ACTIVITY 3.15 *On CD track 2-17, you will hear George Ruckert recite the nine patterns. When you have listened sufficiently to follow what he is doing, experience this principle of increasing the rhythmic density yourself. Either speak it with Ruckert or set your own slower, steady beat. Clap to sound it out or ask a classmate to do it for you. If you find it too difficult to speak the syllables, substitute numbers. To experience this principle of increasing the rhythmic density, set a very slow, steady beat (•) and clap to sound it out. Then start speaking these patterns to fill in the beats, keeping the pace of the beat steady. If you feel really ambitious, carry it through the nine patterns.*

•	•	•	•
Ta	Ta	Ta	Ta
Ta ka	Ta ka	Ta ka	Ta ka
Ta ki ta	Ta ki ta	Ta ki ta	Ta ki ta
Ta ka di mi	Ta ka di mi	Ta ka di mi	Ta ka di mi
Ta kaTakita	Ta kaTakita	Ta kaTa kita	Ta kaTakita

Through subdivisions of the beat, musicians in an ensemble can play different instruments at different speeds, with all parts linked by a common basic pulse. Music played on the Central Javanese *gamelan*s demonstrates this clearly. The register (see chapter 4) on each instrument correlates with the rhythmic density of its musical part: the higher the pitch, the denser the part. When you hear an extremely slow basic melody in this music, listen for extremely fast playing on some instruments. To hear this, I refer you to CD track 1-9 and Activity 3.9.

In this chapter on the organization of time I have presented some ideas and practices by which musicians mark the passage of time through musical selections. Those ideas range from successions of unequal durations in freely floating rhythm, to a single regular unit—a pulse—to various kinds of meters, and to colotomic meter, rhythmic mode, and polyrhythm. Finally, I considered the element of speed, the pace of moving through time. In chapter 4 I take up the musical element of pitch.

CHAPTER 4

Thinking about Pitch

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I treat the subject of pitch at some length in this book for two connected reasons: pitch is the fundamental element in both melody and harmony, and ideas about pitch need to be explored in order to understand how melody and harmony are cultivated in different traditions. Accordingly, I will start by analyzing pitch in basic terms—as single **tones** and in the formation of intervals and scales. Then I will proceed to the use of pitch in melody (thinking horizontally) and in harmony (thinking vertically). This specialized metaphorical use of "horizontal" and "vertical" comes from Western staff notation, where melodies are notated from left to right and harmonies are aligned vertically.

In its most generic sense, **melody** can be defined as any selection of pitches in succession. A particular melody will have one of several forms. It might be short—as in a **motive** (CD track 2-18). It might be relatively longer, as in an Irish tune (CD track 1-4) or a mariachi strophe (CD track 1-7), or even longer, as in a jazz riff of several sections or the solos of a Japanese *syakuhati* (vertical bamboo flute) player (figure 2.12, CD track 1-21). A melody can be easy to sing or play for those familiar with the melodic system, or difficult to remember.

In its most generic sense, **harmony** can be defined as pitches heard simultaneously. How the relationship between those pitches is understood differs from system to system.

PITCH

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"Ken McIntyre once commented that a great improviser could play an entire solo based on one pitch alone. Coincidentally, during an interview with a young drummer, a soft background recording featured flugelhornist Wilbur Hardin, who was gen-

erating tremendous excitement with a stream of single-pitched rhythmic patterns at his solo's opening. . . . The drummer suddenly burst out laughing and, with an apology for his distraction, added: 'Did you hear that? That's what our music's about. Listen to all that brother can say with one note!'" (Berliner, 1994: 147).

∞

The term **pitch** as a relative quality of "highness" or "lowness" of sound is not limited to musical terminology: we speak of the high-pitched squeal of tires and the low-pitched roar of a powerful motorcycle engine. Musical pitch is a more focused idea, referring to a sound that is produced more purposefully in some area, high to low.

In terms of musical practice around the world, it is useful to think of a continuum of ideas about pitch placement. At one end is a sense of satisfaction when the pitch lies anywhere within an expected general compass. In his case study of East African music in this series, Greg Barz cites the distinguished Ugandan musician Centurio Balikoowa as saying: "The temperature in our country is sometimes a bit hot, and the instruments, apart from the flutes, they respond to the weather. If it's hot they go very high. If it's cool it goes very low. So people just play without thinking that this is [this pitch] or this is [that pitch as on a keyboard]." At the other end of the continuum is the ideal of precise placement, a pitch that results when a string, a column of air, or other sound-producing body vibrates at a particular **frequency** (rate) such as 440 cycles per second. I will return to this concept later.

Some instruments can produce clearer or more well-defined pitches than others. Wind, brass, and bowed string instruments have patterns of vibration that are periodic. The repetition rate, known as the fundamental frequency, determines the perceived pitch. Other instruments like wood blocks, snare drums, and cymbals do not produce periodic patterns of vibration, and although they may sound higher or lower, they do not have clear pitches. Periodic sounds have frequency components that fall along the harmonic series in that the constituent frequencies are integer multiples of the fundamental or repetition rate of the waveform. We say these sounds are harmonic. On the other hand, nonperodic sounds like those from many percussion instruments are said to be inharmonic. CD track 2-19 demonstrates the difference between harmonic and inharmonic sounds. The harmonic sound has frequency components at 220, 440, 660, and 880 cycles per second

(Hertz), whereas the inharmonic sound has frequency components at 220, 395, 678, and 845 cycles per second (Hertz).

The practice of harmony in Western music requires periodic or nearly periodic tones. *Gamelan* music from Indonesia, in contrast, uses percussion instruments that do not produce harmonic tones. In such music the Western notion of harmony does not apply.

Pitch Names. For communication about music and as an aid to memory (mnemonic), it is convenient to assign names to pitches. This has been done in various places around the world, using syllables, numbers, or letters. A few examples are given here.

Syllables. Syllables used to name pitches (and percussion strokes) are generically called by the term **solfège**. In India historically syllables have been assigned to seven pitches in ascending order as *sa, re* (in North India, *ri* in South India), *ga, ma, pa, dha* (in North India, *da* in South India), and *ni*. On CD track 1-32, those syllables are incorporated into vocal music as text for melody; this brief excerpt sung by the late great Pandit Amir Khan begins "*re—ni sa*." Indian musicians notate music by writing those syllables, and they appear prominently in the case studies on North and South India in this series.

ACTIVITY 4.1 *Make a transcription of the pitch syllables from CD track 1-32. Then invent a notation to show the melody spatially—showing the contour. Once you have completely plotted the melodic contour, redo the notation to show indications of relative durations. Are some pitches prolonged rhythmically or sung relatively quickly? When you finish, try to sing with the recording from your notation.*

Solfège syllables have been used in European music since about 1600, as follows: *do, re, mi, fa, sol, la,* and *ti* (or *si*), in ascending order. The song "Doe, a deer, a female deer," from the Broadway musical *The Sound of Music*, plays with those syllables, as in "Ray, a drop of golden sun;/Me, a name I call myself." That song occurs as the nanny is giving the children a singing lesson. In fact, that system of solfège is used for teaching music around the world; it has been widely adopted

throughout the Middle East, and musicians in Arab countries, Turkey, and Iran are masters at singing and sight-reading in solfège.

Numbers. Numbers are used in music in at least two different ways. One is to indicate pitch (*do* = 1, *re* = 2, etc.). The other use is technical, instructing musicians how to produce a particular pitch on an instrument. This is the case with the tablature for the Chinese *qin* (figures 1.8 to 1.11), where notation tells the player which string to pluck. In Javanese music, where basic melodies are played out on metal xylophone-type instruments, the slabs are numbered (figure 1.5). On the *qin* and the metallophone, the resulting melodies depend on which pitches the strings or slabs are tuned to.

Letters. In the European system, letters as well as syllables and numbers are used for identifying pitches. Adopted from Arabic in the early Middle Ages, the letters in ascent are A, B, C, D, E, F, and G. Interestingly, the present-day Arab world does not use this letter system, preferring either European solfège or traditional Arab or Persian names for the notes.

Setting the Pitch. Questions arise. Where is pitch *sa* or pitch 1 or pitch A? Who sets the pitch, and how?

Who Sets the Pitch. On many instruments the pitch is fixed in construction. During manufacture, a flute will have pitch holes drilled at some points. If, as in the case of the typical Tanzanian **filulu** flute, which is invariably played alone for one's own enjoyment, there is no need to worry about drilling holes to obtain pitches that will match some other flute's (Barz 2004:10). On a metallophone, the metal will be forged and then trimmed to produce a certain pitch when struck. Tuning a bar is accomplished by scraping or filing away different parts of the bar. If the pitch is too low, metal is filed off the end of the bar, thus decreasing its mass and raising its pitch. If the pitch of the bar is too high, metal is filed off underneath the middle of the bar, thus increasing the flexibility of the bar and lowering the pitch. On the metal surface of a steel drum discretely tuned spots will be hammered out (figure 4.1). On a chordophone, **frets** (perpendicular bars or strings running under several strings) are one mechanism for indicating the pitch placement; the player presses the string down to the fret (called "stopping the string") to indicate the place of other desired pitches. Most but not all fretted

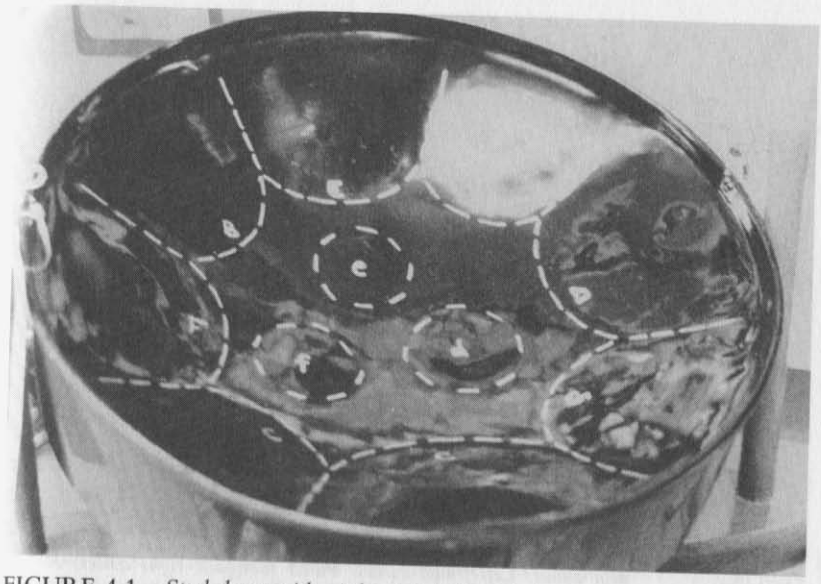

FIGURE 4.1 *Steel drum with pitches labeled.* *(Photo by Phuoc Truong)*

stringed instruments are lutes (figure 4.2); the zither-type Korean *komungo* has frets (figure 2.13, CD track 1-24). If they are to be fixed in place, the instrument maker will have to know the musical system in order to set the pitches properly.

If the pitches are not fixed on the instrument, the musician has responsibility for setting them. While a North Indian maker of *sitārs* (figure 3.2, CD tracks 1-14, 1-15) will put frets on an instrument, he will strap them onto the neck, rather than fix them in place, so that the player can set them according to the melody (**rāga**) to be performed. On the Japanese *koto* (figure 2.12), the player positions a moveable **bridge** under each string to set its pitch, and a player of a lute-type instrument, such as the *syamisen* in figure 2.12, tightens the strings to a certain basic pitch. Beyond that, fretless bowed and plucked lutes present great challenges for players. To obtain pitches beyond those on their open strings, all the musicians in figure 2.5 and the *syamisen* player in figure 2.12 (CD track 2-20) have to memorize where to press their fingers down on the strings along the neck. They must literally embody the sense of pitch as they train their muscles what to do.

FIGURE 4.2 *Salsa Band. Left front, Héctor Pérez (bongos); right center, Rafael Angel Irizarry (Puerto Rican* cuatro*); right front, Jorgé Martínez* (guitarrón); *right rear, Marisol Berrios-Miranda* (güiro); *rear left, Karim A. Imes (drum set); rear right, Allan Stone (bass). The bongo drums (front left) are tuned the interval of a fourth apart. Note the bridges on the sounding board of each of the plucked lutes, and the frets up the necks, as well as the tuning pegs on the guitar on the left rear. (Photo by Kathleen Karn)*

ACTIVITY 4.2 *If you know how to tune an instrument, articulate that process to someone who is unfamiliar with it. In addition, get someone to explain the process on an instrument you are less familiar with.*

Pitch Placement. At what sound levels pitches should lie is a matter of choice in a musical style, deeply embedded in tradition.

All musicians have an ideal of pitch precision, but the ideals differ widely. Indonesian traditions provide a good example of this. In Central Java, each ensemble (*gamelan*) of instruments is manufactured to have its own distinctive set of pitches (figure 1.5). No two ensembles are

tuned alike, and the aesthetic effect of its tuning gives each *gamelan* a musical identity.

In Bali, precise tuning is done with pairs of instruments. However, the two instruments in a pair are tuned precisely *unalike*: the frequencies (the rate of vibration of the sound waves) of their pitches are very close but intentionally set far enough apart in order to produce **beats**. Beats occur when two sound waves with different frequencies overlap; what we hear are resulting periodic variations in loudness. This is demonstrated on CD track 2-21, with each instrument played alone, then the two instruments together. The practice of paired tunings creates the desired bright, shimmering metallic timbre that you hear in CD track 2-5. When played together, the higher instrument, known as the "inhaler," and the lower, the "exhaler," create this pulsing effect, metaphorically breathing and thus bringing the sound of the *gamelan* to life. When there is more than one of a single instrument, such as in the metallophone section of the *gamelan*, the inhalers are all tuned alike, and the exhalers are all tuned alike (Gold 2005: 33). The contrasting pitch ideals in the Central Javanese *gamelan* on CD track 1-9 and the Balinese *gamelan* on CD track 2-5 make the ensemble sounds unmistakably different. (I am assuming that you are remembering to take the initiative to listen when I refer to a CD track, even if I do not tell you to do so.)

In classical music in the European system the named pitches (A, B, C, D, etc.) are expected to lie at some precise place, that is, at a precise frequency: by agreement in recent times, the pitch called "A above middle C" vibrates at 440 cycles per second (with some preference also for the slightly higher pitch of 442 cps). Instruments with fixed pitch are manufactured to this standard, and instrumentalists without fixed pitch are expected to adjust to it. This adjustment can be witnessed and heard through the tuning practice that initiates an orchestra concert (CD track 2-22). Before the conductor of the orchestra comes onstage and the performance begins in a formal sense, the **concert master** (the male or female leader of the violin section, who acts as an assistant to the conductor) stands to face the orchestra and instructs the lead player of the oboe section to produce the pitch A. In turn, in a ritualized order the sections of the orchestra tune. From the cacophony that soon results, it is clear that this is also an opportunity to warm up onstage. Furthermore, the tuning cues the audience to settle into silence for the performance, a practice derived from and idiosyncratic of European classical music performance.

With a sense of "in-tuneness" firmly established in one's musical soundscape, playing against it can be an aesthetic choice. One need only think of the "bent notes" that play around with pitches' "in-tuneness";

modern keyboard synthesizers have wheels on them so the keyboardist can bend the notes. The *salsa* musician Gerardo Rosales insists that *salsa* is not authentic *salsa* unless the trombonist plays a little bit out of tune; not all *salsa* musicians agree, however (Berrios-Miranda 1999).

For a performer to produce pitches at the desired frequencies is known as "having good **intonation**." An ideal once held by musicians of European classical music was to "have **perfect pitch**," wherein one could identify or produce a desired letter-named musical pitch at its established frequency even if asked on the spot; now it is considered far more useful to "have excellent relative pitch." That is certainly the case if you want to enjoy music of traditions with different senses of intonation. A sensible, flexible way to think about "good intonation" is to appreciate musicians' exceptional ability to remember what they hear, in whatever pitch system they cultivate.

A finely cultivated sense of pitch is crucial also in the classical music of North India. Producing pitches that are out of tune with the expected pitch placement is sufficient in contemporary times to ruin a musician's reputation, but it has always been so; from the *Nāradīya Śikṣā* (c. fourth century C.E.): "Wrong musical intonation is a crime in which one risks one's life, one's progeny, and one's cattle" (te Nijenhuis 1974: 36). Flexibility is embedded within the system, however: there is no standardized pitch frequency (cycles per second) for the pitch called *sa*. *Sa* can be placed anywhere a singer is comfortable placing it—not so high or so low as to prevent reaching all the pitches desired in the improvisatory moments to come.

ACTIVITY 4.3 *Experiment with singing a straight ascending row of pitches, calling them* sa re ga ma pa dha ni sa re ga ma. *Start the* sa *on several different pitch levels and listen and feel the difference. Finally, find "your* sa," *a place to start where it is most comfortable to sing up that number of pitches.*

All of the preceding discussion about pitch assumes that a pitch is a discrete entity, a sound. To musicians in some traditions there is much more to it. In Korean musical aesthetics, for instance, the moments of the sounding are just part of the aural experiencing of a pitch. Its dying away, its decay as a string gradually ceases to vibrate audibly, is at the

heart of the aesthetic sense, as well: the beauty of "sound into silence." This should be clear to you from listening to CD track 1-24—the fretted zither *komungo*—particularly through the first minute and a half. The player creates vibrato with his small bamboo rod (figure 2.13) until the sound of the plucked string dies away; the decay is even more obvious when a pitch is allowed to die without vibrato.

THINKING HORIZONTALLY

Intervals. In the discussion above I focused primarily on single pitches, but here I want to move to thinking about pitches in relationship to each other. That relationship can be horizontal—that is, a succession of pitches, as in melody—or vertical—that is, in some kind of harmonic simultaneity. In either case, it is the distance spanned between pitches that comes into play. The English-language term for that distance is **interval.** The matter of intervals is more important in music in the European system than in any other, because that system cultivates harmonic relationships. Nevertheless, I shall approach intervals first as pitches occurring one after another (horizontally), as in melody.

Naming Intervals. So important are intervals in European music theory that they are given names. Two factors are involved in the naming. One is the number of pitches that the interval spans. Figure 4.3 depicts a keyboard with the white keys labeled A, B, C, D, E, F, and G.

Ascending from A to B involves two pitch letters; the interval from A to B is thus called a second. Going up from A to C spans across A, B, and C (i.e., three pitch letters), so the interval is called a third, and so forth. The interval from one note to another note with the same letter name spans eight pitch letters and is called an **octave** (*octo-*, "eight"), as in A to the next higher (or lower) A.

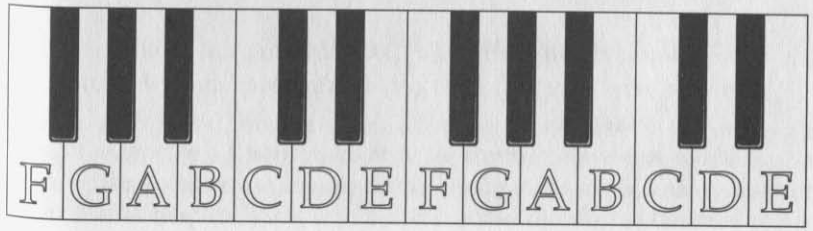

FIGURE 4.3 *Keyboard with white keys named.* (Chart by Viet Nyugen)

ACTIVITY 4.4 *Practice singing and naming intervals in both ascending and descending order: second, third, fourth, fifth, sixth, seventh, octave. Say the letter name of the pitch as you sing it. For example: to sing an ascending fourth from A, sing A, B, C, D, then sing the two outside pitches back and forth—A and D, D and A—to get the feel of it.*

The second factor involved in the naming of intervals in the European system is the type or quality of the interval. There are different types of seconds, thirds, fourths, and the like. Looking again at the keyboard (figure 4.3), you can see two types of seconds. Between pitches B and C (the interval of a second) and E and F (also a second), there is no intervening key. Between F and G (also a second), however, there is an intervening key. The size of the second between F and G is wider: it is called a **major second**. The interval between E and F is the smaller second, called a **minor second**.

Seconds are named in another way as well: the major second is called a **whole step** (in figure 4.4 labeled *W*). The minor second is a **half step** (in Figure 4.4 labeled *H*). Figure 4.5 shows how, on the piano keyboard, the interval between any two adjacent keys is a half step.

Just as there are two types of seconds, there are two sizes of thirds—major and minor thirds. To explore these, see Activity 4.5.

ACTIVITY 4.5 *On the keyboard, count the number of half steps in the third from C to E. You should find four. This is a major third. Or think of it this way: two whole steps make a major third.*

Now count the number of half steps in the third from E to G. There are only three half steps (or, a whole step and a half step). This is a minor third.

Major and minor thirds are crucial intervals for you to hear and feel. One way to do it is to sing the familiar melody of

FIGURE 4.4 *Two ways of naming the interval of a second.* (Chart by Viet Nguyen)

FIGURE 4.5 *Half steps on the piano keyboard.* (Chart by Viet Nguyen)

"Frère Jacques" (CD track 2-23): the melody on just those two first words of the song outline a major third, first in ascent and then in descent. You might know this as "Are you sleeping?"; in that case, the major third occurs on "Are . . . sleeping." Sing it several times. Once you have that interval in your ears, try to lower the pitch on "Jac/sleep" by a half step; the melody will sound very different with a minor third.

Microtones. Many musical systems use intervals smaller than the half step, the smallest named interval in Western music; resulting pitches at such intervals are sometimes called **microtones. Quarter tone** is another term that is frequently used in a rather loose manner to describe many

different "types" of pitches that do not fall into the Western scale. For example, microtones/quartertones are a feature of Arab music, which is based on a theoretical scale of twenty-four pitches per octave. The system includes all the twelve pitches per octave that coincide with those of Western music, but achieves its additional twelve notes per octave by subdividing the intervals into quarter steps. One obtains thereby half-flat" intervals–a half-flat second, half-flat third, and the like. No musician would ever play the twenty-four notes in succession; rather, the system just supplies a great variety of possible pitches from which scales may be derived. **Maqam Rast**, a melodic mode explored in depth in Scott Marcus's volume on the music of Egypt and the eastern Arab world in this series, features a half-flat third and a half-flat seventh (CD track 2-1).

ACTIVITY 4.6 *Listen to the beginning of CD track 2-1, the instrumental introduction to a song by the great Egyptian singer Umm Kulthum. In the melodic unit (phrase) that immediately follows the downbeat given by the double bass, the second note is a half-flat third. The penultimate note of that phrase is a half-flat seventh. The phrase repeats. Listen to the opening section several times, up to the beginning of the* qanun *(plucked frame zither) solo.*

Scale. Theorists and practitioners in a number of musical systems think about melodic material in terms of pitch sets—groups of pitches. One clear way to articulate a set of pitches is to present them as a scale, in straight ascending or descending order. (Note: this is not appropriate for some types of pitch sets.) When one hears a scale, the focus can be on the pitches or on the intervals formed by the distances between the pitches. In Indian music theory, for instance, the focus is on the pitches, while in the European system the focus is on the intervals. I shall sample a few scale types and illustrate how scalar material might be used in melodic practice.

The Chromatic Scale. Sounding all twelve pitches in an octave on the piano in ascending or descending order produces what in English is called a **chromatic scale**.

ACTIVITY 4.7 *Find a keyboard and use figure 4.5 to position a finger on pitch C, in about the middle of the keyboard. Play each key in succession (both white and black) up to the next pitch C. You have created a chromatic scale of twelve pitches.*

A dramatic example of the chromatic scale in melody is the opening of the famous aria "L'amour est un oiseau rebelle," from *Carmen*, an opera by the French composer Georges Bizet (1838–75). Much of the first part of the aria consists of a descending chromatic scale. (This aria is more commonly called "Habanera," which is actually the Cuban song form that supposedly served as the stylistic basis for the aria.)

ACTIVITY 4.8 *At the point in the story of the opera* Carmen *that is recorded on CD track 1-31, a number of women factory workers mill about onstage, trying to attract the attention of soldiers who wait instead for the sensually flirtatious heroine, Carmen. The excerpt begins as she finally enters. Carmen is interested only in a soldier whom she does not see.*

First listen to CD track 1-31 all the way through, for the purpose of following the French text (even if you do not know French).

The quick orchestral introduction to the aria begins at 1:02. In repeated listenings, focus on the chromatic scale at the beginning of the aria and through the selection. Occurrences of chromatic melody are underlined in the French text. You will hear it better if you try to sing along with the soloist. Keep listening, because that melody repeats.

(Carmen enters)

0: 05 All

La voilà! — *There she is!*

0:17 Men

Carmen, sur tes pas, — *Carmen, we're all at your feet!*

nous nous pressons tous;	
Carmen, sois gentille, au moins réponds-nous,	*Carmen, be kind and at least answer us,*
Et dis-nous quel jour tu nous aimeras.	*and say that one day you'll love us!*
Carmen, dis-nous quel jour tu nous aimeras.	*Carmen, say which day you will love us!*
0:33 **Carmen**	***(after a quick glance at Don José)***
Quand je vous aimerai?	*When will I love you?*
Ma foi, je ne sais pas.	*Really, I don't know.*
Peut-être jamais, peut-être demain,	*Perhaps never, perhaps tomorrow,*
Mais pas aujourd'hui, c'est certain.	*but not today—that's certain.*
1:08	***Habanera***
L'amour est un oiseau rebelle	*Love is a bird wild and free*
que nul ne peut apprivoiser.	*whom no one can tame;*
Et c'est bien en vain qu'on l'appelle,	*And it's useless to appeal to him,*
S'il lui convient de refuser.	*if he's in the mood to refuse.*
Rien n'y fait; menace ou prière.	*He heeds no threat or prayer.*
L'un parles bien, l'autre se tait;	*One speaks well, the other is silent;*
Et c'est l'autre que je préfère.	*and it's the other whom I prefer.*
Il n'a rien dit, mais il me plait.	*He has said nothing; but he pleases me.*
1:36 **Chorus**	
L'amour est un oiseau rebelle	*Love is a bird wild and free*
que nul ne peut apprivoiser.	*whom no one can tame;*
Et c'est bien en vain qu'on l'appelle,	*and it's useless to appeal to him,*
S'il lui convient de refuser.	*if he's in the mood to refuse.*
1:37 **Carmen**	***(first line overlapping with chorus)***
Amour, amour, amour, amour!	*Love, love, love, love!*
L'amour est enfant de Bohême,	*Love is a gypsy child*
Il n'a jamais, jamais connu de loi.	*who never, never heeds any law.*
Si tu ne m'aimes pas, je t'aime.	*If you don't love me, I love you;*

Et si je t'aime, prend garde à toi!	*And if I love you— ah then, beware!*
2:05 **Chorus**	
Prends garde à toi!	*Ah then, beware!*

Continue to listen for repetition of the last three lines and the verse from the beginning of the "Habanera."

Long chromatic descents and ascents and quick three-pitch chromatic motives comprise much of the melodic material in the contemporary piece "Mini Overture" by the Polish composer Witold Lutosławski (1913–94) (CD track 2-4). This is a snappy fanfare for brass quintet. Within seconds of the start, the first trumpeter gives out a descending chromatic alarum, which is taken up in turn by the horn and trombone players. Immediately after, the trombonist initiates the idea of repeating three-pitch chromatic motives, answered very quickly by the second trumpeter and then the horn player. From that point you can hear rapid three-pitch chromatic motives that seem to be everywhere: 1:02 to 1:35 is thick with them, also at 1:55. The long chromatic line recurs at 2:35, recalling the beginning at the end.

Diatonic Scales. **Diatonic scales** comprise some arrangement of half steps and whole steps. If you have grown up hearing music in the European system, and you just sing the most natural scale that comes into your head, you will no doubt sing one of them—the **major scale**. You have learned it by osmosis. It is the scale you sing on the text syllables "Doe, ray, me, far, sew, la, and tea" in "Doe, a deer" (that is, the solfège syllables *do, re, mi, fa, sol, la,* and *ti* or *si*). Figure 4.4 shows a major scale that begins on pitch C. You can see there the arrangement of whole steps and half steps within an octave: W W H W W W H (CD track 2-24).

ACTIVITY 4.9 *Other CD tracks you have listened to thus far have melodies that use a Western major scale. Listen again to identify at least two of them. This is a good moment for you to be certain that you have added all the references to all the CD tracks thus far in your cumulative accounting for them.*

Another important diatonic scale in the Western system is the **natural minor scale**. Its arrangement of whole steps and half steps is W H W W H W W. Major and minor thirds play the most significant part in distinguishing the major and minor scales.

The "Oriental" Scale. Perhaps you will immediately recognize CD track 2-25 as a Spanish flamenco song—by the vocal style perhaps, or by the guitar style. The scale in the melody might also sound familiar to you; starting on C, its pitches are C D^{b} E F G Ab B. You have not yet encountered in this book the interval between pitches 2 and 3, and between pitches 6 and 7; because it spans two letter names, it must be a second of some kind, yet it encompasses three half steps. Larger than a major second, this **augmented second** distinguishes this scale from a diatonic scale and establishes its "difference." The music of the excerpt on CD track 2-25 is so particular to flamenco that the scale is strongly associated with the Roma, who developed the style. Linking the Roma (gypsies) and Spain and nondiatonic melody is logical. The Roma have a long history in Spain. So, too, did peoples of the Near East (more properly called "West Asia" now) of non-Christian faiths (Muslim and Jewish) until 1492, when Ferdinand and Isabella expelled them. Left behind were assimilated elements of those peoples' cultures—including music. Even today, some musics of southern Spain suggest some cultural retention through the centuries.

Non-Romani composers have used this and similar nondiatonic scales to suggest not only the Roma but also other exotic people and places in "orientalist" fashion (Said 1978). For that reason, this scale is sometimes called the "**Oriental scale**." Begging for further exploration here are the words "orient," "oriental," and "orientalist" in order to begin to understand why the adjective "exotic" is frequently attached to nondiatonic—i.e., different—scales in the European perspective. (I can tell you from personal experience that North Indian musicians find the minimalist selection of scale possibilities in the European tradition to be quite "boring"; they find nothing "exotic" in the difference.) In the European imagination in the period of world exploration, "the Orient" meant—not Asia as a totality as one may think—but particularly the "Near East"—as lands of Arab and Indian cultures were called in reference to their location relative to the colonial powers to "the West." "Oriental" is the adjectival form of "orient," pertaining in that terminology to characteristics of peoples and their cultures in the Arab and Indian worlds. "**Orientalism**" is what Edward Said dubbed the imaginative construction by European powers of a view of Arab (and

Indian) culture as the "exotic Other" for purposes of the colonial project. (See Chapter 6.) Because the word "Oriental" now connotes derogatory colonialist attitudes, English speakers today use the term with caution.

Nevertheless, that one musical scale heard in CD track 2-25 in particular continues to suggest the generalized "exotic other," and the use of it may outlast the use of the word "oriental." I recently heard it employed in Ken Burns's documentary series, *The War*—first a soulful violin line based on that scale over a vague "harmonic" steadiness behind the telling of the bombing of Pearl Harbor, a musical underlining of the otherness of the Japanese to Americans, and then again as the genocide of the Polish Jews—Hitler's other—is narrated. From the earlier discussion of microtones/quarter tones, you can realize what an essentializing connotation has clung to that particular scale. However, many types of nondiatonic scales exist and in many musical systems around the world.

Number of Pitches in an Octave. To consider scales on a worldwide basis, it is useful to think in terms of the number of pitches that lie within an octave. There are numerous **heptatonic** (seven-tone) scales, of which the European major scale is one (CD track 2-24). From the perspective of the total number of pitches within an octave, Arab music scales, too, are all heptatonic—selections of seven pitches from the twenty-four possibilities mentioned under "Microtones." The scale on CD track 2-1 is an example. **Pentatonic** (five-tone) scales are also numerous, such as the scale of "Auld Lang Syne" (C, D, E, G, A), sung to mark the beginning of a new year.

ACTIVITY 4.10 *To experience music with two different pentatonic pitch selections, first sing "Auld Lang Syne." Then listen to CD track 1-9, a selection in a Javanese tuning system called* sléndro, *which is pentatonic. While the pentatonic scale of "Auld Lang Syne" has a clear "gap" between pitches E and G, Javanese* sléndro *positions the five pitches more or less equidistantly within an octave.*

Listen to the Irish ballad on CD track 1-8 again. Try to make out the pitch selection and make a scale from the pitches.

While "we" usually think about pitch selections in terms of pitches within an octave, there are other possibilities. One is the concept of **tetrachord** as an analytic tool. A tetrachord is a four-note scalar segment whose first and fourth pitches are separated by the interval of a perfect fourth (for example, C to F, D to G). On CD track 2-27, you can hear the heptatonic scale on CD track 2-26 as the combination of a lower tetrachord and an upper tetrachord. (See Marcus 2007.) Modern Arab music theorists usually recognize nine different tetrachords, each with a unique intervallic configuration, each named. On CD track 2-27, you hear the tetrachord named **rast** as both the lower and upper tetrachords. CD track 2-28 gives you *rast* and two others—**nahāwand** and **hijāz** for comparison.

Pitch Functions. Whether you have a set of five, six, twelve or some other number of pitches in a set, the idea of assigning some particular function to one or more of them is widespread. A South Indian classical *rāga* (**melodic mode**) is likely to have a beginning pitch, an ending pitch, and "life-giving tone(s)" on which the melody pauses and dwells.

An extremely common musical practice is to establish a **pitch hierarchy**; that is to say, some pitch in a pitch set is given more importance in melody than other pitches. Ethnomusicologists have called it various things: a **tonal center**, a base note, a fundamental, or a primary pitch. One can often sense a tonal center in listening to melody, perhaps because the pitch occurs frequently or because the melody comes to an end on it. The best way to locate a tonal center is simply to listen and let it emerge in your hearing—and not worry if you cannot sense it at first.

ACTIVITY 4.11 *Try feeling the tonal center in these selections: CD track 1-2, Trinidadian steeldrum; CD track 1-3, Chinese ensemble, "Moderate Tempo Six Beats"; CD track 1-6, "Ballad of César Chávez"; and CD track 2-23, "Frère Jacques" ("Are you sleeping").*

In the European tradition the tonal center is called a **tonic**, and the system of music that is organized around having a functional tonic is called **tonal music**. It is appropriate to think of "tonic" as a "home pitch" because in tonal music aesthetics there is a definite sense of finality associated with returning to the tonic pitch to end a piece. You can feel this clearly on CD track 2-7, "West End Blues."

Any pitch in the European system can be the tonic of a major or minor scale. The resulting tonality is identified as a **key**: the key of A major (A is *do*) or the key of A minor; the key of D major (D is *do*) or the key of D minor. Keys are useful in several ways, one of which is performing music at a pitch register that is comfortable for your voice or on your instrument.

ACTIVITY 4.12 *Find a comfortable pitch for yourself, from which you can sing a major scale up, covering about an octave. Identify your comfortable key by finding the starting pitch (the tonic) on the piano.*

Hierarchy is so important in tonal music that three other pitches in a key are designated as more important functionally. The important pitch that is five pitches up from the tonic is called the **dominant**; in "Take Five" (CD track 1-37) the bass player articulates the metric structure by alternating between the tonic and dominant. The pitch located four pitches up from the tonic is the **subdominant.** A third important pitch is generally called the **leading tone**; located a half step below the tonic (or, in the less common case of the "upper leading tone," a half step above tonic), it is used to create a feeling of going toward the tonic.

Mode. Beyond the rather abstract idea of pitches and their functions, intervals, and scales is another way of thinking about what constitutes fundamental melodic material on which compositions and improvisation are based. That is **mode**, an idea about pitch and melody that encompasses both explicitly musical practice and extramusical associations. European major and minor scales are modes, in that there is sometimes a mood associated—a sense of major as "happy" and a sense of minor as "sad." "Association" is the operative word here. Tom Turino points out how, unlike in North America where the minor scale that begins with a minor third is associated with sad, somber, or serious emotions, it has no such emotional meanings for indigenous Andean people of South America. Rather, it is speed that bears an association

with moods: slow tempos communicate more serious or profound sentiments, and fast pieces are associated with upbeat emotions (2007).

In addition to mood (or instead), it is musical practice that distinguishes modes. Rajna Ledoux has described the way she learned about mode in Turkish music, there termed **makam**.

> Every Tuesday morning I would meet my teacher, Yusuf Ömürlu Bey, for my lesson. Each time, he would have ready two identical binders containing select vocal and instrumental pieces in one *makam*. With these binders on his desk—one for him, the other for me—introduction of a new *makam* would commence. As he is browsing through the sheets deciding which tune we will start our lesson with, Yusuf Ömürlu Bey is humming in free rhythm a vocal improvisation, a *seyir* of a *makam* I am about to learn. This little ritual is followed by his explanation of the properties of the *makam*. He would write a scalar formation of a *makam*, clearly defining its tonic and dominant with whole notes, delineating its tetrachord and pentachord with arches, showing acoustical relationships between adjacent notes with standard symbols [letters] and also the general melodic progression of the *makam*.
>
> Up to this point, Yusuf Ömürlu Bey's instruction is very systematic and does not depart from the explanations one can find in textbooks on Turkish music theory. His instruction is musically mute, my teacher never finding any reason to demonstrate either the scale or those nuances with his voice.
>
> From that point, however, Yusuf Ömürlu Bey's instruction departs to the more illusive and poetic realm of "colors" [*renkler*] or "fragrances" [*kokular*] of the *makam* in question. This is where his passion for Turkish music and Turkish melody becomes obvious. As he demonstrates with his voice these *colors and fragrances in the form of characteristic motif, change in register, shift to important functional degrees, and melodic alterations that give particular identity* to the *makam*, his facial expressions depict *the emotional feel* of the *makam* that puts it into the realm of poetry. He frequently describes them with poetical tropes such as melancholy, happiness, and so forth. As a conclusion, Yusuf Ömürlu Bey hums another vocal improvisation demonstrating discussed features of the *makam* for that day, and segues into singing several vocal and instrumental compositions from the binder. (Klaser 2001: 62–4)

In the quote, I have italicized those characteristics—particular expressive qualities—that make mode a more encompassing idea about

melodic material than even the composite of pitch and pitch function, interval, scale, and key.

To pursue *makam* (Turkish spelling) a bit with a musical illustration, I turn to *maqam* (Egyptian transliteration) Rast that is featured throughout Scott Marcus's book in this series on Egypt and the eastern Arab world. For pitch selection, *maqam* Rast will be performed with the *rast* tetrachord in the lower position, but with any of the three tetrachords (CD track 2-28) in the upper position. It will take sharp listening to hear the quick shifts among them in the melody of CD track 1-37, but with a listening guide, you can at least get the principle of the melodic practice, with a focus on *hijāz* tetrachord.

0:05–0:11	The initial rubato phrase starts with the notes of a *hijāz* tetrachord (G-Ab-B-c),
0:33–0:38	That again.
0:55–	The *qānūn* solo reasserts the *hijāz* tetrachord.
1:26–1:30	With the entry of the percussion, a quick alternation, here *nahāwand* tetrachord
1:30–1:36	*hijāz*
1:36–1:37	*nahāwand*
1:37–1:39	*hijāz*, before falling to the tonic. A tonic pitch is a characteristic of modal practice in the *maqām* system.

The words "mode" and "mood" are linguistically related and musically articulated. "If you take any set of notes and continually play only these notes, then a mood is built up. After a long period of hearing only these notes, adding a new note creates a shock. Similarly, by playing only a different set of notes, a different mode is created" (Scott Marcus, personal communication, 2001).

Musicians in North India consider many of their melodic modes (*rāga*) bearers of special expressive capacity to communicate moods. Some historians explain that capacity by citing the ancient connection of music and drama, where the shifting moods in a play would be expressed musically. Other historians connect it with the shifting natural moods in a day, from meditative in the early morning hours, to energetic in midmorning, tantalizingly tentative at sunrise and sunset, and serious in the late night. Others explain it through the different contexts and functions of music in a complex court culture in which India's classical music was cultivated—music for religious worship, light after-dinner entertainment, serious discussion deep in the night. Perhaps it is a combination of nature and culture. Whatever the reason, medita-

tive *Rāga Āsāvarī*, with all its particular modal characteristics, is best performed in early morning. Rag Jog, featured in CD tracks 1-14 and 1-15 is a relatively recent melodic mode, best played late at night from midnight to 3:00 a.m. The Malhar *rāga*s are best performed in the monsoon season, when, perhaps, they might relieve the oppressively humid atmosphere by causing a cloudburst (or by bringing a beloved, who is as awaited as the rain).

Melodic mode with all its characteristics and associations is fully explored in the Egypt, North India, and South India volumes in this series.

THINKING VERTICALLY

In the discussion above, I focused on pitch as the fundamental material for melody. Here I shift to thinking about pitches that are heard simultaneously (vertically), bringing harmonic orientation into play. The amount of focus on vertical relationships and the nature of them differs from music to music; no musical system cultivates verticality as much as does the European music system. In the discussion below, I present a few examples of ways in which musicians practice music with a vertical orientation.

Naming Vertical Intervals. The term **interval** in harmonic thinking has the same meaning as in melodic thinking: the distance between two pitches. Several intervals may be heard on CD track 2-29; their names in European music theory are as follows: minor and major second, minor and major third, perfect fourth, augmented fourth/diminished fifth and perfect fifth, minor and major sixth, minor and major seventh, and octave. Intervals that exceed the octave are called ninth (i.e., an octave plus a second), tenth, eleventh, and so forth. The vocal duo on CD track 1-6 are singing in a style that is characteristic of the Mexican *corrido*—in parallel thirds. Neither voice carries "the melody"; they sing pitches at the interval of a third a part—sometimes a minor third, sometimes a major third.

Dissonance and Consonance. The quality of the sound produced by a vertical interval is spoken of as **dissonant** or **consonant**. A widely held idea in European music theory has been that those intervals which are mathetically simple regarding the ratios of their frequencies (an octave is a simple 2:1 ratio) are "consonant." The consonant intervals are the first five of the natural overtone series: the octave, the fifth (3:2), the fourth (4:3), the major third (5:4), and the minor third (6:5). Complex intervals, on the other hand (a major second is 9:8) are "dissonant."

According to this theory, dissonance produces tension, whereas consonance offers relaxation, by release of tension.

ACTIVITY 4.13 *When a pitch is produced, we hear it as a single entity, but in actuality it is a composite of the fundamental frequency plus a set of mathematically related overtones—the* ***overtone series****.*

Find a stringed instrument with which to experiment. (The strings inside a piano will do, or guitar or violin strings.) To obtain the first natural overtone of the pitch to which one string is set, sound the string while lightly touching it right in the middle of its length, producing a simple 2:1 ratio; do not press so hard that you touch the sounding board. Doing so should result in a ringing pitch an octave higher than the string's pitch when played normally. To get the second overtone, experiment with finding a spot where the string is divided into three equal parts. When you find it, the pitch a fifth higher than the first overtone (i.e., an octave and a fifth higher than the string's normal pitch) will result. To get the third overtone (a fourth higher than the second overtone and two octaves higher than the starting pitch), find the spot one-fourth the length of the string.

Venturing beyond that mathematical concept of consonance and dissonance takes us into the subjective realm of musical aesthetics. For example, we find entirely different aesthetic ideas about the interval of a second: to Bulgarian women in the area of Sofia, the second is "pleasant and smooth"—in effect, consonant. In an example presented in Timothy Rice's volume on Bulgaria in this series, one woman sings the melody; another sings a part that zigzags between the tonic pitch and the note below it (CD track 2-30). They are striving to make their vertical intervals "ring like a bell" by narrowing them, especially on long-held notes, to somewhere between a major second and a minor second until they get the desired effect, an intense "beating" that is reminiscent of that produced on the paired Balinese instruments (CD track 2-21). The tension of

singing is released at the end of a verse with a cry on the syllable "eee," leaping melodically up a seventh or an octave, and sliding down.

Nor is the idea about dissonant seconds and sevenths maintained in a good deal of contemporary composition, whether written in the tonal system or not. Lutosławski 's "Mini Overture" abounds with minor seconds; they contribute part of the energy of the piece (CD track 2-4).

Functional Harmony. Intervals stacked vertically in tonal music are usually understood to form **chords**. A certain chord built on pitch 1 (*do*) of a key is the tonic chord (written in Roman numerals, I); likewise, a certain chord built on pitch 5 is the dominant chord (V), a certain chord built on pitch 4 is the subdominant chord (IV), and so forth. Not surprisingly, those chords constitute a hierarchy analogous to the pitch hierarchy discussed above: the tonic chord is all-important; the dominant chord and subdominant chords are important, in that order. This use of chords is called **functional harmony**.

Chords in the tonal system consist of three or more pitches. The most basic is a **triad**, so called because it consists of three pitches, the upper two of which are stacked a third and a fifth, respectively, above the bottom pitch or root of the chord.

ACTIVITY 4.14 *To do this activity you need to gather at least two friends. Together count as you sing up from pitch 1 to 5 (starting anywhere that is comfortable for all of you), then sing just 1, 3, and 5 (leaving out 2 and 4). Sing 1–3–5–3–1 (ascent and descent) until it feels easy; those are the pitches of a triad. Then split up the pitches among you so that someone is singing each of the three pitches. When you sing them simultaneously, you are producing a triad. Build more triads, stacking thirds above any pitch.*

A sequence of chords is called a **chord progression**. In much tonal music a common practice guides which chord is likely to follow a given chord. The subdominant chord (IV) is likely to be followed by the dominant chord (V) or the tonic chord (I), for instance, and the dominant chord (V) is likely to lead to the tonic chord (I). Chord progressions of countless songs use just two or three of those chords.

ACTIVITY 4.15 *With the recording on CD track 2-31, sing this progression of these pitches:*
1 4 5 1 4 1 5 1 4 5 1
If you were to build chords on each one of those pitches, your chord progression would be I IV V I IV I V I IV V I. The pitches are called the root pitches of the chords.

The *corrido* "Ballad of César Chávez" (CD track 1-6) uses the tonic and dominant chords in a clear fashion. The guitar player anticipates the change with finger picking. Here I have rewritten the first two verses, with the chords indicated.

(Guitar intro settles on I.)

En un día siete de marzo, Jueves Santo en la mañana,

I V V I

Salió César de Delano, Componiendo una compaña.

I V V I

(Brief guitar interlude stays on I.)

Companeros campesinos Este va a ser un ejemplo

I V V I

Esta marcha la llevamos Hasta mero Sacramento.

I V V I

A genre of music that uses the I, IV, and V chords to the fullest is the blues. In most blues pieces, a chord progression that repeats in every verse provides stable underpinning for the flexible parts that swirl around it. Stripped to its simplest form, that chord progression is as follows.

I I I I

IV IV I I

V V I I

ACTIVITY 4.16 *Listen to the* corrido *on CD track 1-6 and try to sing the tonic and dominant pitches that undergird the chord progression.*

If you succeed at that, proceed to CD track 2-7, "West End Blues," a 1928 Louis Armstrong hit. Try to follow the blues chord progression when the theme begins, just after Armstrong's famous introductory trumpet solo.

The first task is to feel the tonic. Listen through the selection until you are sure you have that. Then focus on chord changes. You should expect to get all the way through the blues chord progression in the length of one chorus.

0:15 Listen to the chords in the piano through the first chorus.

0:50 The second chorus features a solo by trombonist Fred Robinson.

1:24 Armstrong sings scat syllables through the third chorus, alternating with Jimmy Strong on clarinet.

1:59 The fourth chorus features a piano solo by Earl "Fatha" Hines.

2:33 The final chorus starts with a long-held high pitch on the trumpet before Armstrong takes off again.

The piece ends on a clear, comfortable tonic chord.

One of the effects of the global circulation of popular music, particularly from the Americas and the Caribbean region, is the widespread presence of functional harmony—or, in some cases, what seems to be functional harmony. On CD track 2-32, there are moments from a selection of new Egyptian music, featuring someone playing chords in rhythmic patterns that match the rhythmic modes played by the percussion section. While these chords often match those of Western harmonic practice, they also frequently follow a non-Western harmonic grammar. Said Kadry Sorour, "We generally don't hear the chords as establishing a Western sense of harmony. Rather, they add color to the *maqām* that is being played (personal communication to Scott Marcus, cited in Marcus 2007:173). In CD track 2-32, the *maqām* is again Rast, with the *rast* upper tetrachord.

Tone Clusters. Complex tone clusters occur in Japanese *gagaku* music, played on an aerophone called the **shō**. (It is the first instrument heard on CD track 2-2, and the players of *shō* sit at the rear right in figure 2.18.) A **tone cluster** is a vertical set of pitches, without the functional implications of chords in the tonal system. In the *shō* part in this musical tradition, the bottom pitch of the cluster and the occasional single pitch correspond to melodic pitches. The effect of the *shō* cluster is that of a complex chord played on an organ, sustained for several counts, and gradually changed to another cluster. The *shō*'s part is important to the sound of the ensemble; without it the texture becomes sparse, as you can hear in CD track 2-2 when its part ceases.

THINKING HORIZONTALLY AND VERTICALLY

Now I want to consider the interplay among musical parts when groups of people make music together. The variety of melodic and harmonic practices can be heard as lying along a continuum, at one end of which is music with no vertical dimension and at the other is music in which the vertical dimension is paramount. Musical relationships among the various parts result in what many music analysts call **texture**. For a good deal of music in the European system, it is possible to classify pieces according to categories of texture, and I refer to those categories below. Many pieces, however, are not easily categorized, and when one considers musics outside of Europe, the number of possibilities for ensemble relationships burgeons, causing many ethnomusicologists to avoid analyzing music in terms of texture altogether. In this section I shall explore some of those many possibilities, starting with ways a group of musicians might perform one melody.

Performing One Melody.

Solo and in Unison. A musical texture consisting of a single melodic line and nothing else is **monophony**, literally "one voice." Melody is monophonic if sung or played by a single person alone (**solo**), as on CD track 1-1, Islamic Qur'ānic recitation; on CD track 1-21, a *syakuhati* solo; and on CD track 1-8, an Irish ballad. The texture is still monophonic if that single melodic line is sung by a group of people in **unison**, either on the same pitch or in octaves. (Note: singing pitches an octave apart is musically thought of as singing "the same" pitch.) The Navajo song (CD track 1-10) is started as a solo, then the individual is joined by others in unison. For the first thirty-four seconds of CD track 2-33, the four-

Sumer is icumen in.
Lhude sing cucu,
Groweth sed and bloweth med,
and springth the wude nu.
Sing cucu.
Awe bletheth after lomb,
Louth after calve cu;
Bulloc sterteth, bucke verteth
Murie sing cucu.
Cucu, cucu.
Wel singes thu cucu,
Ne swik thu naver nu.

FIGURE 4.6. *"Sumer is icumen in."*

teenth-century song "Sumer is icumen in" ("Summer is a-coming in") is presented in unison by a mixed chorus. (The Middle English text is provided in figure 4.6). Various signs of summer are noted—seeds growing, female animals with young, and the male animals restless—but the recurring reference is to the cuckoo, whose call is imitated melodically.

Interlocking Parts. Another way of performing a melody communally is to split it up among several musicians, assigning a single pitch or a few pitches only to each person. The melody is the sum of the parts. (This performance style was known as **hocket** in music of the late medieval period of Western history.) If you listen closely to the Peruvian panpipe selection (CD track 1-33), you can hear that two players combine pitches to make the melody in each part. This performance practice of **interlocking parts** occurs frequently in Balinese music also; on CD track 1-25, players of a group of *gangsas* create a single melodic line with pitches subdivided between them, interlocking in intricate rhythmic patterns, playing at rapid speed. From the beginning of the CD selection to 0:36 you can hear one of the two parts alone, from 0:36 to 1:03 the second part alone. From 1:03 to the end, the two parts join in a complete interlocking pattern (**kotekan**) to form the melody. These examples have demonstrated interlocking parts as melodic, but the same practice occurs in rhythm. On CD track 2-34, multiple players of bottles interlocked and alternated, together creating the resulting rhythm.

Rounds. Along the continuum from horizontal to vertical orientation is the performance practice of singing a melody as a **round**. As you must know from singing rounds yourself, music makers begin the melody at systematically different spots, thereby overlapping. It is challenging, because you have to concentrate on singing the melody yourself—thinking horizontally—while at the same time hearing the combined voices vertically. The total effect can be so busy that one must listen carefully to be sure that just one melody is being rendered. On CD track 2-33, "Sumer is icumen in" is sung as a round from 0:36 to 1:34; in this performance the women start the round and the men join.

A melody sung as a round is just one type of a texture called **polyphony** (literally "multiple voices") in European music terminology (see further discussion below). When each singer imitates the melody of other singers (rather than simultaneously singing a different melody), the result is **imitative polyphony**. In a round (also called **canon**) the imitation is strict; everyone sings the melody just alike.

ACTIVITY 4.17 *Reach back in your memory for a round you sang when you were young. Try to sing that melody or another that you remember with a friend or group of friends—first in unison, then in multiple parts. Perhaps "Frère Jacques" ("Are you sleeping?") is one of them; its melody is on CD track 2-23.*

Heterophony. In **heterophony** (literally "different voices") multiple musicians perform one melody, but each musician might render the melody somewhat differently. In Arab music, for example, a lute player and a flute player might give slightly different renditions of a melody, in part because of the idiomatic capabilities of each instrument. The flute player might insert frequent trills, or the lute player might insert rapid and repeated plucking of a single note. When played together, the two different renditions create a highly valued heterophonic texture (CD track 2-1).

Heterophony is widespread in Asian musical traditions. On CD track 2-35, the classical Japanese composition "Yaegoromo," the sung melody at the beginning is self-accompanied on *koto* and further accompanied on *syamisen* and *syakuhati* (figure 2.12). A heterophonic texture is created by the somewhat different timing and pitches as the three instrumental parts and vocal combine to present "the melody."

ACTIVITY 4.18 *To test your hearing and understanding of different practices for performing a single melody, listen to these tracks on the CD and decide whether each is an example of monophony or heterophony: tracks 1-3, 1-17, 1-18, 1-24, 1-26, 1-30, 1-34 and 2-1.*

Performing One Melody with Another Part. A single melody can also be performed with one or more other parts that use pitch (as opposed to a nonpitched drum, for instance) but whose function is not melodic. Such a relationship among parts takes a number of forms in music throughout the world; I mention only two here.

Melody and Drone. A widespread manner of performing a single melody with a pitched but nonmelodic part is to put it over a **drone**—sustained tone. A drone is usually thought of as being one pitch that undergirds the melody by being sounded in a persistent fashion, as in Scottish bagpipe music (CD track 2-36).

However, there are multiple varieties of drone. On CD track 1-14 and 1-15, North Indian *sitār* (plucked lute figure 3.2) music, the pitch *sa* is sounded intermittently on a string designated on the instrument for a drone; while the sounding of *sa* on that string is far from constant, its function is heard as a drone. A drone might also consist of multiple pitches. When the drone in India's music is kept on **tānpūra**, a chordophone devoted solely to that role, it consists of multiple pitches that are sounded in succession constantly from the beginning to the end of a performance selection (CD track 2-37). The metal strings of the *tānpūra* provide a lush sound quality that contrasts with the vocal timbre.

Homophony. Perhaps the most widespread practice of performing a single melody—thanks to the dissemination of American popular music worldwide—is to back it up with functional chords. The term for this texture is **homophony** (literally "same voice"). Chords undergird the melody, and the melody is conceived in terms of the harmony; in that sense, they are "the same voice." Because the term is so linked with tonal harmony, the label "homophony" is most applicable in such music. Examples can be heard on CD tracks 1-2, 1-6, 1-7, 1-31, 1-37 and others. In some homophonic music, such as choral renditions of hymns and patriotic songs, the harmonizing parts move in the same rhythm as the melody—another sense in which they are the "same voice."

Performing Multiple Melodies.

Polyphony. When multiple melodic parts are performed together, the texture is termed **polyphony** ("multiple voices"). The singing of rounds, the type of polyphony discussed above, is a musical practice in which one melody is taken up in turn by multiple musicians. Here, I discuss another type of polyphony: the texture achieved when multiple musicians perform different melodic parts simultaneously. But what constitutes a "melodic part"? Because they work with such a variety of musical traditions, ethnomusicologists who want to use the term "polyphony" consider any number of things to be a melodic part—anything from a short ostinato to a full tune. In his volume on Bulgarian music in this series, Rice considers a two-part woman's song to be an example of polyphony: one woman sings "a melody" while the other sings a second melodic part, but not one he identifies as "a melody." Rice's idea of "melodic part" is typically flexible.

Melody and Ostinato. Some scholars consider an **ostinato**—that is, a constantly recurring melodic, harmonic, or rhythmic motive—to be an extended form of drone.

A performance of "Sumer is icumen in" is not complete until the melody, which you have already heard performed in unison and as a round (CD track 2-33), is complemented by not one ostinato but two ostinati (called *pes* in medieval terminology). Each of them is a melodic motive. The text of ostinato 1 is "Sing cucu nu, sing cucu"; the text and melody of ostinato 2 reverse the two phrases: "Sing cucu, sing cucu nu." The two ostinati can be heard on CD track 2-33, from 1:28 to 1:57.

When all parts of "Sumer is icumen in" are performed together, a full polyphonic texture is created. From 2:01 to the end of CD track 2-33, you can hear the rich texture that results from the combination of the two ostinati and the melody performed as a three-part round. For performers and listeners, this piece demands simultaneous horizontal and vertical musical orientation.

In this chapter I have discussed pitch as the foundation for both melody and harmony, offering perspectives from music theory as well as practice. I also explored a variety of ways in which musical parts are made to relate. In the next chapter I shall discuss processes for structuring a musical selection.