the *Yes We Can* chords are stated in straight quavers (♩♩♩♩).²⁷ Moreover, the initial I-III of *Down and Out* continues into a falling fifths progression including VI (E or E7), not vi (Em), then ii (Am) and, after passing through chords like #iv^{dim} (C#dim), to II7 (A7), V7 (D7) and I (G). Neither diminished chords nor extended flatward key-clock movement is to be heard anywhere in *Yes We Can*. It is conceived in a different timbral, metric, rhythmic and tonal idiom altogether.

26. The chords of *Abilene* (brisk swing 4/4) run G|B|C|G|A|D|G C|G [D]|, those of *Crazy* G|B7|Em|Em|D |D7 |G |G [D]| (medium slow ballad). *Who's Sorry Now* goes E♭|G7|C7|F7|B♭7|E♭ etc. in E♭ at ♩.=88 and *The Charleston* B♭|D7|G7|C7|F7|B♭ at ♩.=96 in B♭.

27. For example, the Clapton (1972) recording runs at ♩.=56.

Sitting On The Dock Of The Bay (Redding, 1968), on the other hand, runs in straight quavers (♩♩♩♩) and presents the four chords of its sequence at virtually the same rate (♩=104) as *Yes We Can*: I-III-IV-II (G-B-C-A). This *Dock of the Bay* sequence is itself remarkable because it contains not a single plagal (IV→I) or dominantal (V→I) change. Only the 19-second bridge passage (1:24-1:43) of the song's total duration of 2:45 includes a very brief ♭VII→V→I progression (1:37-1:43) to lead back into the virtually directionless sequence of chords occupying all but a few seconds of the recording. The *Dock of the Bay* sequence is also interesting because it consists of two pairs of chords: [1] I and IV (G and C) are next to each other in the circle of fifths; [2] III and II (B and A) are both well on the sharp side of I and IV and they are only separated from each other by VI (E) in the circle of fifths. But the four chords aren't played in that sort of order — try G-C-A-B or G-B-A-C[-G] instead — because I and III (G→B) belong together in one phrase to which Redding sings 'Sitting on the dock of the bay', after which he *breathes*. After that halfway cesura he sings 'Watching the tide roll in' to the second half of the chord loop (its IV→II part, C→A), a sort of I-VI in C echoing the same sort of change as the I-III in the first half, G→B). There would be nothing remarkable about that division of the sequence if the two tertial triads in each half were closer to each other on the key clock, but that is not so. The second triad of each pair is situated not just one or two quintal steps away from the first but at a distance of four (I-III/G-B) and three (IV-II/C-A) steps respectively. This is what makes the *Dock of the Bay* sequence sound more like two similar chord shuttles played one after the other — constant to-and-fro movement — rather than like a chord loop such as I-vi-IV-V or I-V-♭VII-IV. This to-and-fro movement in *Dock of the Bay*, enhanced by the addition of seaside sound effects like waves washing in and out, is of course absent in *Yes We Can* whose chord sequence contains two very clear neighbour-key chord changes: B→Em (III→vi, dominantal) and C→G (IV→I, plagal), giving it an definite *loop rather than double shuttle* character.²⁸

None of this means *Sitting On The Dock Of The Bay* is inadmissible as IOCM for the *Yes We Can* chords. Even though the Redding recording's shuttle character, its harmonic continuation and its orchestration differ clearly from *Yes We Can*, its bridge repeats a short melodic phrase type (at 'Nothing's gonna change', 'I can't do what ten people tell me to do', etc., 1:24-1:37) that recurs in similar guise at 0:31 in *Yes We Can* ('It was sung by immigrants').²⁹ As Barbara Bradby pointed out in her IASPM-list posting, that phrase in *Yes We Can* is quite close to Ben E King's initial 'When the night' declamation in *Stand By Me* (1961). I would add that those melodic phrases in each of the three songs can be characterised as proclamatory, sincere and passionate. I would also characterise the phrase type as typical of male soul lead vocalists from the 1960s (e.g. Otis Redding, Wilson Pickett, Marvin Gaye) and associable with the Civil Rights struggle and with the sort of social processes that Haralambos documents in *Right On! From Blues to Soul in Black America* (1974). If there is any truth in this interpretation of the phrase at 0:31 in *Yes We Can*, the connection with the I-III in *Dock Of The Bay* becomes one of circular reinforcement by cross-association. That chain of connotations contains the following sort of indexical links: [1] a melodic phrase in *Yes We Can* resembles melodic archetypes

28. Please note the distinction between chord *shuttle* (what Björnberg (1989) calls *pendulum*) and chord *loop*. Shuttles go *to and fro*; loops go *round*. You need at least three different points to create a two-dimensional *shape*. The more angles in a two-dimensional shape, the more it will resemble a circle. A baseball diamond has four angles ('bases') as, indeed, does a *rounders* pitch. You can even take a walk *round* a completely rectangular block. You just *can't* go round in a straight line between two points, at least not in Newtonian physics. It's the same with chord sequences.

Incidentally, *Sitting On The Dock Of The Bay* also contains the obligatory sea-shore gull sounds in addition to the washing in and out of waves. Dylan Kell-Kirkman (Montréal M.A. student and bass player) told me that the G-B part of the Redding loop makes him think of breathing in, going up, and the C-A part of breathing out, going down, like a sigh of resignation. For more on the double shuttle, see p. 445.

29. The context of that phrase in the lyrics of *Yes We Can* is as follows. "'Yes we can". It was sung by immigrants as they struck out from distant shores and pioneers who pushed westward against an unforgiving wilderness. "Yes we can"."

sung by male vocalists in late 1960s soul music; [2] that music at that time was often associated with a more hopeful and assertive image among African Americans in the USA; [3] one of the most famous of those male vocalists was Otis Redding, one of whose biggest hits was *Sitting On The Dock Of The Bay*; [4] that song also contains the same I→III departure as *Yes We Can*, the Obama campaign song; [5] Obama's presidency marks another major positive change in US civil rights.

ELO's *Jungle* (1979), mentioned by Allan Moore, runs at the same tempo as *Yes We Can* ($\text{♩}=100$). Its first three relative chord changes are identical to those of the Obama song: D F# Bm G (*Jungle*, in D) = I-III-vi-IV = G- B-Em-C (*Yes We Can*, in G). 'Bingo!', you might think and, indeed, you seem to have a 100% match. But there are problems because this perfect match doesn't *sound* much like the *Yes We Can* chords. There are at least four reasons for the mismatch. [1] the ELO chords aren't used as a loop; [2] the ELO sequence continues into a repeated V→I cadence (A→D); [3] the four chords cover two, not four, bars and are spaced | ♩. ♩. ♩ | with only one note for each chord, not a full bar of ♩ ♩ ♩ ♩, or ♩ ♩ ♩ ♩, or any other similar pattern for every chord; [4] the instrumentation is totally different, filled with 'world-musicky' tropical instruments associable, at least in an urban, non-tropical, 'first world' music culture, with the song title (*Jungle*). I hear instruments resembling agogo, güiro, cowbell, wood block, maracas, plus — outside that field (or jungle) of connotation— a very audible thick string pad. All these differences make me reluctant to use the ELO chords, despite their unmistakable similarity in terms of conventional harmonic theory, to those of the Obama song, as IOCM for *Yes We Can*.

Similar reasoning, but for different reasons of difference, can be applied to John Lennon's *Woman Is The Nigger Of The World* (1975). Apart from the fact that the Lennon sequence is not a loop but part of an eight-bar chorus sequence (I-III-vi-I-IV-iv-I-I in E), the Lennon song's beat is swung (12/8 feel), the overall volume effect much louder, the vocal register higher and timbre harsher than *Yes*

We Can's. There are also radical instrumentation differences between the two, the Lennon piece including a percussive piano track, electric guitar and bass, up-front wailing sax and loud drum-kit events. None of these features are anywhere to be heard in the Obama song.

Only two pieces of I→III IOCM are left to discuss, the Lennon/McCartney song *A World Without Love* (Peter & Gordon, 1964) and Radiohead's *Creep* (1992).

From 1964 until recently I laboured under the misapprehension that the first four bars of each verse in *A World Without Love* were set to the chords E | G# | C#m | A (I-III-vi-IV), i.e. to the same relative progression as the *Yes We Can* chord loop. The sequence in fact runs E | G# | C#m | C#m. I had even played it wrongly many times without any listener or fellow musician ever complaining, probably because the only melody note in the fourth bar, a C#, sounds just as good over A as C#m. The point of this anecdote is to suggest once again that an exact harmonic match is not necessarily the most important factor determining whether a chord sequence in one piece sounds like a chord sequence in another. In this context it means that the most important harmonic likeness between *A World Without Love* and *Yes We Can* is the fact that they both share the common departure changes I→III→vi. Now, the Lennon-McCartney sequence sounds different to *Yes We Can*'s mainly because: [1] the former runs at a faster pace (♩=134); [2] the accompaniment is dominated by McCartney's heavy ♩. ♪. ♪. ♪ 'one-five oom-pa' bass figures;³⁰ [3] its I-III-vi is not repeated as a loop. That said, the I-III-vi-vi in *World Without Love* does occur regularly at the start of each verse in straight 4/4, with one chord per bar and with simply strummed acoustic guitar accompaniment, however low in the mix it may be. Moreover, *World Without Love*'s harmonic contin-

30. By 'one-five oom-pa' I mean that for each chord the bass part plays first the root of the overlying chord, then the fifth in relation to that note, e.g. e then b for E, g# then d# for G#, then c# and g# for C#m and so on. The order may sometimes be reversed on V, e.g. f# then b for a B chord (V) in the key of E (I).

uation I - iv - I - I - ii - V - I (E |Am |E |E |F#m |B |E) stays within the *Yes We Can* idiom of common triads in root position, while the simple pop instrumentation has much more in common with *Yes We Can* than do ELO's *Jungle*, Lennon's *Woman Is The Nigger*, not to mention *The Charleston*, Bessie Smith's *When You're Down And Out*, etc.³¹ Like *Dock Of The Bay*, the I→III in *World Without Love* does share some structural traits in common with *Yes We Can*. However, unlike *Dock Of The Bay*, the Peter & Gordon recording contains no elements of soul or gospel to point listeners toward any kind of civil rights connotations. If that is so, what sort of paramusical message does *World Without Love* contain?

[v.1, v.3] Please lock me away and don't allow the day here inside where I hide with my loneliness. I don't care what they say I won't stay in a world without love. [v.2] Birds sing out of tune and rain clouds hide the moon. I'm OK, here I'll stay with my loneliness. I don't care what they say I won't stay in a world without love. [bridge] Here I wait and in a while I will see my lover smile. She may come, I know not when. When she does I lose, so baby until then.

At first sight the musings of this lovesick young man have nothing in common with the struggle, hope and commonality found in the key phrases from Obama speeches that occur throughout *Yes We Can*. That said, you only need scratch a little below the surface of the Lennon/McCartney lyrics to find one parallel: an emotional process, expressed in simple terms, from relative despair and darkness to relative hope and light, all with some sense of determination. That's not unlike what happened in *Grita* (p. 458, ff.).

The sequence in Radiohead's *Creep* runs $\hookrightarrow I \rightarrow III \rightarrow IV \rightarrow iv \curvearrowright (G | B | C$

31. The chord sequence for the twelve bars of the verse in *A World Without Love* runs $\hookrightarrow E | G\# | C\#m | C\#m | E | Am | E | E | F\#m | B | E | \uparrow 1 C B \text{ turnaround } \curvearrowright 2 E$ into middle 8 or at end |. The song's instrumentation consists of: [1] McCartney's heavy dotted one-five oom-pas; [2] simple and discrete drumkit work; [3] simple guitar strumming; [4] a Vox organ playing virtually inaudible pads plus the tune of the verse by way of an instrumental break. The vocal line is sung simply and melodically by young males.

[Cm) as a loop at ♩=92 throughout the entire four-minute song. Each loop covers four bars, with one chord per bar rhythmicised in straight crotchets or quavers in the drumkit and guitar parts (♩♩♩♩ in hi-hat), and with simple ♩. ♩♩♩ ♩ patterns on bass. Taken as accompanimental motion *in toto*, these parts are even more similar than those of *Dock of the Bay* to the simple ♩♩ ♩ patterns of *Yes We Can's* acoustic guitar. They are certainly much closer to the Obama song than are ELO's ♩. ♩♩, or *Down and Out's* or *Woman Is The Nigger's* swung ♩ ♩♩ ♩| or *Who's Sorry Now's* ♩♩♩ ♩♩♩|; and, as just stated, they are, like *Yes We Can*, looped over the same period of four 4/4 bars. Moreover, the Radiohead loop's turnaround change from C minor back to G (iv→I) is plagal like *Yes We Can's* and the accompanimental patterns are all paragons of a no-frills pop/rock style (simple, standard drum and hi-hat patterns, simple guitar arpeggiations, virtually no reverb or other noticeable signal treatment etc.). *Creep's* BARE ESSENTIALS aesthetic tallies well with the NO-FRILLS character of the *Yes We Can* guitar sound.

Now, none of the similarities just mentioned can deny the fact that there are also clear differences between *Creep* and *Yes We Can*, the most obvious being Radiohead's use of alienated, angry rock yelling and powerfully overdriven guitar during 39% of the recording.³² Another important difference is harmonic: while *Yes We Can* repeats I-III-vi-IV, the *Creep* loop runs I-III-IV-iv. This means that although the turnaround change in both songs is plagal, the IV chord (major) in *Creep* occurs one bar earlier in the place of *Yes We Can's* E minor (vi) and that the latter's C major triad (IV) is in the same loop position as Radiohead's C minor (iv). This C minor chord, with its e♭ enharmonically contrasted in terms of voice-leading directionality against the B major chord's ascending d♯, gives the *Creep* loop a unique character that may contribute to the song's sense of dramatic despondency:³³ the d♯ goes up and out to e♭ but the e♭ repeatedly reverses that movement back down and

32. 39% of the song's 4:00 = 1:34. The yelling and overdrive occurs at two points in the recording: 1:02-1:24 (22") and 2:06-3:08 (1:02").

inwards to $d\sharp$ and G. *Yes We Can* contains no descending chromaticism.³⁴


Nevertheless, despite these clear differences between *Yes We Can* and *Creep*, the two songs definitely share more in common than just the initial I-III change in a four-chord, four-bar harmonic loop in G. The question is how a song of angry self-deprecation about being a ‘creep’ and a ‘weirdo’ can share anything musically significant with one affirming the hopeful collective belief of *Yes We Can*. One reason may be contained in the sort of notion, hinted at by other IASPMites, that the I-III change has a strong GOING SOMEWHERE ELSE value, the kind of UP AND OUT found in the ascending I-III- vi (bass) and $\hat{5}\text{-}\sharp\hat{5}\text{-}\hat{6}$ (inner part $d\text{-}d\sharp\text{-}e$) movement already mentioned, and that this UP AND OUT GOING SOMEWHERE ELSE is just as essential to expressing confidence in overcoming difficulties – ‘yes we can’ – as it is to bawling out disgust at whatever it is that brings about self-disgust. The *Yes We Can* chord loop does not have the chromatic slide back down of *Creep*, nor is its I-III change followed by *Dock Of The Bay*’s second directionally equivocal IV- ii (C-A) change: it has none of the to-and-fro effect of that song’s double shuttle. In fact, to gain more insight into the meaning of the *Yes We Can* chords we will need to examine comparison material featuring the other two chords in the Obama song’s chord loop: vi and IV. To be more precise, we need to find IOCM featuring four-chord loops running $\text{I} - x - \text{vi} - \text{IV}$, where x is an alternative to III as an intermediary chord between I and vi . The most common x chord will

33. *Creep* is certainly unique to the extent that I know of know other song based on the looped sequence I-III-IV- iv . I base the DRAMATIC DESPONDENCY interpretation not so much on the song’s lyrics, though they contain plenty of drama and despondency, as on the sort of descriptions music analysis students provide, common responses being ALIENATED, ANGRY, HOPELESS, DESPAIR, CYNICAL, etc. Try replacing the Cm chord with D or Dm or F. If you register *more* or the same amount of DESPONDENCY with those alternatives to C minor, we may have different musical backgrounds and I apologise for generalising on the basis of my own and on my students’ experience.

34. There’s a similar sort of power-chord ‘enharmonic chromaticism’ in Nirvana’s *Lithium* (1991; ex. 30, p. 109; $F\sharp5\text{-}B5\text{-}G5\text{-}B\flat5$).

of course be *iii* or *V* (in G major: *Bm* or *D*).

I - *iii* - *vi* - IV

The first four chords of *What Becomes of the Brokenhearted?* (Ruffin 1966) run *B_b Dm Gm E_b* or, in relative terms, *I*→*iii*→*vi*→*IV*, i.e. exactly what we are looking for. Unfortunately, this is not the IOCM jackpot we wanted because the chord sequence actually goes *B_b_f Dm_f Gm E_b_g* (*I*₅→*iii*₃→*vi*→*IV*₃): three out of the four triads are inverted. True, there is no conjunct bass line spanning a fourth or more in this sequence as in *A Whiter Shade Of Pale* (Procol Harum 1967a) or Clapton's *Bell-Bottom Blues* (Derek and the Dominoes, 1970), but the triad inversions and the pedal-point character of the Ruffin song's bass part make for a partly static harmonic effect that is not released into substantial movement until later in the piece. Moreover, like Clapton's *Bell-Bottom Blues* (1970a), *Brokenhearted*'s initial sequence is not looped and its continuation contains harmonies incompatible with the consistent straight root-position chords of *Yes We Can*.³⁵ On top of all that, the Motown tune is orchestrated quite differently, with piano, strings, backing vocals and percussion all in clear evidence. Perhaps the  in 4/4 at $\text{♩}=100$ and the male vocal timbre similar to that heard at 0:31 in the Obama piece can counteract some of the differences just mentioned. If so, eventual interobjective links between *Yes We Can* and *Brokenhearted* are unlikely to be related to audible harmonic resemblance.

Harmonic incipits running *I*→*iii* in root position are not uncommon in other types of anglophone pop music. For example *Puff The Magic Dragon* (Peter, Paul & Mary, 1963), *The Weight* (The Band 1968) and *Daniel And The Sacred Harp* (1970) all start *I*-*iii*-*IV*, while *Sukiyaki* (Sakomoto 1963)³⁶ and *Hasta Mañana* (Abba, 1974b) both

35. Apart from other triad inversions, *Brokenhearted* contains an *E*_{dim} and features bold switches to C major/A minor and back to *B_b* major/G minor.

36. In fact *Sukiyaki* starts with a plagal shuttle (*I*-*IV*-*I* in G) before harmonically departing into its *I*-*iii*-*vi*-*V* at bar 5 in the verse.

feature a I-iii-vi progression. Later changes from I via iii to IV or vi also occur in *Hangman* (Peter, Paul and Mary, 1965) as well as at prominent places in Bob Dylan's *It's All Over Now Baby Blue* (1965: I-iii-IV) and *I Pity The Poor Immigrant* (1968: I-iii-vi).³⁷ Except for *Sukiyaki* and *Hasta Mañana*, these songs all belong to the US folk and folk rock repertoires. Moreover, *Hangman*, the two Band tracks and the two Dylan tunes feature lyrics diverging from the normal pop fare of love, fun and teenage angst or antics. Only one of the songs, *The Weight*, uses a repeated chord loop, I-iii-IV-I at $\text{♩} = 124$ in regular 4/4 with one chord change per bar. Like *Hangman*, the lyrics of *The Weight* tell a story that contrasts negative and positive experiences, while the I-iii-vi of Dylan's *Immigrant* accompanies the twist towards justice at the end of each verse.³⁸ On the other hand, although all these songs feature simply strummed guitar over I-iii-IV or I-iii-vi progressions with all chords in root position, just one of them (*The Weight*) features a chord loop, and only then as a three- rather than four-chord unit. Moreover, none of the songs run I-iii-vi-IV which would have been the closest variant to *Yes We Can's* I-III-vi-IV. In short, even if there may be some similarities and some possible references to US-American folk and folk rock songs with serious lyrics, we really need to look elsewhere for more convincing harmonic resemblance.

I - V - vi - IV

The second of our two alternatives to III in linking I to vi (between **G** and **Em** in *Yes We Can*) is **V** (D in G). The simple harmonic

37. The iii-IV change in *Baby Blue* occurs towards the end of each verse (at 'Look out, the saints are coming through' in verse 1). The iii-vi recurs just before the final rallentando at the end of each verse of *I Pity The Poor Immigrant* (with Joan Baez from *A Hard Rain* concert, 1976).

38. The storytelling lyrics of *Hangman*, *The Weight* and Dylan's *Immigrant* also occur in another well-known song using a I-iii[-vi] departure in andante tempo: The Beatles' *A Day In The Life* (1967b: 'I read the news today', 'A crowd of people stood and stared', etc.). Without conscious awareness of this connection, I also used I-iii[-IV] for similar narrative purposes in *Revolutionens vagga* (Röda Kapellet, 1974).

point here is that V is the relative major of iii, the key-specific triad on the root of the major scale's third degree, and that, like ii or III, V contains two notes adjacent to the target triad of vi.³⁹ This second-chord alternative changes the loop from I-III-vi-IV (*Yes We Can*) to I-V-vi-IV. Now, that sequence sounds quite similar to the start of Pachelbel's Canon — \hookrightarrow I V |vi iii |IV I |IV V \hookrightarrow —, a harmonic pattern that seems to have acquired widespread currency in English-language pop music.⁴⁰ That chord progression constitutes the entire harmonic basis of Liverpool band The Farm's *All Together Now* (1990) with its tempo of $\text{♩}=108$ in 4/4 and its rate of harmonic change at one chord per bar.⁴¹ More specifically, the I-V-vi-IV sequence, also in 4/4 and with one chord per bar, can be heard at the start of each verse in The Beatles' *Let It Be* (1970: $\text{♩}=76$ |C |G |Am |F) as well as, with two chords per bar, in the harmonic loop \hookrightarrow I V₃|vi IV \hookrightarrow under most of Bob Marley's *No Woman No Cry* (1974: $\text{♩}=78$ \hookrightarrow C G₃ | Am F \hookrightarrow). The same I-V-vi-IV also accompanies the chorus hook line of John Denver's *Country Roads* (1971: $\text{♩}=80$ |D |A |Bm |G) and of The Dixie Chicks' *Not Ready To Make Nice* (2006: $\text{♩}=86$ \hookrightarrow G |D |Em |C \hookrightarrow).⁴² Of course, the same chord sequence can occur in boisterous rock tunes like *We're Not Going To Take It* (Twisted Sister, 1984: $\text{♩}=144$) or *Another Girl Another Planet* (The Only Ones, 1978: $\text{♩}=156$) but the tempo, rhythmisation, instrumentation and vocal delivery of these two tunes is a far cry from the relatively stately pace and relatively ordered, NO FRILLS aesthetic of the *Yes We Can* chords.⁴³ Indeed, the Obama song's chord sequence uses a tempo

39. The d and f# of the D chord in G major are both adjacent to the root of E minor.

40. For a hilarious pot-pourri of Pachelbel's Canon tunes, see Paravonian (2006).

41. It is worth noting that the song appears on the 'album *Spartacus*, and is said to link ... the band's favourite themes [of] socialism, brotherhood and football' (Wikipedia article 'All Together Now' [090317]).

42. Returning for the last time to the repertoire of the left-wing political rock band of which I was a member from 1972 to 1976, it may be worth adding that we used a I-V-vi-IV loop in G (G D Em C) to accompany the main storytelling sections of the ten-minute montage *Lärling* (Röda Kapellet, 1976). The lyrics are about rough deals for industrial apprentices and the determination to change things for the better.

and a rate of delivery that has much more in common with the extremely popular songs mentioned earlier. But that is not the whole story. *All Together Now*, *Let It Be*, *No Woman No Cry*, *Country Roads* and *Not Ready To Make Nice* all have an anthemic character. They are eminently singable and all feature lyrics expressing hope or encouragement in the face of trouble and hardship. True, the lyrics of *Country Roads* mention only briefly a slight regret — ‘I get a feeling I should have been home yesterday’ — but all the others clearly present, as Table 40 (p. 474) shows, experiences of *both* hardship and hope.

The *Yes We Can* video’s ‘Yes we can’ encapsulates the kind of sentiments listed in the HOPE, ENCOURAGEMENT, DETERMINATION column of Table 40 (p. 474). The Obama song’s TROUBLES column would be filled with quotes like ‘slaves and abolitionists’, ‘immigrants [braving the] unforgiving wilderness’, ‘workers [who had to] organise’, ‘women [who had to] reach for the ballots’, ‘obstacles [that] stand in our way’, the ‘chorus of cynics who grow louder and more dissonant’, and ‘the little girl who goes to a crumbling school in Dillon’. Apart from the all-encompassing slogan ‘Yes we can’, column *three* would contain ‘they blazed a trail’, ‘King who took us to the mountain-top and pointed the way to the Promised Land’, ‘opportunity and prosperity’, ‘heal this nation’, ‘repair this world’, ‘there has never been anything false about hope’, etc.

43. Journey’s *Don’t Stop Believing* (1981) runs at a more moderate pace ($\downarrow=122$) than the Twisted Sister and Only Ones tracks, and repeats the I-V-vi-IV loop during the verses. Still, with its four-square amplified piano crotchets and pseudo-classical semiquaver arpeggios on electric guitar, it is instrumentally very different to *Yes We Can*. Even so, the song has some anthemic value with lyrics telling someone not to give up (‘Don’t stop believing’). Another anthemic rock I-V-vi-IV example in G is Lynyrd Skynyrd’s *Free Bird* (1973, $\downarrow=120$). However, that sequence is part of an 8-bar $\zeta I|V|vi|vi \rightarrow IV|IV|V|V \supset$ period with IV in bar 5 as the start of a *second* phrase. More apposite, quite anthemic and politically progressive is iconic Swedish prog band Hoola Bandoola’s *Man måste veta vad man önskar sig* (1972 $\zeta D|A|Bm|G \supset$; $\downarrow=120$). Still, like the Röda Kapellet references (footnotes 9, 38, 42), even if stylistically rooted in the Anglo-American pop/rock tradition, Hoola’s lyrics are in Swedish, not English.

Although only one of the four songs mentioned in Table 40 (*Grita*) features simply strummed six-string guitar accompaniment, they all, like *Yes We Can*, move at a steady pace with one chord per 4/4 bar in four-bar periods. Three of them (*No Woman No Cry*, *Not Ready To Make Nice*, *Grita*) repeat the I-x-vi-IV sequence at least twice in succession, while the lyrics of all songs, plus *Yes We Can*, juxtapose experiences of hardship and of hope.

Table 40. Key OVERCOMING HARDSHIP phrases in the lyrics of pop tunes featuring the I-x-vi-IV chord progression of *Yes We Can*.

<i>Tune</i>	<i>Troubles</i>	<i>Hope, encouragement, determination</i>
The Farm: <i>All Together Now</i> (1990)	...‘forefathers died, lost in millions for a country’s pride’; ‘All those tears shed in vain; Nothing learnt and nothing gained’.	...‘they stopped fighting and they were one’; ‘hope remains’; ‘Stop the slaughter, let’s go home’; ...‘joined together’; ‘All together now’.
Beatles: <i>Let It Be</i> (1970)	‘times of trouble’; ‘the broken hearted people’; ‘the night is cloudy’.	‘Mother Mary comes to me’; ‘words of wisdom’; ‘There will be an answer’; ‘Still a chance’; ‘A light that shines on me’.
Bob Marley: <i>No Woman No Cry</i> (1974/5)	‘The government yard in Trenchtown’; ‘observing the hypocrites’; ‘good friends we’ve lost’.	‘No woman no cry’; ‘dry your tears’; ‘I’ll share with you’; ‘got to push on through’.
Dixie Chicks: <i>Not Ready To Make Nice</i> (2006)	‘I’ve paid a price and I’ll keep paying’; ‘too late to make it right’; ‘sad, sad story’; ‘my life will be over’.	‘I’m through with doubt’; ‘I’m not ready to back down’; [I won’t] ‘do what... you think I should’.
El Jarabe de palo: <i>Grita</i> (1996)	‘nada bueno’; ‘tienes miedo’; ‘el hielo que recubre tu silencio’.*	‘Te tiendo la mano; tu agarras todo el brazo; si quieres más, grita!’*

* ‘Nothing good; you’re afraid; the ice of your silence’ v. ‘I offer you my hand and you take my whole arm; if you need more, just yell!’

IOCM in combination

It would have been surprising if there had been one single piece of other music containing exactly the same chord loop as *Yes We Can*’s

played at a similar tempo in a similar way on the same sort of instrument[s] in the same key and same metre. On the other hand, the IOCM presented above shows how a range of different elements found mainly in relevant English-language pop music traditions are incorporated in the *Yes We Can* chord sequence. It should also be clear that those specific structural elements are often associated in those traditions with notions, attitudes, emotions, activities, events and processes that together build a reasonably coherent connotative semantic field. The most important structural traits and their main paramusical fields of connotation (abbr. PMFC) are radically summarised in Table 41.

Table 41. Brief summary of *Yes We Can's* harmonic IOCM and its PMFCs.

<i>General structural traits</i> (all 4/4 moderato)	<i>Genre[s]</i> (anglophone)	<i>Connotations</i> (PMFC)
G major and other easy chords on acoustic metal-6-string guitar	folk-related	easy to play, participatory, democratic, progressive politics, 'yes we can'
I - III	pop	up and out, possible problems
I - iii - vi	folk, folk rock, country rock	storytelling, of the people
IV - I	gospel, soul, rock	anglophone pop, affirmative, determined, participatory ('Amen')
I - x - vi - IV	pop, rock	from hardship to encouragement, determination and hope; anthemic, participatory, progressive politics

In short, there is good reason to believe that the *Yes We Can* chords, by drawing mainly on specific English-language popular music traditions, contribute to the connotation of the sort of encouragement, affirmation, empowerment and democratic participation that were part of the Obama ethos and agenda during the election campaign of 2008. Particularly striking is the juxtaposition of hardship and hope found in the I-x-vi-IV IOCM (Table 40) corresponding to the Obama speech quotes about slaves, abolitionists,

immigrants, workers, women and their determination to overcome various forms injustice. Zooming in on a more recent and specific example, it's worth adding that The Dixie Chicks used the I-V-vi-IV variant of the *Yes We Can* chord loop to accompany their determination to defy personal threats resulting from the band's shame over the fact that the previous president hailed from their home state of Texas.⁴⁴

Of course, there is much more to be said about the music of the Obama election video and its connotations. It might for example be argued that the anthemic character of the I-V-vi-IV IOCM is of minor relevance to *Yes We Can* and its mainly spoken lyrics. But such an argument misses at least one important point: that recordings consisting of one-line phrases presented as a string of statements by one artist after another have existed as a recognised pop song form since at least Band Aid's *Do They Know It's Christmas?* (1984) and that songs in that form — the *charity stringalong*, as I call it — invariably involve a call to action for a just cause.⁴⁵ This singing or declaiming consecutively rather than simultaneously is simply another way of musically presenting a sense of community compared to a hymn or anthem. *Yes We Can* combines, so to speak, the harmonic universe of the progressive *Sing Out!* community⁴⁶ with the community of a charity stringalong for a humanitarian cause. The *Yes We Can* chords also refer to other popular anglophone music traditions like four-man-band rock (e.g. Beatles, early Radiohead), country- and folk-rock (e.g. The Band), and soul (Otis Redding). Moreover, *Yes We Can* adds rap and African-American preaching

44. The complete story of the Shepherd's Bush (London) incident in 2003, when singer Natalie Maines expressed that shame, and its consequences for those three brave young female musicians from Texas is told in the moving documentary *Shut Up and Sing* (2006).

45. For example, Artists United Against Apartheid (1985), Svensk rock mot apartheid (1985), USA for Africa (1985), Hear'n Aid (1986), Disco Aid (1986). For definition, etymology and explanation of '*charity stringalong*' see Glossary.

46. Among *Sing Out!* magazine's founders were Pete Seeger, Woody Guthrie, Paul Robeson, Alan Lomax and Irwin Silber. For a description and history of the magazine, see singout.org/sohistory.html [090318].

to that mixture of styles, fusing them all into one single production. That fusion certainly seems to align with the Obama campaign's rhetoric of unification and collaboration. However, all these issues — the musically inclusive expression of community, the role of rap and preaching in *Yes We Can*, and their relation to the political context in which the video was produced and used— are all topics regrettably beyond the scope of this book.

Summary in 10 points

[1] Much of the 2008 Obama election campaign video *Yes We Can* is based harmonically on the four-chord loop $\text{C}\text{G} | \text{B} | \text{Em} | \text{C}$ ♮, or, in relative terms, $\text{C}\text{I} | \text{III} | \text{vi} | \text{IV}$ ♮.

[2] *Yes We Can* moves at 100 bpm with a harmonic rate of one chord per $\frac{4}{4}$ bar. The accompaniment pattern is simple: just root (bass) note played with the thumb plus strum on the guitar's middle and upper strings.

[3] Except for the second-fret barré B, the *Yes We Can* chords have simple first-position shapes. All four chords can be easily played by any semi-competent amateur guitarist.

[4] The first sound of the Obama song — a simple G chord in first position played on acoustic, metal-stringed guitar— is identical to the first chord in several well-known songs by Bob Dylan and Woody Guthrie.

[5] The IOCM suggested by various popular music scholars was all relevant but some suggestions were more apposite than others.

[6] $\text{I} | \text{III} | \text{vi} | \text{IV}$ occurs in at least four Spanish-language pop/rock songs issued between 1996 and 2007. Three of those run, like *Yes We Can*, at around 100 bpm, but only one (*Grita*) features a first-position G chord and simple strumming. The other songs are quite different in terms of surface rate, accompanimental patterning and instrumentation. They are also all in Spanish, a feature which for most anglophone listeners funnily enough signals 'Spanish' !

[7] $\zeta I | III | vi | IV \supset$ had no exact matches in the English-language pop/rock song repertoire. Dozens of songs with a $I \rightarrow III$ departure had to be discarded as IOCM because they differed markedly from *Yes We Can* on one or more of the following counts: chordal inversion, instrumentation, tempo, surface rate, accompanimental patterning, harmonic continuation, overall tonal idiom.

[8] Closest to *Yes We Can* in terms of harmony and other parameters of expression were: [1] *World Without Love* — $I | III | vi | vi$ (Lennon-McCartney/Peter & Gordon); [2] *Creep* — $I | III | IV | iv$ (Radiohead); [3] *All Together Now* — $I | V | vi | IV$ (The Farm); [4] *Let It Be* — $I | III | IV | iv$ (Beatles); [4] *No Woman No Cry* — $I V_3 | vi IV$ (Bob Marley); [5] the 'B' section of *Not Ready To Make Nice* — $I | V | vi | IV$ (Dixie Chicks).

[9] The five songs mentioned in §8, together with *Grita* (§6), shared not only common musical traits. Their lyrics also exhibited paramusical similarities in terms of a contrast between problems and solutions, and a transition from hardship to hope.

[10] Structural comparison based on chord sequences can be revealing and semiotically useful, provided that harmony is treated as just one among several parameters of musical expression.

Glossary

8 or **8V** *n. mus. abbr.* octave; **8vb** = octava bassa (one octave lower than written); **15mb** = quintesima bassa (two octaves lower).

A. *n. mus. abbr.* alto (voice).

AC. *adj. abbr.* acoustic[s].

A CAPPELLA [aka¹pɛlə] *adv. mus.* [1] *usual sense*: voice[s] only without instrumental accompaniment; *etym. It.* *CAPPELLA* = chapel, choir, i.e. in the manner of a chapel choir; [2] *specialist usage*: voice[s] accompanied by only church organ.

ACCIDENTAL *n.* a sign used in musical notation, typically a sharp (#), flat (b) or natural (♮) sign, indicating that the note it immediately precedes does not belong to the expected tonal vocabulary of the piece, section or passage in which it occurs and that the note it precedes has been raised or lowered by a small interval, most commonly a semitone (see also *ENHARMONIC*). The accidental ‘♭’ indicates that the tone it precedes is lowered by a quarter-tone .

ADELIN SLIDE *n. ph. mus. neol.* (1990) Short, chromatic passage, usually covering a third and usually descending, as in *Sweet Adeline*. See also *MINICHROMATIC*.

ADSR → *ENVELOPE*.

AEOLIAN *adj.* heptatonic diatonic mode equivalent to the ‘natural minor’ or ‘descending melodic minor’ of euroclassical music theory. It’s the ‘*CHURCH*’ *MODE* which, with a as tonic, runs from a to a on the white notes of a piano keyboard. Its seven ascending tones (1) and semitone (½) steps are 1 ½ 1 1 ½ 1 1, and its scale degrees $\hat{1} \hat{2} \hat{3} \hat{4} \hat{5} \hat{b6} \hat{b7}$: a b c d e f g in A).

AESTHESIC [is¹θi:zɪk] *adj.* (from Fr. *esthétique*, Molino via Nattiez); relating to the *aesthesis* [is¹θi:sɪs] (αἴσθησις = *perception/sensation*) of music rather than to its production or construction; cf. *POÏETIC*.

A.K.A. *abbr.* also known as, alias.

ALEATORIC [alɪə¹tɔɪk] *adj.* based on elements of chance; *n.* *ALEATORICS*.

ANACRUSIS *n.* a very short musical event having the character of an

upbeat or pickup, i.e. a rhythmic figure and/or short tonal process propelling the music into whatever it immediately precedes; *adj.* ANACRUSTIC; *etym.* Gk. ἀνάκρουσις.

ANAPHONE *n.* [ˈænəfəʊn] *neol.* (1990); musical sign type bearing iconic resemblance to what it can be heard to represent (p.487, ff.); *adj.* ANA-PHONIC [ˈænəfɒnik]; see also *SONIC ANAPHONE*, *TACTILE ANAPHONE*, *KINETIC ANAPHONE*.

ANAPHORA *n.* rhetorical device by which successive sentences start identically but end differently, as in Martin Luther King's 'I have a dream' speech; transferred to music, a *melodic anaphora* means that successive phrases start with the same motif but end differently, while a *harmonic anaphora* means that successive chord sequences start with the same change[s] but end differently. *Anaphora* is the opposite of *EPISTROPHE* (see pp.195, 447).

ANHEMITONIC *adj.* (usually of modes or scales) containing no semitone step; see *PENTATONIC*.

ANTITONIC *n. mus.* configuration of three quartally spaced notes serving as ► *COUNTERPOISE* to three quartally spaced tonic notes, e.g. $\flat\flat\flat\flat$ ($B\flat^4$) as antitonic to $c\text{-}f\text{-}b\flat$ (C^4) as tonic; concept presented in Chapter 3 of *Symmetries of Music*: 'Harmonic Principles (A): The Pentatonic Chromatic System' — 'tonic-antitonic relations in the pentatonic scale' (Lendvai, 1993).

ARR. *abbr.*, arranger, arrangement, arranged by.

AVE MARIA CHORD *n. neol.* (1989); a subdominant 6-5 chord with fifth in bass held over as second chord in a phrase from an initial major tonic root. *Etym.* the Dm^7 (or F^6) with c in the bass that comes as second chord in J.S. Bach's Prelude N^o 1 in C Major (*Wohltemperiertes*, vol. 1) and which was used by Gounod for his setting of *Ave Maria*; also the second chord (resolved) in Mozart's *Ave verum corpus*.

B. *n., adj., mus. abbr.* bass (voice); ► *DBS*, *BSGT*.

B&H *abbr.* Boosey and Hawkes (music publishers, London)

LA BAMBA LOOP *n. neol.* (c. 1983) *CHORD LOOP* running $\text{♭I-IV-V}^{\text{♯}}$, as in *La Bamba* (Valens, 1958), the *IONIAN* (major-key) equivalent of the *CHE GUEVARA LOOP*.

BIMODALITY *n.* (Vega, 1944) type of tonality in which two different modes, and therefore two different tonics, can be heard either simultaneously or in succession one after the other (see Chapter 14).

BIMODAL REVERSIBILITY *n. neol.* (2009) trait whereby a melodic or harmonic sequence in one mode becomes, when reversed, a sequence in another mode (see p.441).

BLUES PENTATONIC → pp. 158-163.

BRIT. *adj. abbr.* British

BS. *n., adj. mus.* bass.

BSGT. or **BS. GTR.** *n. abbr. mus.* bass guitar.

BSN. *n., mus., abbr.* bassoon.

C20 FOX *abbr.* Twentieth Century Fox (US media corporation).

CADENCE *n. mus.* structural element indicating the end of a phrase, a period or a piece of music; see *PERFECT CADENCE*, *PLAGAL CADENCE*, *HALF CADENCE*, *INTERRUPTED CADENCE*, *QUARTAL CADENCE*, *MELODIC CADENCE*.

CF. *abbr. Lat.* ‘confer’ = compare, often with something different.

CH4 *abbr.* Channel 4 TV (UK)

CHARITY STRINGALONG *n. neol.* (2009) recording made for a humanitarian cause in which individual artists sing or declaim single phrases in succession and only join together in concert or unison for the chorus or hook line, e.g. *Do They Know It’s Christmas?* and *We Are The World*; *etym.* *STRING* in the sense of ‘a string or line [succession] of persons or things’ and *SINGALONG*, meaning ‘community singing’ or a tune to which anyone can sing along at the same time, usually in unison rather than in succession (*Oxford Concise Dictionary*, 1995).

CHARLESTON DEPARTURE *n. neol.* (2000) chord sequence starting I-III like *The Charleston* (Mack & Johnson, 1923: B \flat D \flat G \flat , etc.), *Has Anybody Seen My Gal?* (Henderson, 1925) and other old-time jazz hits.

CHE GUEVARA LOOP *n. neol.* (2008); *CHORD LOOP* running $\text{C}_i\text{-iv-V}^{\text{C}}$, as in *Comandante Che Guevara/Hasta la victoria!* (Puebla, 1965; ex.289, p. 438); the aeolian/harmonic minor equivalent of the La *BAMBA LOOP*.

CHORD LOOP *n. neol.* (2009) short repeated sequence of (almost always) three or four chords. Chord loops are indicated by 180° arrows at each end. The familiar *VAMP* loop, for example, runs ζI -vi-ii- \vee or ζI -vi-IV- \vee like the ζB -G#m-E-F# \vee in Sam Cooke's *What A Wonderful World* (1960b) or the $\zeta E\flat$ Cm Fm B \flat \vee in *Blue Moon* (Rodgers, 1934). Most chord loops have no name but some are so common that it saves time and space if they are given mnemonic labels like 'the *La Bamba* loop' (ζI -IV- \vee , e.g. ζC -F-G \vee) or 'the *Che Guevara* loop' (ζi -iv- \vee , e.g. ζAm -Dm-E \vee), so called because of its use in Carlos Puebla's *Comandante Che Guevara*. Chord loops are discussed in Chapters 13 and 14. See also *CHORD SHUTTLE*.

CHORD SHUTTLE *n. neol.* (1993) oscillation between two chords, for example the to-and-fro between tonic minor (i, B \flat m) and submediant major (\flat VI, G \flat) in Chopin's *Marche funèbre* (1839), or Dylan's *All Along The Watchtower* (1968: Am \rightarrow F), a.k.a. 'aeolian pendulum' (Björnberg 1989); or between ii \flat 7 and V in *He's So Fine* (Chiffons 1963), *Oh Happy Day* (Edwin Hawkins 1969), or *My Sweet Lord* (Harrison 1970). Chord shuttles are indicated by double ended arrows, e.g. $i \leftrightarrow \flat VI$ or B \flat m \leftrightarrow G \flat for Chopin's funeral march, and are discussed in Chapter 12; cf. *CHORD LOOP*.

'**CHURCH**' **MODE** *n.*, a.k.a. **ECCLESIASTICAL MODE**; one of the seven *HEPTATONIC DIATONIC* modes which, when arranged in scalar form with the initial note repeated at the octave, contain, in varying positions, two semitone and six whole-tone steps. The six main 'church' modes are: [1] *IONIAN* (c-c on the white notes of the piano); [2] *DORIAN* (d-d on the white notes); [3] *PHRYGIAN* (e-e); [4] *LYDIAN* (f-f); [5] *MIXOLYDIAN* (g-g); [6] *AEOLIAN* (a-a); [7] *LOCRIAN* (b-b); see pp. 94-112.

CIRCLE OF FIFTHS *n. ph. mus.* See *KEY CLOCK*.

CIT. MEM. *abbr.* cited from memory.

CLASSICAL HARMONY *mus.* general term denoting the widespread type of *TERTIAL TONALITY*, based on the *IONIAN* and on the *IONIANISED* minor modes, as used in *EUROCLASSICAL* music, in most types of jazz, as well as in the majority of urban popular music in the nineteenth and early twentieth centuries (see pp. 245-271).

CLT. *n. mus. abbr.* clarinet.

CONJUNCT-LINE TROPE *n. ph. mus.* conjunct motion in any voice or part that provides the basis for a common chord sequence, for example: [1] the $\hat{4} \hat{b}\hat{3} \hat{b}\hat{2} \hat{1}$ bass line for the $iv-bIII-bII-I$ Andalusian cadence (p. 131); [2] the parallel-third minichromatic runs¹ $\hat{5} \hat{b}\hat{5} \hat{4} \hat{\Delta}\hat{3}$ with $\hat{\Delta}\hat{3} \hat{b}\hat{3} \hat{2} \hat{1}$ in blues turnarounds (pp. 367-368); [3] the *valse-musette* ‘caroussel’ motif $\hat{c}\hat{8} \hat{7} \hat{6} \hat{7}\hat{c}$ (pp. 361-362); [4] the ‘Bach Air’ descending bass line $\hat{1}=\hat{8} \hat{7} \hat{6} \hat{5} \hat{4}$ (p. 269), etc.

CONSTRUCTIONAL *adj., neol.* (2001). See POÏETIC.

COR *n. mus. abbr.* corno/corni, It. for French horn[s]

COUNTERPOISE *n.* ‘1 a force etc. equivalent to another on the opposite side. 2 a counterbalancing weight’ (*Oxford Concise English Dictionary*, 1995); adapted (2009) to denote a tonal (melodic and/or harmonic) ‘complementary pole’ to the tonic, typically (though not exclusively) V in the ionian mode, $bVII$ or IV in the mixolydian and dorian, bVI or iv in the aeolian, bII or $bvii$ in the phrygian, etc. *Counterpoise* has basically the same meaning as *ANTITONIC* and is not altogether unlike the Northern Indian concept of *vadi* (\approx ‘king’ of the melodic line in relation to main drone note, *sa*) or, perhaps, *samvadi* (the ‘queen’). The tonal rhythm generated by varying metric / periodic / temporal placement of change between tonic and counterpoise is a factor of interest in pre-industrial popular music from the British Isles (see *KICKBACK POINT*).

COWBOY HALF-CADENCE *n., neol.* (1987) harmonic progression from major triad on the flat seventh to major triad on the dominant ($bVII-V$), as in the main themes from *The Magnificent Seven*, *Dallas*, *Blazing Saddles*, etc.

CRISIS CHORD *n. neol.* (1991) chromatically embellished chord containing at least one diminished or augmented interval and occurring within the standard harmonic context of the European tertial idiom; usually occurring as m^6 or m^7b^5 , crisis chords can often be found about 75% of the way through a nineteenth-century parlour ballad.

CUP *abbr.* Cambridge University Press.

DBS. *n. mus. abbr.* double bass.

1. a.k.a. ‘Adeline slides’, see Tagg & Clarida, 2003: 209-212.

DEPARTURE *n. mus.* whatever occurs when music leaves an established point of reference (e.g. after an initial tonic); **DEPARTURE CHORD** → **OUTGOING CHORD**.

DGG *abbr.* Deutsche Grammophon Gesellschaft.

DIATAXIS [daɪəˈtæksɪs] *n. mus. neol.* (2011) long-term arrangement/disposition/order of musical **EPISODES** in terms of chronological placement and relative importance; in contradistinction to **SYNCRISIS** (q.v.); *etym.* διατάξις= disposition, arrangement, order of events, running order, order of service, etc., as of processions, prayers, chants, bible readings, sacraments, and other ‘episodes’ in Byzantine Orthodox liturgy; *adj.* **DIATACTICAL** [daɪəˈtæktɪkəl]; *deriv. n.* **DIATAXEME** [daɪəˈtæksi:m] identifiable element of diatactical meaning.

DIATONIC *adj.* conforming to the **HEPTATONIC** tonal vocabulary of any of the European ‘**CHURCH MODES**’ in which each constituent note is in English named after one of the first seven letters of the alphabet, for example **a b c d e f g** (**AEOLIAN** in A), **d e f# g a b c#** (**IONIAN** in D), **g a b bb c d eb f** (**phrygian** in G). Arranged in scalar form, all diatonic modes contain five whole-tone (1) and two semitone steps (½), e.g. c-d (1), d-e (1), e-f (½), f-g (1), g-a (1), a-b (1) and b-c (½) in C **IONIAN**. Semitone steps in European diatonic modes are separated by a fifth (e.g. e-f and b-c on the white notes of a piano keyboard).

DOH-HEXATONIC *adj. mus.* of the major hexatonic mode containing no seventh (1̂ 2̂ Δ3̂ 4̂ 5̂ Δ6̂); see p. 169, ff.

DOH-PENTATONIC *adj. mus.* of the pentatonic mode containing a major third and major sixth (1̂ 2̂ Δ3̂ 5̂ Δ6̂); see pp. 154, 159-161.

DOMINANT *n.* Western music theory term used to denote: [1] the tone (5̂) or chord (V) located a perfect fifth above or a perfect fourth below the tonic (*adj.* **DOMINANTAL**); [2] the syntactic-narrative function of that tone and chord in euroclassical tonality.

DOO-WOP. *n.*, primarily vocal genre with origins in black US gospel of the 1940s and in barber shop quartet singing. Originally sung a cappella or with simple percussion, doo-wop became part of US-mainstream pop in the 1950s and early 1960s. The term’s etymology is onomatopoeic (like *fa la la la* in Elizabethan madrigals), deriving from the style’s use of paralinguistic syllables vocalising approximations of instrumental accompaniment patterns, e.g. The Marceles’ version of

Blue Moon (1961), Barry Mann's *Who Put The Bomp* (1961).

DORIAN *adj.* heptatonic diatonic 'CHURCH' MODE which, with d as tonic, runs from d to d on the white notes of a piano keyboard. Its seven ascending tone (1) and semitone (½) steps are 1 ½ 1 1 1 ½ 1 and its scale degrees $\hat{1} \hat{2} \hat{b}\hat{3} \hat{4} \hat{5} \hat{6} \hat{b}\hat{7}$ (d e f# f a b# c in D).

DROMOS (Gk. δρόμος, pl. δρόμοι, lit. = way, road) *n.* MODE or MAQAM.

ECCLESIASTICAL MODE, see 'CHURCH MODE'.

ED. or **EDS.** *abbr.* editor[s], edited by.

ELBS. *n. abbr. mus.* electric bass, bass guitar.

ELGT. or **EL.GTR.** *n. abbr. mus.* electric guitar.

ENG. *n. & adj. abbr.* England, English.

ENHARMONIC *mus. adj.* . characteristic of notes having identical pitch in equal-tone tuning but which for practical reasons are 'spelt' differently. For example, the note b_4 (≈ 494 hz) is much more likely to be written b_4 (≈ 494 hz) in the key of Bb minor, but it will inevitably appear as $b\sharp$ in its own key of B (Fig. 73: 1-2). Similarly, the individual note pitch g, apart from being itself (Fig. 73: 3), should be spelt $f\sharp$ ('F double sharp') in a $G\sharp$ minor context (Fig. 73: 4). Just as it would be mad to write d e g# g# (5 $\Delta 6$ b1 b1) for a simple 5- $\Delta 6$ - $\Delta 7$ -1 run-up from d to g, it's absurd to write the same 5- $\Delta 6$ - $\Delta 7$ -1 run-up in $G\sharp$ minor (from $d\sharp$ to $g\sharp$) as 5- $b\flat 7$ - $b1$ -1 or as anything other than $d\sharp$ e# $f\sharp$ $g\sharp$.

Fig. 73. *Enharmonic spellings and misspellings*





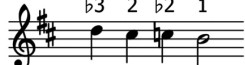
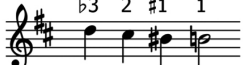

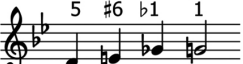


	RIGHT ★	WRONG ✱
1. Bb minor descending $b_3 \rightarrow 1$	 $d\flat$ c $c\flat$ $b\flat$ b_3 2 b_2 1 	 $d\flat$ c $b\sharp$ $b\flat$ b_3 2 #1 1 
2. B minor descending $b_3 \rightarrow 1$	d $c\sharp$ $c\sharp$ b b_3 2 b_2 1 	d $c\sharp$ $b\sharp$ $b\flat$ b_3 2 #1 1 
3. G minor ascending $5 \rightarrow 1$	d e $f\sharp$ g 5 #6 #7 1 	d e $g\flat$ $g\sharp$ 5 #6 b_1 1 
4. $G\sharp$ minor ascending $5 \rightarrow 1$	$d\sharp$ e# $f\sharp$ $g\sharp$ 5 #6 #7 1 	$d\sharp$ $f\sharp$ $g\sharp$ $g\sharp$ 5 $b\flat 7$ b_1 1 

Fig. 74. *Enharmonic ups & downs: 12 × 12-note chromatic scales (equal-tone tuning)*

The figure displays twelve musical staves, each representing a 12-note chromatic scale. The scales are labeled with their starting notes: C, Db, D, Eb, E, F, F#, Gb, G, Ab, A, Bb, and B. Each staff shows the sequence of notes in an ascending order, with the final note being a sharp (e.g., B# for the C scale). The notation uses various accidentals (sharps, flats, naturals) to represent the 12 distinct pitches in equal-tone tuning.

Enharmonics aren't just a matter of formal correctness, even though seeing, say, $d\sharp$ ('D sharp') when it should be $e\flat$ ('E flat') is a bit like reading 'I no' instead of 'I know'. Enharmonic spelling has more to do with clarity and practical convenience. The idea is to let the notationally literate musician know about the immediate tonal context and direction of the line being performed, not least if the line is chromatic. That principle should be clear enough from Figure 74 which presents all twelve 12-note chromatic scales, both ascending and descending. The pitches in descent are, in equal-tone tuning, identical to those in ascent except they're in reverse order and spelt quite differently. You're much more likely to find sharps in ascent because sharps raise

the note you're currently on —they point upwards— and more likely to find flats in descent because, by lowering the note you're on, they point downwards.

Another principle of enharmonics relates to key. While it is not unusual to hear or read music in G# minor, you will almost never see anything in G# major: A♭ major, yes, but not G#. This enharmonic convention is due to the fact that while the key signature of G# minor contains only four sharps, the key of G# major would, if it were ever used, have a key signature containing eight accidentals: seven sharps plus one double-sharp. D♭ minor, if it existed, would have the same problem in reverse: its key signature would have to include seven flats and one double-flat. A♭ and D♭ major, on the other hand, are quite common keys with their four and five flats respectively (see 'key clock', p.256). Since making music in keys featuring six or seven accidentals (F#/G♭, C# and C♭ major plus D#/E♭ and A♭ minor) can already be quite a challenge, having to think in keys with eight or nine accidentals is a pointlessly difficult task. That's why the minor keys whose tonic is one of the piano keyboard's five black notes are: B♭, E♭ or D#, G#, C# and F#, never A#, D♭ or G♭ and very rarely A♭. Similarly, while common major keys are B♭, E♭, A♭, D♭ and G♭ or F#, you will never find major-key music in A#, D# or G#, and only rarely in C# major. If you're dealing with a chromatic passage in tonical music, it's always advisable to use accidentals belonging to key signatures closest to that of the tonic in your passage.

EPISODIC MARKER *n. neol.* (1990) musical sign type consisting of a short processual structure mediating temporal position or relative importance (see p.516,ff.); see also *DIATAXIS*.

EPISTROPHE *n.* rhetorical device by which successive sentences start differently but end similarly. A melodic epistrophe means that successive phrases start differently but end with the same motif, while a harmonic epistrophe means that successive chord sequences start differently but end with the same change[s]. Epistrophe is the opposite of *ANAPHORA* (see p.195).

EQUIDURATIONAL. *adj. neol.* (2000) of equal duration, lasting for the same amount of time.

EUROCLASSICAL *adj. mus. neol.* (2008) belonging to or having the characteristics of European classical music (a.k.a. ‘art music’, or ‘WECT’ [=Western European Classical Tradition]), most typically that composed between c. 1650 and c. 1910. The prefix *EURO* is included to avoid confusion with classical (or ‘art’) music traditions outside Europe, e.g. the Tunisian *nouba*, the *rāga* traditions of India, Cambodian court music, the *yǎyuè* (雅乐) of imperial China, etc. ‘Euroclassical’ is shorter than other labels denoting the same thing; nor does it imply that other musics are artless.

EX. *abbr.* music example. **EXX.** = examples.

ETYMOPHONY [ɛtɪˈmɔfəni] *n. neol., adj.* **ETYMOPHONIC** [ɛtɪməˈfɒnik] (c. 1990) origin[s] and development of a non-verbal sound’s meaning; *etym.* transfer from **ETYMOLOGY** (= the sources of the formation of a word and the development of its meaning).

EXTENDED PRESENT *n. ph.* (a.k.a. **PRESENT-TIME EXPERIENCE**, or, misleadingly, ‘SPECIOUS PRESENT’). As a duration the extended present lasts no longer than a musical phrase (exhalation), or a few footsteps, or a short gestural pattern, or a few heartbeats. It is a duration experienced as a single unit (*Gestalt*) in present time, as ‘now’ rather than as an extended sequence of musical ideas; see also *INTENSIONAL*, *SYNCRISIS*). The extended present can also be imagined as the human brain’s equivalent to a computer’s RAM where information is processed immediately, rather than as its hard drive (longer-term memory) where access and retrieval times are longer. For more, see Tagg (2013: 272-3; 417-484).

EXTENSIONAL *adj.* (Chester, 1970) relating to ‘horizontal’, syntactical aspects of musical expression extended over longer durations; opposite of *INTENSIONAL*.

FL. *n. mus. abbr.* flute.

FLAT SIDE. *n.* the left side of the *CIRCLE OF FIFTHS* or *KEY CLOCK* (p. 256), where flats are included in the relevant key signatures: F, B \flat , E \flat , A \flat , D \flat [G \flat].

FLATWARD[S] *adv.* and *adj.* proceeding anticlockwise round the *CIRCLE OF FIFTHS* (p. 256); opposite of *SHARPWARDS*. For example, ‘the chord progression proceeds flatwards via Dm and G 7 to C’ (adverbial); ‘Am 7

Dm7 G7 C is a flatwards chord progression landing on the tonic, C' (adjectival). Flatwards movement is so called because the number of flats in the major-key signature of the root note of successive chords in the progression increases or the number of sharps decreases. For example, in the progression Fm - B♭ - E♭ (ii-V-I), the number of flats increases from 1 (F) via 2 (B♭) to 3 (E♭), while in the flatwards progression Dm - G7 - C the number of sharps decreases from 2 (D) via 1 (G) to 0 (C).²

FR. *abbr. n & adj.* France, French.

FTNT. *abbr.* footnote.

GENRE SYNECDOCHE [ˈzɑnr^ə sɪnˈɛkdəki] *n. ph. mus. neol.* (1992) part-for-whole musical sign type referring to a musical style other than that of its immediate surroundings and, by extension, to paramusical or extramusical aspects of the genre with which that 'other' musical style is associated (see Tagg, 2013: 524-528).

GK. *abbr.* Greek

GOSPEL JAW [ˈɡɔspəldʒo:] *n. ph. mus.* vocal technique used primarily by female singers in the gospel and soul music tradition to simulate real vocal vibrato. The simulation, produced by wobbling the jaw rapidly up and down, is often applied towards the end of long notes by such artists as Whitney Houston.

GROOVE *n. mus.* sense of gross-motoric movement produced by one or more simultaneously sounded rhythm patterns lasting, as single units, no longer than the *EXTENDED PRESENT*, and repeated throughout a musical *EPISODE* or *PIECE*. Most commonly used in reference to the perception of continuous propulsion created, typically for dancing, by the interaction of musicians in a band's rhythm section or its accompanying parts, groove can also denote other types of perceived gross-motoric movement, as in work songs and marches.

GT. or **GTR.** *n. mus. abbr.* guitar.

2. At the Université de Montréal I used to translate *flat side* as *le côté bémol* or *le côté des bémols* and *flatwards* as *vers les bémols*; sharp side was *le côté des dièses* and sharpwards *vers les dièses*. In Sweden I used *mollsidan/korssidan* for flat side/sharp side and *mollriktat/korsriktat* for flatwards/sharpwards.

HALF CADENCE a.k.a. IMPERFECT CADENCE *mus.* harmonic cadence marking a temporary resting point in *CLASSICAL HARMONY*. In that tradition final closure can only be effectuated by a *PERFECT CADENCE*.

HARMONIC MINOR *n. & adj.* denoting a *MODE*, recognised in conventional Western music theory, whose scale degrees are $\hat{1} \hat{2} \hat{b}\hat{3} \hat{4} \hat{5} \hat{b}\hat{6} \hat{\Delta}7$ (e.g. c d e \flat f g a \flat b \natural in C, scale steps 1 $\frac{1}{2}$ 1 $\frac{1}{2}$ 1 $\frac{1}{2}$ 1 $\frac{1}{2}$), i.e. the same pattern as maqam *NAHAWAND* (see pp. 91; 116, ff.).

HEPTATONIC *adj.* (of modes or scales) containing, or having a tonal vocabulary of, seven different notes within the octave. Theoretically a heptatonic mode could contain c c \sharp d d \sharp e a \flat and b \natural , or any other conceivable combination of different notes, but Western music's familiar heptatonic modes all contain a note based on each of the first seven letters of the alphabet, e.g. a b c d e f g (*AEOLIAN* heptatonic in A), d e f \sharp g a b c \sharp (*IONIAN* heptatonic in D), g a \flat b \flat c d e \flat f (*PHRYGIAN* heptatonic in G); see also *DIATONIC*, *PENTATONIC*, *HEXATONIC*.

Table 42. Heptatonic note names in Indian and Arabic music theory

	1	2	3	4	5	6	7	8=1
sol-fa	doh	ré	mi	fa	sol	la	si	doh
Indian	Sa	Re	Ga	Ma	Pa	Dha	Ni	Sa
Arabic	Rast	Douka	Jaharka	Nawa	Hussayni	Awj	Kirdan	...

HEXATONIC *adj.* (of modes or scales) containing six different tones within the octave; see pp. 165-174; cf. *PENTATONIC*, *HEPTATONIC*.

HIJAZ *n. mus. Ar.* family of *MAQAMAT* whose lower *TETRACHORD* runs $\hat{1} \hat{b}\hat{2} \hat{\Delta}\hat{3} \hat{4}$ ($\frac{1}{2}$ $1\frac{1}{2}$ $\frac{1}{2}$, e.g. c d \flat e \natural f in C). The *HIJAZ FAMILY* includes *HIJAZ* itself ($\hat{1} \hat{b}\hat{2} \hat{\Delta}\hat{3} \hat{4} \hat{5} \hat{b}\hat{6} \hat{b}7$), *HIJAZ KAR* ($\hat{1} \hat{b}\hat{2} \hat{\Delta}\hat{3} \hat{4} \hat{5} \hat{b}\hat{6} \hat{\Delta}7$) and *SHAD ARABAN*. *HIJAZ* modes are common in the Balkans, the Eastern Mediterranean, Southern Spain and throughout the Arab world (see pp. 116, pp. 119-133); *etym.* *HIJAZ/HEJAZ* (الحجاز = 'the barrier'), the Red Sea coastal region in the west of today's Saudi Arabia.

HOCKET *n. mus.* From French *hoquet* and Latin *hoquetus* (= 'hiccup'); musical performance technique in which individual notes or chords within musical phrases, not entire phrases, are alternated between different voices, instruments or recorded tracks. Although the term is traditionally used to describe the technique in late medieval French

motets (see *In seculum*, 1908), hockets are not uncommon in modern popular music. A well-known example is the woman shifting to and fro between voice and one-note pan pipe in the introduction to Herbie Hancock's 1974 version of 'Watermelon Man'. Hockets is a prominent feature in several African music cultures, not only among the Ba-Benzélé (1965) featured on the Hancock recording, but also among the Mbuti, the Basarwa (Khoisan) and Gogo (Tanzania) (Nketia, 1974: 167). In a more general sense, fast alternation of one or two notes between voices, instruments and timbres not only contributes massively to the dynamic of timbral and rhythmic distinctness that is intrinsic to the polyphonic and polyrhythmic structuration of much music in Sub-Saharan Africa (Nketia, 1974; Chernoff, 1979): it also gives evidence of 'social partiality for rapid and colourful antiphonal interchange' (Sanders, 1980). Such partiality may also help explain the predilection for hocketing found in funk music where the technique is intentionally employed for purposes of zestful accentuation and interjection. Typical examples of funk hocketing are the quick, agogic interplay between high and low slap bass notes, or the fast interchange between extremely short vocal utterances, stabs from the horn section and inter-punctuations from the rest of the band (e.g. James Brown, Larry Graham; see Davis, 2005). These affective qualities of hocketing were certainly recognised by medieval European clerics who characterised it as *lascivius* (= fun) *propter sui mobilitatem et velocitatem*.³ In 1325, Pope John XXII issued a bull banning its use in church (Sanders, 1980).

Another type of hocketing has been developed in response to restrictions of instrument technology. For example the Andean practice of sharing the tonal vocabulary of a piece between two or more pan pipes (*zampoñas*) and their players demands skillful hocketing to produce runs of notes that are in no way intended to sound like hiccups (see Morricone, 1989). Advanced hocketing is also practised in Balinese gamelan music where very short portions of melody are allocated to many different players to produce highly complex sound patterns.

HUAYNO (*Wayñu* in Aymara and Quechua) is a genre of popular Andean Music... especially common in Peru, but also present in Chile, Bolivia, Argentina and Ecuador... The history of HUAYNO ... [is] a

3. It was deemed improper and *lascivius* 'due to its mobility and rapidity'.


combination of traditional rural folk music and popular urban dance music' (Wikipedia entry *Huayno* [140805]).

IASPM *abbr.*: International Association for the Study of Popular Music.

INCOMING CHORD *n. neol.* (2009) last chord before the tonic in a three- or four-*CHORD LOOP* (a.k.a. *TURNAROUND CHORD*). In a three-chord loop the *MEDIAL* and *INCOMING* chords are often identical; see also *OUTGOING CHORD* and *MEDIAL CHORD*; for fuller explanation see pp. 414-416.

INTENSIONAL *adj.* (Chester, 1970) relating to 'vertical' aspects of musical expression and to the limits of the *EXTENDED PRESENT*; opposite of *EXTENSIONAL*.

INTERRUPTED CADENCE *n. ph. mus.* (in *CLASSICAL HARMONY*) a *CADENCE* ending on *vi* (usually *V→vi*) and usually followed, sooner rather than later, by a final cadence (normally *V→I*). N.B. Outside the sphere of classical harmony, cadences on *vi* can be final: nothing is interrupted because it is finished: see *UNINTERRUPTED CADENCE*; see also *PERFECT CADENCE*, *HALF CADENCE*, *PLAGAL CADENCE*.

INTERVAL COUNTING the anomalies of interval counting, according to which an octave (*octava* = eighth) can equal 7, 8 or 9 (!), are explained on line at  tagg.org/teaching/IntervalCounts.html [140811] (Tagg, 2014).

IOCM *abbr., n., neol., mus., semio* (1979) InterObjective Comparison Material, i.e. intertextual reference[s] consisting of music other than the *ANALYSIS OBJECT* and which sounds like and/or is structurally similar to (part or parts of) that same analysis object.

IONIAN MODE *mus.* *HEPTATONIC*, *DIATONIC MODE* containing *SCALE DEGREES* $\hat{1} \hat{2} \Delta\hat{3} \hat{4} \hat{5} \Delta\hat{6} \Delta\hat{7}$ (scale steps 1 1 ½ 1 1 1 ½); i.e. the same as the Western major scale.

IONIANISE *v. mus. neol.* (2007) to make *IONIAN*, i.e. to change certain scale degrees in other modes so they conform to euroclassical principles of tonality linked to that tradition's proclivity for the *IONIAN MODE*, e.g. the *HARMONIC MINOR* and ascending *MELODIC MINOR* modes (see pp. 90-92, ff.); *n.* *IONIANISATION*; *adj.* *IONIANISED*.

IR. *adj. & n. abbr.* Irish, Ireland.

IT. *adj. & n. abbr.* Italian, Italy.

ITV *abbr.* Independent TV (UK).

KEY CLOCK, a.k.a. CIRCLE OF FIFTHS, *n. ph. mus.* theoretical model of the Western octave's twelve constituent tones, and their keys, arranged in order of fifths ascending clockwise (sharpwards, C G D A E B F[#]/G^b D^b A^b E^b B^b F) and descending anticlockwise (flatwards, C F B^b E^b A^b D^b G^b/F[#] B E A D G); see pp. 255-265.

KEY-CLOCK NEIGHBOURHOOD: see *TONICAL NEIGHBOURHOOD*.

LA-HEXATONIC, *adj. mus.* of the 'sixthless' hexatonic mode containing scale degrees $\hat{1} \hat{2} \flat\hat{3} \hat{4} \hat{5} \flat\hat{7}$; see p. 170, ff.

LA-PENTATONIC *adj. mus.* of the anhemitonic pentatonic mode containing scale degrees $\hat{1} \flat\hat{3} \hat{4} \hat{5} \flat\hat{7}$; see pp. 155-163.

LAT. *adj. abbr.* Latin.

LEAD SHEET *n. ph.* sheet of paper displaying the basic information necessary for performance and interpretation of a piece of popular music; for complete explanation, see pp. 229-230.

LEAD SHEET CHORD *n. ph.* chord indication on a lead sheet.

LEAD SHEET CHORD SHORTHAND *n. ph.* [1] symbols used on a lead sheet to represent the chords of a song or other piece of music; [2] the widespread system according to which musicians most frequently denote chords; for complete explanation, see pp. 229-244.

LEADING NOTE *n.* the major seventh degree ($\Delta\hat{7}$) in the European major, ascending minor and harmonic minor scales, so called because in those modes it is assumed to lead to the tonic one semitone higher. *Leading note* can also designate any note that leads by a semitone step, ascending or descending, into another note contained within the subsequent common triad, e.g. the note f in a G⁷ chord descending to the e in a C major tonic triad. It is worth noting that a phrygian cadence from \flat II to I uses *three* leading notes: [1] from minor second to tonic (\flat 2-1, e.g. \flat f to e in E phrygian), from perfect fourth to major third (4-3, e.g. a to g[#] assuming there is a Picardy third on the tonic E, as in flamenco music); [3] from minor sixth to perfect fifth (\flat 6-5, e.g. c to b in E phrygian). Since a large, widely disseminated and influential body of popular music so often uses modes with *minor* sevenths (\flat 7), the term *leading note* cannot be meaningfully used to designate the seventh degree in those contexts. The term *SUBTONIC* (q.v.) is used instead.

tival suffix *-al* to a noun ending in *-ant*, the only logical adjectival derivative of *mediant* in the English language is *mediantal*.

MEDIANTAL *adj.* relating to or having the character of the *MEDIANT*.

MELODIC CADENCE: *CADENCE* defined melodically, not harmonically.

MELODIC MINOR *n. & adj., mus.* denoting a mode, recognised by conventional Western music theory, whose *ascending* scale degrees are $\hat{1} \hat{2} \flat\hat{3} \hat{4} \hat{5} \hat{6} \hat{7}$ (e.g. c d e♭ f g a♯ b♯ in C, scale steps 1 ½ 1 1 1 ½) and whose *descending* pattern is $\flat\hat{7} \flat\hat{6} \hat{5} \hat{4} \flat\hat{3} \hat{2} \hat{1}$, i.e. that of the *AEOLIAN* mode or ‘natural minor’ which ascends $\hat{1} \hat{2} \flat\hat{3} \hat{4} \hat{5} \flat\hat{6} \flat\hat{7}$ (e.g. c d e♭ f g a♭ b♭ in C, scale steps 1 ½ 1 1 ½ 1 1). The *ascending* form of the melodic minor is one *IONIANISED* version of the aeolian mode ($\flat\hat{6} \flat\hat{7} \rightarrow \hat{6} \hat{7}$).

MILKSAP *n. colloq.* derogatory term, probably first coined by Jerry Lee Lewis, to designate the bland pop songs recorded in the USA by ‘all those goddam Bobbies’⁴ – Bobby Darin, Bobby Rydell, Bobby Vee, Bobby Vinton, etc. – between 1957 (the end of rock-‘n’-roll) and 1963 (the arrival of the Beatles and Rolling Stones). The harmonic epitome of this teen-angel sort of pop was the ♭I vi IV V♭ vamp.

MINICHROMATICS *n., neol.* (1976) a.k.a. ‘decorative chromaticism’ and opposed to ‘structural’ or ‘modulatory’ chromaticism. Minichromatics implies using chromaticism, within the euroclassical tertial idiom, as a means of colouring and decorating the current tonality rather than as a means of modulating away from it.

MINOR THIRD RULE *n. ph. mus. neol.* (2014) principle of quartal harmony according to which the music’s tonal centre needs to move at least three key-clock steps in either direction – a minor third up or down in terms of pitch – to sound like a ‘change of key’ (p. 301, ff.); see also *TONICAL NEIGHBOURHOOD*.

MIXOLYDIAN *adj.* *HEPTATONIC DIATONIC ‘CHURCH’ MODE* which, with g as tonic, runs from g to g on the white notes of a piano keyboard. Its seven ascending tone (1) and semitone (½) steps are 1 1 ½ 1 1 ½ 1 and its scale degrees 1 2 3 4 5 6 ♭7.

MODE *n. mus.* tonal vocabulary that can for theoretical purposes be reduced to individual occurrences of each tone arranged in scalar order

4. For source and further details, see footnote 10 (p. 407).

inside one octave delimited by the mode's first scale degree ($\hat{1}$ and $\hat{8}=\hat{1}$: *TONIC, KEYNOTE*); for fuller explanation, see pp. 85–89.

MOR *n., adj., abbr.* middle-of-the-road; genre label used in US media.

MOVEMENT *n. mus.* self-contained section of a symphony, sonata or similar type of euroclassical work, that usually has its own structure, tempo, home key, etc.

MUSEME *n.* (Seeger, 1960) minimal unit of musical meaning; see also Tagg (2000a: 106-108).

MUSEME STACK *n. neol.* (1979) compound of simultaneously occurring musical sounds to produce a meaningful unit of 'now sound'; components of a museme stack may or may not be musematic in themselves.

MUSTAAR *n. mus. Ar. MAQAM* whose scale degrees are $\hat{1} \#2 \Delta3 \#4 \hat{5} \Delta6 \flat7$, e.g. c d# e f# g a bb, steps $1\frac{1}{2} \frac{1}{2} 1 \frac{1}{2} 1 \frac{1}{2} 1$ (see p. 135).

MVT. *n. mus. abbr.* → *MOVEMENT*.

NAHAWAND *mus. Ar. MAQAM* mode similar to the Western *HARMONIC MINOR* scale (see pp. 91; 116, ff.).

NAWA ATHAR *mus. Ar. MAQAM* in the *NIAVENT* family.

NIAVENT *mus. Ar. family of MAQAMAT* whose lower *TETRACHORD* is $\hat{1} \hat{2} \flat3 \#4$; includes *NIAVENT* itself ($\hat{1} \hat{2} \flat3 \#4 \hat{5} \flat6 \Delta7$), *NAWA ATHAR* ($\hat{1} \hat{2} \flat3 \#4 \hat{5} \flat6 \flat7$), and *NIKRIZ* ($\hat{1} \hat{2} \flat3 \#4 \hat{5} \Delta6 \flat7$ or $\Delta7$); see pp. 116, 135.

NIKRIZ *mus. Ar. MAQAM* in the *NIAVENT* family.

OUTGOING CHORD *n. neol.* (2009) the first chord, a.k.a. *DEPARTURE CHORD* after the tonic in a three- or four-chord loop; cf. *INCOMING CHORD* and *MEDIAL CHORD*. For more detail, see pp. 414-416.

PARAMUSICAL *adj. neol.* (1983) literally 'alongside' the music, i.e. semiotically related to a particular musical discourse without being structurally intrinsic to that discourse; see also *PMFC*.

PASSIM *adv. etym. Lat.* = 'here and there'; used in references to indicate that the phenomenon in question can be found in several or many places in the referenced work.

PENDULUM See *CHORD SHUTTLE*.

PENTATONIC *adj.* (of modes or scales) containing five different notes within the octave; see pp. 153-163.

PERCEPTIONAL See AESTHESIC.

PF. *n. mus. abbr.* pianoforte, i.e. piano.

PERFECT CADENCE *n. ph. mus.* harmonic CADENCE from V to I (see p. 252, ff.); *a.k.a.* V-I CADENCE, DOMINANTAL CADENCE, FULL CADENCE, etc; see also *PLAGAL CADENCE*, *HALF CADENCE*, *INTERRUPTED CADENCE*, *INTERRUPTED CADENCE*, *QUARTAL CADENCE*.

PHONOLOGICAL LOOP *n. ph. neurol.* short-term ($\pm 2''$), ongoing mini-chunk of audio information inside the brain's working memory that can be instantly recalled and strung together with up to three others in immediate succession to produce a larger chunk of 'now sound'; see also *EXTENDED PRESENT*.

PHRYGIAN *adj.* heptatonic diatonic 'CHURCH' MODE which, with e as tonic, runs from e to e on the white notes of a piano keyboard. Its seven ascending tone (1) and semitone ($\frac{1}{2}$) steps are $\frac{1}{2}$ 1 1 1 $\frac{1}{2}$ 1 1 and its scale degrees $\hat{1}$ $\flat\hat{2}$ $\flat\hat{3}$ $\hat{4}$ $\hat{5}$ $\flat\hat{6}$ $\flat\hat{7}$ — e f# g a b# c d in E.

'**PHRYGIAN DOMINANT**' *n. ph. mus.* misnomer, widespread in jazz theory, for *HIJAZ* or the 'majorised phrygian' mode which has neither *DOMINANT* nor dominantal function (see pp. 129, 132-133, 148).

PL. *abbr* plural.

PLAGAL *adj. mus.,* via Latin *plagiarius* (=oblique) from Greek *πλάγιος* (=sideways, slanting, askance, misleading); mostly used to qualify a cadence from IV to I — the *PLAGAL CADENCE*; also used to qualify any type of tonal (usually harmonic) motion between I and IV, e.g. the plagal ornamentation of chords, as described in Chapter 11, p. 362, ff.

PLAGAL CADENCE *n. ph. mus.* harmonic cadence from IV to I (the 'Amen ending'); opposed to *PERFECT CADENCE* q.v. *Plagal* and *perfect* are terms developed by music theorists to denote cultural specificities of tonal direction in the euroclassical tradition; see also *HALF CADENCE*, *INTERRUPTED CADENCE*.

PMFC *neol., n.* (1991) *PARAMUSICAL* field of connotation, i.e. connotatively identifiable semantic field relating to identifiable (sets of) musical structure(s); previously (1979) incorrectly called 'extramusical field of association'.

POÏETIC *adj.* (from Fr. *poiétique*, Molino via Nattiez) relating to the *poiësis*, i.e. to the making of music rather than to its perception (a.k.a. *constructional*); the opposite of **AESTHESIC** ('receptional'), *poiëtic* qualifies the denotation of musical structures from the standpoint of their construction rather than their perception, e.g. *con sordino*, *minor major-seven chord*, *augmented fourth*, *pentatonicism*, etc. rather than *delicate*, *detective chord*, *allegro*, etc.

PRESENT-TIME EXPERIENCE → *EXTENDED PRESENT*.

PROG a.k.a. **PROG ROCK** *n., adj. colloq. abbr.* 'progressive rock', a sub-genre of **ROCK**. It's a problematic term used to loosely designate whatever it is that artists like Genesis, Gentle Giant, Jethro Tull, King Crimson and Pink Floyd are supposed to have in common.

QUARTAL *adj.* (of **CHORDS** and **HARMONY**) based on the stacking of fourths; see Chapter 10 (pp. 293-351); cf. **TERTIAL**.

QUARTAL CADENCE: harmonic cadence used in **QUARTAL** contexts. One type of quartal cadence is common in the droned accompaniment of traditional song: it moves from a chord based on the **COUNTERPOISE** to one based on the tonic (e.g. $D\bar{4} \rightarrow G^5$ in G: see pp. 340-349). Another type is more chromatic: it involves the **MINOR THIRD RULE** and voice leading from a different **TONICAL NEIGHBOURHOOD** and (pp. 320-322).

Q.V. *abbr. Lat.* 'quod vide' = which see, i.e. look up, in the same work, whatever immediately preceded the 'q.v.'.

R&B (also **RNB**) *n. abbr.* **RHYTHM AND BLUES**, i.e. the broad musical style and genre typified by the work of such artists as Muddy Waters, Howlin' Wolf and John Lee Hooker (1950s-70s), *not* that of Whitney Houston, Mariah Carey, Janet Jackson, Michael Jackson, Boyz II Men etc. (1980s-). This latter style is sometimes misleadingly called 'contemporary R&B'.

REAL BOOK popular name of an initially illegal collection of jazz standards and other popular tunes duplicated in **LEAD-SHEET** form (melody and **LEAD-SHEET CHORD SHORTHAND**) at the Berklee School of Music (Boston, USA) in the early 1970s. Songs appearing in *The Real Book* have been legally licensed since 2004. It has a wide circulation among musicians with jazz training (distribution mainly through photocopying or P2P PDF file sharing). It uses shorthand which diverges on

several counts (see p. 242) from that presented on pp. 229-244 in this book.

RÉ-HEXATONIC *adj. mus.* of the hexatonic mode containing scale degrees $\hat{1} \hat{2} \hat{4} \hat{5} \Delta 6 \flat \hat{7}$; see pp. 172-173.

RÉ-PENTATONIC *adj. mus.* of the anhemitonic pentatonic mode containing no third but a minor seventh ($\hat{1} \hat{2} \hat{4} \hat{5} \flat \hat{7}$); see pp. 156-158.

REC. *n., v., abbr.* recording, recorded [by].

RECEPTIONAL *adj., neol.* (2001) See AESTHESIC.

ROCK *n. and attrib. adj.* a wide range of popular and originally English-language musics produced since the mid 1950s for a primarily youth audience, initially more often male than female. The label *rock* covers everything from *PROG ROCK* (e.g. Genesis) to country rock (e.g. Byrds), from punk rock (e.g. Sex Pistols) to folk rock (e.g. Steeleye Span) and from heavy metal (e.g. Led Zeppelin) through thrash (e.g. Metallica) to death and speed metal (e.g. Slayer). It's well-nigh impossible to pinpoint stylistic common denominators for such a wide range of musics, apart from the fact that the music is usually loud and its tonal instruments electrically amplified.⁵ The heyday of rock lasted from the mid 1960s to the 1990s and its musicians are mainly, though not exclusively, male. Fun, anger, opposition and corporeal celebration ('kick-ass') are aesthetic concepts frequently linked to rock.

ROCK AND ROLL – basically synonymous with *ROCK*.

ROCK 'N' ROLL *n.* is a much more restrictive term than *ROCK* or 'rock and roll'; it denotes rock music produced only in the 1950s and early 1960s by such artists as Chuck Berry, Bill Haley, Little Richard, Jerry Lee Lewis and Elvis Presley.

SÄMUS *Sw. abbr.* 'Särskild Ämnesutbildning i Musik', Swedish music teacher training programme, 1971-1976 (see Tagg, 1998d).

5. Here are a just four possible common stylistic traits: [1] rock's harmonic vocabulary tends more often than many other styles to be dorian, aeolian or mixolydian rather than euroclassical; [2] most rock is in common time with frequent anticipations of beats 1 and 3 in the bar; [3] its organological core is the rock quartet, consisting of two electric guitars, drumkit and electric bass; [4] it is almost always loud, and intentionally so. Timbre and acoustic mise-en-scène are of course also essential aspects of rock.

SCALE DEGREE *n. ph. (mus.)* the pitch position, expressed as a numeral, of a tone in relation to a given tonic where that tonic is scale degree 1, abbreviated '1'. For example, 'b3' (scale degree 'flat three') means e \flat if 1 is c, but e \natural if 1 is c#.

SCALE STEP *n. ph. (mus.)* the pitch interval, measured in whole tones, between adjacent notes in a scale: '1/4' = quarter tone, '1/2' = semitone, '3/4' = three quarters of a tone, '1' = a whole tone, '1 1/2' = one and a half tones or three semitones.

SCOT. *abbr.* Scotland, Scottish.

SHARP SIDE *n.* the right hand side of the *CIRCLE OF FIFTHS* (p. 256), where sharps are included in the relevant key signatures: G, D, A, E, B [F#].

SHARPWARD[S]. *adv. and adj.* proceeding clockwise round the *CIRCLE OF FIFTHS* (p. 256); the opposite of *FLATWARDS*. For example, 'the chord progression proceeds sharpwards from F via C to G' (adverbial); 'F - C - G is a sharpwards chord progression landing on the mixolydian tonic, G' (adjectival). Sharpwards movement is so called because the number of sharps in the major-key signature of the root note of successive chords in the progression increases or the number of flats decreases. For example, in the progression G-D-A (bVII-IV-I) the number of sharps increases from 1 (G) via 2 (D) to 3 (A); in the progression Bb-F-C the number of flats decreases from 2 (Bb) via 1 (F) to 0 (C).⁶

SHUTTLE See *CHORD SHUTTLE*.

SINGALONG *n.* a tune to which, when performed, it is easy for members of an audience to sing along; in general a tune easily sung by many people, or an occasion on which such tunes are performed (e.g. 'Friday night singalongs at the old people's home'); *adj. attrib.*, e.g. 'a singalong evening with pianist Fred Bloggs' or 'the singalong chorus part of the recording'.

SOLMISATION *n. mus.* the use of mnemonic syllables to designate the pitch of an octave's seven basic scale steps in relation to each other, as in *TONIC SOL-FA* (*doh ré mi fa sol la ti*). Solmisation syllables are also used

6. In analysis classes at the Université de Montréal I translated *sharp side* as *le côté dièse* or *le côté des dièses* and *sharpwards* as *vers les dièses*. In Sweden I would have used *korssidan* for *sharp side* and *korsriktad* for *sharpwards*.

in India (*sa, re, ga, ma, pa, dha, ni*), China (上 (*siong*), 尺 (*cei*), 工 (*gong*), 凡 (*huan*), 六 (*liuo*), 五 (*ngou*), 乙 (*yik*), Java, Japan and the Arab world (*dāl, rā', mīm, fā', šād, lām, tā'*); see also p. 93, ff.

STRINGALONG; see *CHARITY STRINGALONG*.

SUBTONIC *n. neol.* (2009) the seventh degree in a heptatonic mode. **SUBTONIC** replaces *LEADING NOTE* (q.v.) whenever scale degree 7 does not lead to the octave/tonic. $\Delta\hat{7}$ is not always and $b\hat{7}$ is almost never a leading note, but both are always *subtonic*.

SV. *abbr. svensk/svenskt/svenska, Sverige*, i.e. Swedish, Sweden.

SW. *abbr. Swedish, Sweden*.

SYNCRISIS [¹*siŋkrisis*] *n. mus. neol.* (2012) musical form in terms of the aggregation of several simultaneously ongoing sounds perceptible as a combined whole inside the limits of the *EXTENDED PRESENT*, as distinct from *DIATAXIS* (q.v.); *etym.* σύγκρισις = a putting together, aggregate, combination, from συγκρίνω = to combine, compound, put together; *deriv. adj.* **SYNCRITIC** [*siŋ*¹*kritik*]

TERTIAL *adj. neol.* (1998) (of chords and harmony) based on the stacking of thirds (see p.249, ff.); cf. *QUARTAL*.

TETRACHORD *n. mus.* sequence of four tones, typically (though not exclusively) in consecutive scalar order; there are normally two tetrachords in a heptatonic octave (Figure 75, p. 502).

TIMP. *n. mus. abbr. timpani*.

TONAL *adj. mus.* having the characteristics of a *TONE* or *TONES*, cf. *TONICAL*.

TONALITY *n. mus.* system (codified or uncoded) according to which *TONES* are configured (see p. 51, ff.).

TONATIM [*təu*¹*neɪtɪm*] *adv., neol.* (1992) *TONE* for tone or *NOTE* for note; *etym.* *VERBATIM* = word for word.

Fig. 75. TETRACHORDS and SCALE STEPS for some HEPTATONIC MODES

<p>1. IONIAN (Rast, 'major scale')</p> <p>doh (ionian) — doh (ionian)</p> <p>1 2 #3 4 5 #6 #7 8 1 1 1/2 1 1 1 1/2</p>	<p>2. DORIAN</p> <p>ré (dorian) — ré (dorian)</p> <p>1 2 b3 4 5 6 b7 8 1 1/2 1 1 1 1/2 1</p>
<p>3. PHRYGIAN (Kurd)</p> <p>mi (phrygian) — mi (phrygian)</p> <p>1 b2 b3 4 5 b6 b7 8 1/2 1 1 1 1/2 1 1</p>	<p>4. HIJAZ KAR</p> <p>Hijaz — Hijaz</p> <p>1 b2 #3 4 5 b6 #7 8 1/2 1 1/2 1/2 1 1/2 1/2</p>
<p>5. LYDIAN</p> <p>fa (lydian) — doh (ionian)</p> <p>1 2 #3 #4 5 #6 #7 8 1 1 1 1/2 1 1 1/2</p>	<p>6. NAWA ATHAR</p> <p>Nawa Athar — Hijaz</p> <p>1 2 b3 #4 5 b6 #7 8 1 1/2 1 1/2 1/2 1 1/2 1/2</p>
<p>7. LYDIAN b7</p> <p>fa (lydian) — ré (dorian)</p> <p>1 2 #3 #4 5 6 b7 8 1 1 1 1/2 1 1/2 1</p>	<p>8. NAHAWAND/HARMONIC MINOR</p> <p>ré (dorian) — Hijaz</p> <p>1 2 b3 4 5 b6 #7 8 1 1/2 1 1 1/2 1/2 1/2</p>
<p>9. MIXOLYDIAN</p> <p>doh (ionian) — ré (dorian)</p> <p>1 2 #3 4 5 6 b7 8 1 1 1 1/2 1 1/2 1</p>	<p>10. ÆOLIAN/MELODIC MINOR (descent)</p> <p>ré (dorian) — mi (phrygian)</p> <p>1 2 b3 4 5 b6 b7 8 1 1/2 1 1 1/2 1 1</p>
<p>11. LOCRIAN</p> <p>mi (phrygian) — fa (lydian)</p> <p>1 b2 b3 4 b5 b6 b7 8 1/2 1 1 1 1/2 1 1 1</p>	<p>12. MELODIC MINOR (ascent)</p> <p>ré (dorian) — doh (ionian)</p> <p>1 2 b3 4 5 #6 #7 8 1 1/2 1 1 1 1 1/2</p>

TONE *n. mus.* NOTE with audible fundamental pitch (see p. 51, ff.).

TONIC *n. mus.* central or main reference tone, keynote (p. 52, ff.).

TONICAL *adj. mus. neol.* (2008) having a TONIC (p. 52, ff.), cf. TONAL.

TONICAL NEIGHBOURHOOD *n. ph. mus. neol.* (2014) [1] (in quartal harmony) tonal area encompassing three adjacent 'hours' on the key clock or positions on the circle of fifths (e.g. G C F with C4 (c-f-g) as its core triad) (p. 295, ff.); [2] (generally) any tonal area consisting of closely related chords without definite harmonic directionality. See also QUARTAL HARMONY and the MINOR THIRD RULE.

TONIC SOL-FA *n. mus.* type of SOLMISATION using the syllables *doh ré mi fa sol la ti* to designate scale degrees 1 2 3 4 5 6 7 in the ionian mode (European 'major scale'). *Doh* can be set to any of the Western octave's

twelve tones. 'Doh=C' means that the seven notes used in the music to which it applies will be c d e f g a b. 'Doh=Ab' means the seven notes will be ab bb c db eb f g. The absolute pitch of a note designated in tonic sol-fa is in other words movable (p. 49, ff.)

TR. or **TRANS.** *abbr.* translate[d]/translator.

TRAD. *adj. abbr.* traditional.

TRANSSCANSSION [træns'kænʃən] *n. mus. neol.* (c.1989) short wordless motif whose melodic and rhythmic profile closely resembles that of at least two spoken syllables associated with the music in which it occurs; *etym.* TRANS (across) + SCAN (speak or read metrically), i.e. with the metre and rhythm of the word[s] transferred from speech into music, for example the | 4 7 7 7 7 | 7 (5^1 5^2) of 'Intel Inside' (ex. 217, p. 312) or the | 8 7 7 7 | (1^1 1^2 5) of 'Superman' (ex. 160, p. 198).

TRB. *n. mus. abbr.* trombone[s].

TRITONAL *adj. mus.* (of a chord or mode) containing the interval of a tritone (see p. 95); not to be confused with *TRITONIC*; *ant.* ATRITONAL.

TRITONIC *adj. mus.* (usually of mode or melody) containing only three different tones inside one octave; → *PENTATONIC*, *HEXATONIC*, *HEPTATONIC*; not to be confused with *TRITONAL*.

TRP. *n. mus. abbr.* trumpet[s]

TRUCKER'S GEAR CHANGE *n. ph. mus., colloq.* instant, wholesale transposition of previously stated musical material, usually by a small pitch increment, most commonly a semitone (see Tagg, 2013: 414).

TURNAROUND *n.* short chord sequence at the end of one section in a song or instrumental number; the purpose of a turnaround is to facilitate recapitulation of the complete harmonic sequence of that section.

TUNRAROUND CHORD *n.*, a.k.a *INCOMING CHORD*. In chord loops, it is the last chord immediately preceding the reprise of the loop; i.e. the chord whose relation to the first chord works like a *TURNAROUND* (q.v.). Turnaround chords are also *INCOMING* except in instances when the loop's first and last chords are both tonic, in which case a turnaround device is needed to move from the last back to the first.

UNINTERRUPTED CADENCE *n. ph. mus. neol.* (2008) *CADENCE* which, from a euroclassical hearpoint, sounds like an *INTERRUPTED CADENCE*

but which is in fact a final cadence without interruption (p. 260-261).

V. *n. abbr.* [1] verse; [2] version.

VAMP *n. CHORD LOOP* with several variants whose chords generically run $\text{♩I-vi-ii/IV-V}^{\flat}\text{. \}$

VLA *n. mus. abbr.* viola.






























VLC. *n. mus. abbr.* [violon]cello.

VLN./VLNS *n. mus. abbr.* violin, violins.





WW. *n. mus. abbr.* woodwind.




Reference appendix












Table 43: Symbols used in this appendix










	film production		musical notation
	TV production		composer[s]
	off-air recording		conductor
	DVD		vocalist[s]
	videocassette		performer[s]
	YouTube		writer or lyricist
	on line		film director
	video/computer game		star, actor
	phonogram (CD, LP, etc.)		publisher
	audiocassette		arranger
	written word		
	cover version		title theme
	first published		audio example
	first recorded		section/paragraph n°
	advert		track on album




Three example entries with explanations





1. ADDISON, John (1984)  *Murder She Wrote*   CBS  SvTV (1990).

John Addison is composer of the title theme () for this TV production () , first broadcast by CBS in 1984 and recorded off-air () from Swedish TV in 1990.




2. HIGH NOON (1952)  Criterion/Republic/UA  Fred Zinnemann;  4Front 054 1463 (1998);  Dimitri TIOMKIN;    → Frankie LAINE;     → Tex RITTER.

The source used for the music throughout this 1952 film () from production companies Criterion, Republic and United Artists (UA), and directed () by Zinnemann, is a videocassette () released in 1998. Details of the sources used for the title theme () composed () by Dimitri Tiomkin can be found under other entries (→): [1] Tiomkin himself; [2] Frankie Laine, who sang () a popular cover version () of [3] the original recording () sung () by Tex Ritter.



3. MOZART, W A (1791) Concerto for Clarinet and Orchestra in A major, K622 •2nd mvt.  *Padre Padrone* → MACCHI (1977);  *Out of Africa* →  BARRY (1986).

Details of the sound carriers used as sources for the second movement () of this Mozart concerto from 1791 are provided under two other author entries, to which the reader is referred (→): [1] the album containing Egisto Macchi's music for the film () *Padre Padrone* (released in 1977); [2] the album () containing Barry's music for the 1986 film () *Out of Africa*.

URLs

To save space, the initial ‘http://www.’ in internet addresses (URLs) is omitted and replaced with the ONLINE or DOWNLOAD icon . To distinguish URL sources from surrounding text, and to save space, this font is used, for example ‘ tagg.org’. Dates of visits to URLs are formatted yymmdd and placed in square brackets after the relevant URL, for example ‘ tagg.org [100921]’. That’s clearer and much shorter than ‘http://www.tagg.org; page accessed 21st September, 2010’. A struck-through hyperlink, e.g. ~~http://www.tagg.org~~, indicates that the link was previously operative but no longer worked at the time of publication.

YouTube files

YouTube file addresses are reduced to their unique filenames and the recurrent URL prefix <http://www.youtube.com/watch?v=> is omitted. For example: <http://www.youtube.com/watch?v=msM28q6MyfY> (42 characters) appears as simply msM28q6MyfY (1+11=12 characters). Try copying the ‘msM28q6MyfY’ part of the complete reference ‘msM28q6MyfY [120122]’ into the YouTube Search window. It takes you directly to *The Emmerdale Commutations, Version 6* and nothing else. The system doesn’t even bother you with all the other stuff it assumes ‘you might enjoy’. If you are reading this on a digital device you can just click on the hyperlink to access the referenced file.

N.B. The functionality of hyperlinks in this appendix will vary according to factors explained in the ‘Publication format and devices’ section of online information at  tagg.org/mmmssp/BookFormats.html.

Standard source reference abbreviations

IASPM: International Association for the Study of Popular Music | ITV: Independent TV (UK) | N.D. no date | New Grove: *New Grove Dictionary of Music and Musicians* | Orch: Orchestra | OUP: Oxford University Press | REC. recording/recorded | REV – revised | SRP2/SRP3: Sveriges Radio Program 2/3 (Swedish national radio channel 2 or 3) | SvTV: Sveriges Television (Swedish national TV) | Symph: Symphony | tr. translator[s] | TV3: Scandinavia’s commercial third channel | UA: United Artists | U.P. university press | XTR: extract[s] | XWOS: except where otherwise stated.

Contents

This appendix lists: [1] works cited or referred to in main text (c. 90% of entries); [2] publications not in the main text but referred to as sources inside this appendix (c. 3%); [3] works of direct relevance consulted in the production of this book but not cited or referred to in the main text (c. 7%).

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




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


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







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



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Icons, information and typographical conventions

1. SYMBOLS/ICONS. ▶ = See <ANOTHER MAIN ENTRY> | ♯ = see above under current main entry | ♯ = see below under current main entry | ▶♯ = see under <ANOTHER MAIN ENTRY> | ♯ = compared to, in conjunction with | ▶▶ = see also | ✳ = see scale degree index | ♯ = see chord shorthand index | ♯ = see chord sequence index.
2. CROSS REFERENCES to other entries in the alphabetical index are *IN THIS FONT*. References to *SUBENTRIES* are *IN THIS FONT* (e.g. ‘ascending melodic minor ▶MELODIC ♯MINOR ♯ASCENT’). All references are to the main alphabetical index unless preceded by ‘✳’, ‘♯’ or ‘♯’ (see §1).
3. ITALICS. Titles of written or recorded works, as well as words or expressions not commonly used in anglophone music studies, are in italics (e.g. ‘*Abbey Road*’, ‘*Adagio for Strings*’, ‘*Adeste Fideles*’, ‘*Apache*’; ‘*accordéon musette*’, ‘*baião*’).
4. PROPER NAMES (human) are, page or column space permitting, formatted <Surname, Forename> (e.g. ‘Bartók, Bela’); otherwise they are formatted <Surname, Initial[s]> (e.g. ‘Bénech, F L’).
5. UNDERLINED PAGE NUMBERS refer to a music example (e.g. ‘*Axel F 187*’).
6. FOOTNOTE ENTRIES in the alphabetical index are in this smaller font (e.g. ‘*Ahava Rabbah 124*’, ‘*Carey, Mariah 176*’). If reference to a footnote occurs among normal page references, the relevant page numbers only, not the headword, is assigned the same smaller font (e.g. pp. 113 and 138 in the entry ‘*Bulgaria[n] 113, 124, 125, 127, 138, 374*’). N.B. Footnote references are not included if normal reference is made to the same page and they are not distinguished from normal page references in the numerical indexes.
7. BOLD TYPE indicates particularly important or substantial references, definitions, etc. (e.g. ‘**aeolian** ...26, 76, 77, 91, 95–99, 113, 116, 165...’).

Caveats

The page-number references are generated semi-automatically and seem to be mostly correct, judging from tests carried out in September 2014. However, the distinction between normal, bolded, footnote and music-example references, explained under §§3-7, above, is not always applied consistently.

Creating the numerical indexes was a complicated task. Please note that those supplementary indexes are not exhaustive and that I have been unable to verify the accuracy of more than a random sample of page references.

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
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!

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