CHAPTER 3

Gamelan, Tuning, and Instrumental Melody

The first thing that strikes most people when they encounter a Javanese gamelan is the sheer quantity of metal and carved wood. Round gongs, ranging in diameter from a few inches to three feet, hang vertically in rows from wooden stands or rest horizontally on thin ropes stretched across wooden frames. Most of the other instruments have rows of keys, more or less rectangular in shape but varying in size. If the gongs and keys are newly forged bronze or have recently been polished, they sport a brilliant golden sheen. If they are old and left to develop a patina, their surface is more subtle, a rich motley golden-green. Cheaper instruments made of iron, often salvaged from truck suspensions and other scrap metal, may be painted to emulate this color. In any case, the wooden cases are likely to be carved in floral patterns and painted in green, brown, or red with gold leaf highlights. Fancier sets are ornately carved with images such as a mythical serpent king carved along the top of the gong stand (see Quigley 1996 and Vetter n.d. for photos of fantastic and highly unusual examples). A gamelan of good quality is an expensive item that serves as a symbol of prestige. Its value increases with time as the bronze ages and settles in molecular structure and (as a result) timbre and tuning. Spiritual power may also be ascribed to it. No wonder that each of the Javanese courts owns several gamelans and that kings restricted the ownership of a full gamelan in former times (see Vetter n.d. for full information on Yogyakarta palace gamelan).

When I first arrived in Java, I borrowed a *gendèr* (a metallophone) from the music academy and bought a *rebab* (a bowed lute; see figure 3.1) from a stall in the market outside the Mangkunagaran palace. The stall had music supplies such as mallets and cord for hanging gongs, as well as flutes and a few brass gamelan instruments of questionable quality. For bronze instruments, you could not simply go to a store and choose from various brands as you might buy a guitar or piano. Since most Javanese musicians do not own their own instruments but use sets belonging to

a wealthy patron or an institution, one rarely buys a used instrument from a musician. Occasionally one can find somebody selling a gamelan (either as a set or piecemeal), but most instruments are made to order by a gong smith and his network of craftsmen who specialize in elements such as drums or carved wooden frames and racks.

An American acquaintance ordering supplementary instruments for a gamelan in the United States took me to Pak Tentrem Sarwanto, a young gamelan maker who had taken up the family business with his brothers and some other men (see figure 2.1); I know of no female gong smiths. At that time his business was still small, but it has prospered greatly since then thanks to numerous orders from foreign students and from institutions in Indonesia and abroad.

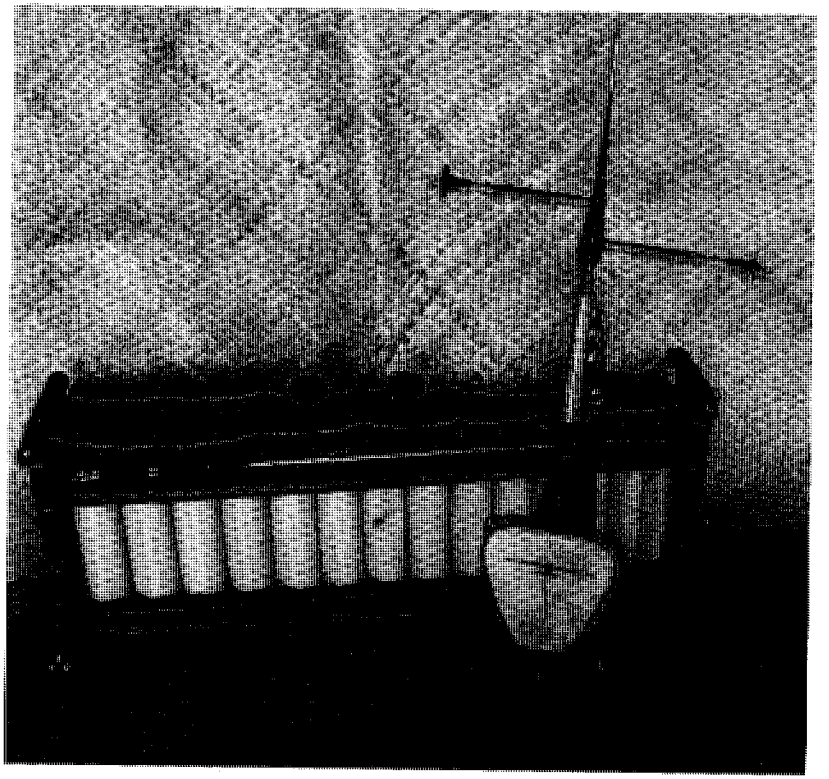

FIGURE 3.1 Rebab *and* gendèr. *(Photo by Ben Brinner.)*

The tools Pak Tentrem had inherited included hammers of many shapes and sizes, specialized for different stages in the forging of bronze gongs and keys. There were stones with rounded hollows (against which the bosses of gongs could be shaped), and numerous tools. Outside the forge stood stacks of crucibles for melting different quantities of metals to create the right alloy of tin, copper, and traces of other metals (see figure 3.2). There also were clay molds for casting the roughly shaped disks and bars that would then be forged into gongs and keys. The building in which the forge was located was kept fairly dark so that the smith could judge the heat of the metal. A pit full of

FIGURE 3.2 *Crucibles and hammers for forging gamelan instruments at the gong smithy of Tentrem Sarwanto. (Photo by Ben Brinner.)*

coal, fired by hand-pumped bellows, was used to heat the metal; a pool of water was used to quickly cool the newly forged instruments.

The process for forging keys for metallophones is simpler than the complex gong forging described in the previous chapter. The component metals are melted, mixed together, and then poured into the appropriate mold, just as they are for gongs. One man hammers the resulting bar while another holds it with long tongs and periodically reheats it (see figure 3.3). After a few strokes, it must be heated again. Once the bar has achieved the desired shape, it is cooled in water and then filed, sanded, and polished. Two holes are drilled in order to suspend the key over its resonator. Tuning is accomplished by scraping or filing away the underside of the key—lowering the pitch by taking from its middle or raising it by filing near the ends (see Quigley in Resources under the Viewing section (1989).

Forging bronze gongs and keys is difficult, intensive hand labor that requires great skill and knowledge. One stroke of the hammer in the wrong place can ruin days of work, though all is not lost as it would be with a choice piece of wood carved for a violin, for instance, since the misshapen

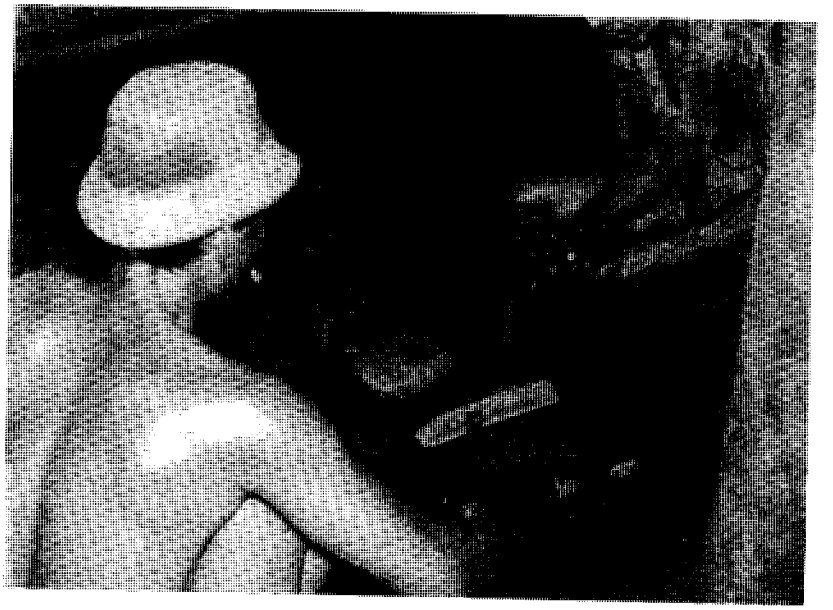

FIGURE 3.3 *Forging a bronze key, gong smithy of Tentrem Sarwanto. (Photo by Ben Brinner.)*

bronze can be melted down and forged again. Gong smithing is a hereditary craft that traditionally has been considered to be spiritually charged and dangerous, requiring offerings to protect the smiths. The cheaper iron instruments are easier to make because the metal is cut to size from manufactured sheets and hammered cold rather than melted, molded, and forged. The manufacture of drums, flutes, and carved wooden cases is somewhat less skilled and not spiritually fraught.

GAMELAN TUNINGS

In theory, no two gamelan sound exactly alike, due partly to the complexities of hand forging but mainly to tuning decisions. There is no standard tuning in Central Java. There is no standard for the relative sizes of the intervals; overall, some gamelans are tuned higher than others, though the differences are not huge. Theorists (mainly non-Indonesian ones) have attempted to establish normative tunings and mathematical models, but they fail to explain the varied abundance of tunings.

Because of the uniqueness of tunings, the instruments in each set are tuned to sound right with one another. Aside from easily tunable instruments such as drums and string instruments (*rebab* and *siter*), the instruments of different gamelan are not interchangeable. Even if a musician does own a *gendèr*, for instance, there is no point in bringing it to a performance because it is unlikely to match the tuning of the other instruments.

In actual practice, some gamelans are tuned alike because a person can ask to have one set tuned to match another. Pak Tentrem suggested matching my new instruments to the gamelan at the radio station. As this gamelan was heard not only on broadcasts but on numerous cassettes, I agreed. This made it much easier for me to play along with cassettes as I was learning. Over time the tuning of my instruments changed as newly forged bronze always does. Pak Tentrem retuned them twice, not in reference to the radio gamelan any more but to make them sound good as a set.

This brings up another aspect of tuning: Making the instruments sound right as an ensemble does not necessarily mean matching all the pitches precisely. Many gamelan tuners (who may or may not be gong smiths as well) purposefully "stretch" octaves, tuning the higher instruments a bit sharp and the lower ones a bit flat, because they feel that the ensemble sounds best that way. This can give a hint of the shimmer achieved in Balinese ensembles by paired tuning (see Gold 2005). All of these variables contribute to the individual character of a gamelan that is recognized and appreciated by musicians much as a wine connoisseur knows wines.

TUNING SYSTEMS: *SLÉNDRO* AND *PÉLOG*

Tuning variability is constrained by two categories or systems named *pélog* and *sléndro*. *Pélog* consists of seven pitches (numbered 1 through 7 in Javanese notation), while *sléndro* has five (numbered 1, 2, 3, 5, and 6; the 4 is omitted because of equivalences between the two systems explained below). This numbering system is the common Javanese method of notation called *kepatihan*. Named after the residence of the king's minister (*patih*) in which it was invented, this notation system was the only notation system to gain wide acceptance, though several others were developed in Java in the late nineteenth and early twentieth centuries. It is relatively straightforward, using horizontal lines above the numbers to join together notes that subdivide a single beat (an idea borrowed from the beams of staff notation) and letters or auxiliary signs to indicate colotomic markers. You have already encountered this system in figures 2.6 and 2.8.

While the "spacing" of these pitches (i.e., the intervals between them) varies from one set of instruments to the next, it is not random, and there is enough difference between the two systems that they remain distinct. In other words, there are two perceptual categories named *sléndro* and *pélog*, and the instruments in a gamelan are tuned to either one or the other. Thus a complete Central Javanese gamelan consists, in essence, of two sets of instruments, one in each tuning system. A few instruments, such as the drums and biggest gongs, do double duty, played for either tuning system. Single gamelan sets exist, too, tuned either to *pélog* or to *sléndro*.

ACTIVITY 3.1 *Listen to the pitches of sléndro and pélog played in ascending and descending order on a large metallophone from the University of California (UC) at Berkeley's Gamelan Kyai Udan Mas (CD track 22). This is followed by two pentatonic subsets of pélog: first pitches 12356, then 23567. On CD track 23, you will hear the introduction to "Lancaran Singa Nebah" played first in pélog and then twice in sléndro in two differently tuned gamelan. On CD track 24, these same tunings are compared with the closest pitches in Western equal temperament (the synthesized tones). Refer back to CD track 3 to hear the clash between the pélog tuning of the gamelan and the diatonic scales played on the synthesizer and guitars in campursari.*

With so much flexibility in tuning, one can become disoriented. At a radio broadcast of an amateur group that had invited me to play *gendèr,* a singer asked me to go over a melody with him during the break between pieces. It was fortunate that we did practice because the pitch he chose by pointing to a key on the *gendèr* proved to be wrong. Although he sang the entire song quite nicely, adjusting to the intervals on the *gendèr,* he ended his solo one note too high. Since this was to serve as the introduction to a piece performed by the entire ensemble, it would have been disastrous to have the musicians enter on the "wrong" note. Aware of such dangers, the *dhalangs* (shadow masters) whom I interviewed repeatedly cited the importance of hearing reference pitches from the gamelan so that they could start their songs on the right pitch and sing in tune with the gamelan. This was particularly crucial when they were performing far from home, using a gamelan provided by the host.

There is yet one more variable to consider to complete this schematic understanding of a gamelan's tuning. This is the relationship between the two tunings. If the two halves of the gamelan have been made as a complete set, they will have at least one pitch in common. Often this is pitch 6 or 5, but it can also be 1 or 2—see figure 3.4 for two possible alignments of the two tuning systems. I have not specified interval sizes because these may vary slightly even within one gamelan, but the spacing of the numbers should give you an idea of the relative size of intervals within and between tuning systems.

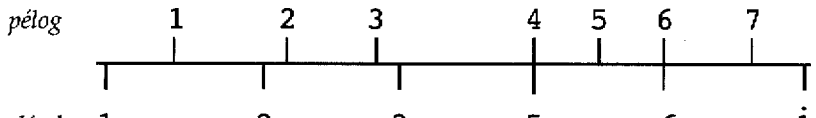

FIGURE 3.4 *Two possible correspondences between* pélog *and* sléndro *tunings of a gamelan.*

GAMELAN INSTRUMENTS

It is time to introduce the rest of the instruments and to learn about their basic construction and ranges. Figure 3.5 shows the instruments of Kyai Udan Mas, the gamelan at UC Berkeley on which some of the CD examples were recorded. Figure 3.6 shows the instrument ranges based on the *sléndro* instruments of that gamelan. These examples cannot be fully representative because gamelan can vary greatly in number, type, and quality of instruments.

ACTIVITY 3.2 Several gamelan performance groups in North America and Europe have websites that feature photos of their instruments. Find three of these (try the American Gamelan Institute site in the Resources section) and compare the appearance of their instruments (color, carving, size) and their instrumentation (e.g., how many gongs and saron).

Most of the instruments in a gamelan are idiophones—metal gongs or keys are the primary sounding elements. You have already been introduced to the gongs of the gamelan, and several other instruments have been mentioned in passing. A gamelan may have only one *gong ageng*, but it is quite common to have two. They are usually tuned a "step" or two apart. (Since Javanese intervals are flexible in size, I use the term *step* to indicate the interval from one note to the next degree of the scale above or below it.) Their pitch is so low that they match both *pélog* and *sléndro*. The somewhat smaller *gong suwukan* (which sometimes also serve both tunings) vary in number from one to three per tuning. As you can see in figure 3.6, the scale started by the *gong suwukan* is continued by the *kempul*, but since the two instrument types fulfill different colotomic functions, they are considered separate instruments (though often played by the same musician). A set of *kenong* is tuned to the octave above the *kempul*.

One gong-based instrument has not been mentioned so far because it is chiefly used melodically rather than for colotomic parts. It consists of 10 or 12 small gongs suspended horizontally in two rows in low wooden racks (such instruments are called gong chimes in ethnomusicological literature). Two sizes are common: the larger *bonang barung* (referred to hereafter simply as *bonang*) and the *bonang panerus*.

Keyed metallophones are represented in abundance in a full gamelan. One type, the *saron*, has thick keys lying across a trough carved out of

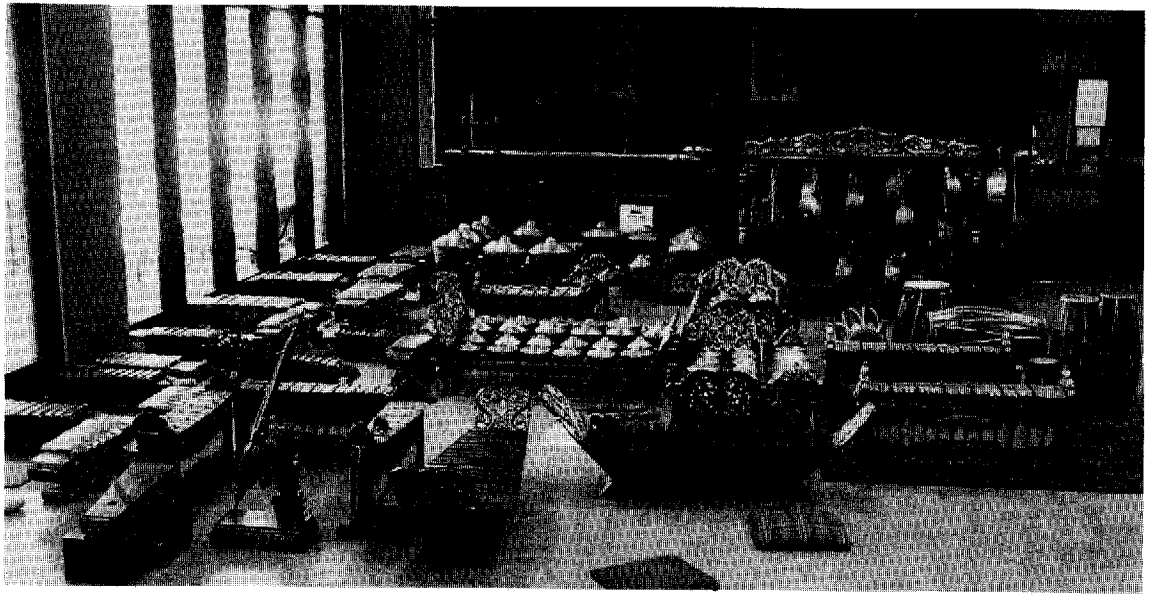

FIGURE 3.5 *Javanese gamelan with instrument names relative to position in photo. The instruments of Gamelan Kyahi Udan Mas, made in the early twentieth century, were donated by Sam and Louise Scripps to the University of California at Berkeley after use at the Center for World Music in the early 1970s. (Photo by Ben Brinner.)*

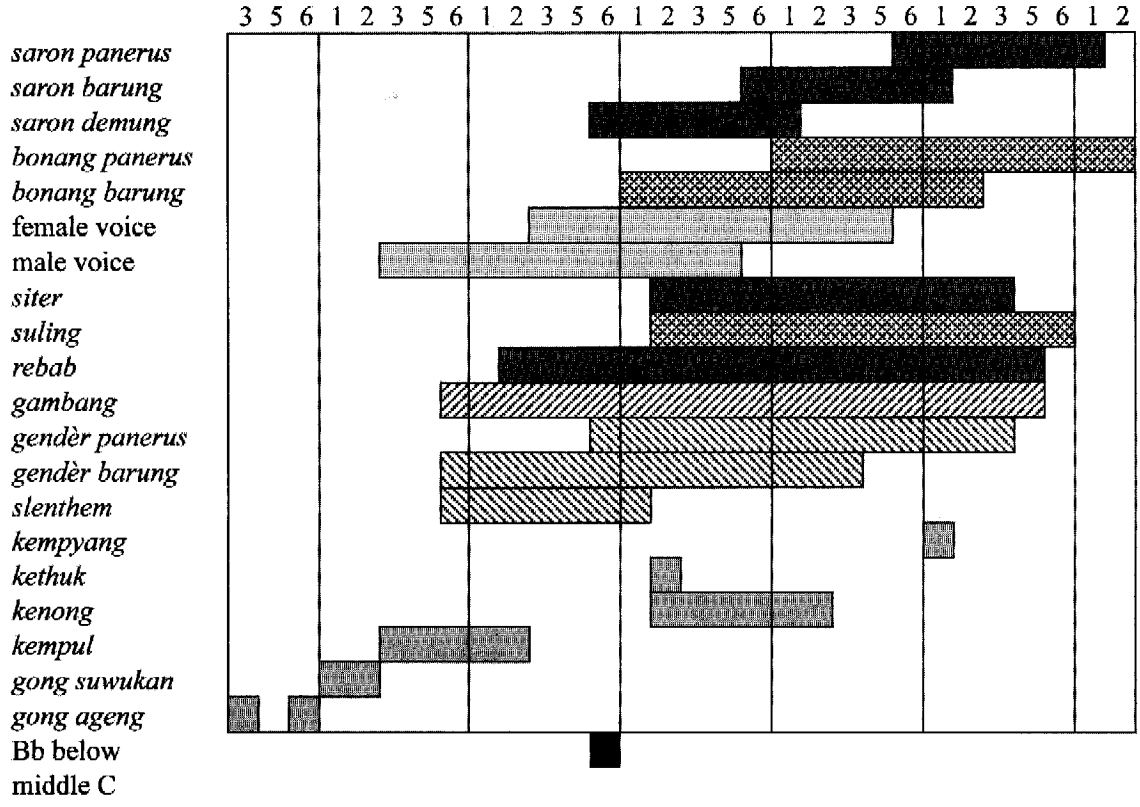

FIGURE 3.6 *Ranges of the* sléndro *instruments of Gamelan Kyai Udan Mas.*

a large piece of wood that serves as both support and resonator for the keys. It is made in three sizes, ranging from the large *demung* (on which CD track 22 was recorded) to the *saron barung* to the *saron panerus* (also called *peking*). A gamelan will often include one or two of each size; really large ensembles might have four of the medium and large *saron* for each tuning. They are played with relatively hard mallets, made of water buffalo horn for the *peking* and wood for the others. This gives a sharp attack, though the instrument can also be played delicately. Usually a *saron* has seven keys whether it is tuned to *pélog* or *sléndro*. In the latter case, the two "extra" keys extend the range of the instrument beyond an octave (cf. CD track 22). The medium *sléndro saron* also comes in a larger nine-key version on which a musician can improvise elaborations for *wayang*.

The second type of keyed metallophone has much thinner keys suspended by cords over individually tuned resonating tubes. The three variants are the 7-keyed *slenthem*, played with a single mallet, and the 12 to 14-keyed *gendèr barung* (see figure 3.1) and *gendèr panerus*, both of which are played two-handed with two mallets. These mallets are padded, so the resulting sound is radically different from that of the *saron*: It is mellow, with a soft attack and long sustain, unlike the *saron*'s brighter sound, sharp attack, and relatively rapid decay (i.e., quick drop in volume).

While some of the old ceremonial ensembles consist only of metal idiophones and a drum or two, the more common ensembles include several other instrument types: the *gambang* (xylophone), the chordophones *siter* (plucked zither) and *rebab* (bowed spike lute), and an aerophone, the *suling* (end-blown fipple flute). Rounding out the ensemble are the various sizes of membranophone (the *kendhang* introduced in chapter 2) and the singers.

ACTIVITY 3.3 *Listen to CD track 25 to hear many of these instruments in relative isolation. Certain parts of the ensemble sound throughout this track: the female voice, drums, slenthem, and colotomic instruments (you should be able to hear kempyang, kethuk, kempul, kenong, and gong ageng). Others are featured in the following order: gendèr, gambang, siter, rebab, and a pair of bonang. Try to match them with the preceding descriptions, and pick them out in the sound of the full ensemble that ends this track. You would not hear such solos in normal performance.*

Numerous conventions shape specific ways in which all these resources for sound production are brought into play together. A few of these conventions were introduced in the previous chapter: the colotomic patterns played out on the gongs, the musical forms delineated by the colotomic patterns, the corresponding drum patterns, and the concept of *irama* (which regulates the rhythmic relationships within the ensemble). Many of the other conventions concern melody.

INSTRUMENTAL MELODY

Melody in gamelan music varies between two radically different performance conceptions: the melodic nuances and free rhythms of unaccompanied song, and the strictly regulated time-delineating rhythms of gong and drum ensembles. Scholars have theorized that the modern gamelan, variable as it is in composition, only came together in the last two centuries, developing out of the confluence of loud ensembles with a preponderance of gongs and soft ones that featured singing, *rebab*, and other soft melodic instruments.

At one extreme, some gamelan music is almost completely devoid of melody. Moments of great tension in theater and dance are often accompanied by *gangsaran*, a form in which the *saron* players repeatedly strike a single note, while the sounds of the various gongs outline a short colotomic pattern similar to *lancaran* and the drummer plays patterns that heighten the intensity and emphasize the movements of the dancers or puppets. The only "melody" you might hear in a *gangsaran* is the brief pattern repeated on the *bonang*, but that is considered an elaboration on the single pitch reiterated by all the other musicians. The contrast between the eerie, insistent monotone of *gangsaran* and the melody of most other gamelan music is extreme. This is why the transition to or from *gangsaran* is so effective in a dramatic context (CD track 20 moves from *lancaran* to *gangsaran* at 0:34 and to a *ladrang* at 1:28).

The Javanese word *lagu*, meaning melody, tune, or song, applies to both instrumental performance and singing. Most of the music played on gamelan features considerable melodic variety, and most of the musicians are engaged in playing or singing melodies. Within the sound world of traditional Javanese gamelan music, there are numerous constraints on *lagu*; at the same time, there is tremendous flexibility.

Among the most basic constraints is the *laras*, the tuning system. A melody will be sung and played either in *pélog* or in *sléndro*, but usually not in both at the same time. Musicians commonly "translate" pieces from *sléndro* to *pélog* (the reverse is rare) or transpose melodies

to start on a different pitch within the same tuning. These are prime examples of the principle of flexibility, which permeates Javanese musicality. Perhaps less obvious, but far more fundamental to Javanese musicianship, is the flexibility required to hear a melody as "the same" when it is played on differently tuned gamelans. Recall that there is no standard tuning; for example, not only is *pélog* pitch 5, for instance, not tied to a particular frequency, but the intervals between 5 and its neighbors 4 and 6 can vary considerably in size. The same holds true for all the other pitches and the intervals between them.

Several other factors shape Javanese gamelan melodies. *Pathet*, a term that can be loosely translated as mode, is one of the most challenging concepts in Javanese musical practice and theory and will be discussed briefly in later chapters. Structure, whether colotomic or poetic, is a third constraint on melody. Almost all instrumental melodies are made to fit the symmetrical phrasing of a colotomic structure. Vocal melodies and the instrumental melodies that derive from them are constrained by poetic concerns, which will be discussed in the next chapter. Yet another constraint on melody is idiomaticity. A particular way of making melodies is associated with each instrument, as noted earlier. A vocal melody is rarely similar to a *gambang* melody, for instance, which differs, in turn, from a *gendèr* melody. You can get a sense of some of those differences by listening again to CD track 25.

So how does a Javanese musician conceptualize melody? The first answer might be that there is no prototypical "Javanese musician." Researchers have found considerable individual differences in conceptualization (see Perlman 2004). No standard interpretation holds sway, but in keeping with Javanese philosophy that privileges inner essence over outer form, several Javanese musicians have theorized that the "real" melody of a piece is not performed by any member of the ensemble. Rather, it is revealed in various ways simultaneously by each of them.

Another answer would be that this conceptualization depends on the circumstances: the instrument played, the *irama*, the performance context, and so on. Nonetheless, musicians' melodic conceptualizations must overlap considerably to enable them to make music together and to transfer their knowledge from one set of instruments to another with little (if any) apparent discomfort. This is yet another instance of the extensive interconnectedness of this musical practice. Two significant factors identified by Judith Becker (1980) are central to these shared conceptions—goal tones and melodic contour.

A goal-oriented approach to melody is prevalent among musicians and evident in performance practice. In any piece certain notes serve as the goals for all the various strands in the musical texture. Such

notes are called *sèlèh*. They are not the same as the tonal goals in much Western music and are not reached in the same manner. Although certain Javanese musicians adopted a few terms from European music theory, notably tonic and dominant, the precise meanings of the terms did not carry over to Javanese music. Despite the fact that theorists designate a particular pitch as the tonic of a given *pathet* (mode), many of the pieces in that *pathet* will focus and end on other pitches. Notice, for instance, that the pitch labeled 1 is not necessarily more important than any of the other pitches—it is usually not the tonic. "Lancaran Singa Nebah" in *pélog* begins on pitch 3 and usually ends there, too (though it does not have to). However, in the course of its melody, which stretches over three gong cycles, both pitch 7 and pitch 2 become important goals as they coincide with the gong stroke at the end of a cycle.

Placement of a note within the colotomic cycle is one of the main determinants of its importance: By definition, the note that coincides with the gong at the end of a cycle is the most important *sèlèh* within that cycle. Musicians conceive of melodic patterns in terms of their final pitch, their *sèlèh*. They generally learn to play the more elaborate parts by mastering a group of patterns that end on each pitch and then applying these as needed to the *sèlèh* in a given composition.

Contour is another crucial aspect of melodic conceptualization. In a number of publications, Judith Becker pointed to the key role of melodic contour in Javanese music. The way the melody moves from one pitch to another is far more important than absolute interval sizes, especially in view of the highly variable tunings. Figure 3.7A is a graph of the mallet motions required to play the basic *saron* melody of "Lancaran Singa Nebah" in *pélog* and in *sléndro*. Read it from top to bottom, imagining that each column represents a key on a *saron*. From this perspective, melodic contour is a series of motions to the left and right as you move the mallet to strike the appropriate keys. Notice that the motion pattern right-left-right-left follows after each gong tone. It starts on a different pitch each time and therefore produces different intervals, yet the basic melodic contour remains the same—a rise in pitch followed by two descents. From this example it should be clear that contour alone is not enough information to create a melody: One must "anchor" the contour to particular pitches. (When this pattern starts from 3 in *pélog*, it involves skipping over the middle key on the *saron*, pitch 4, because that note does not "belong" in the pitch set appropriate to this *pathet*, or mode.)

Such examples also show that it is important to conceptualize melody in terms of contour rather than absolute pitches or interval sizes due to the two tuning systems and the variability within each system. Modern Javanese notation favors this approach because it gives no

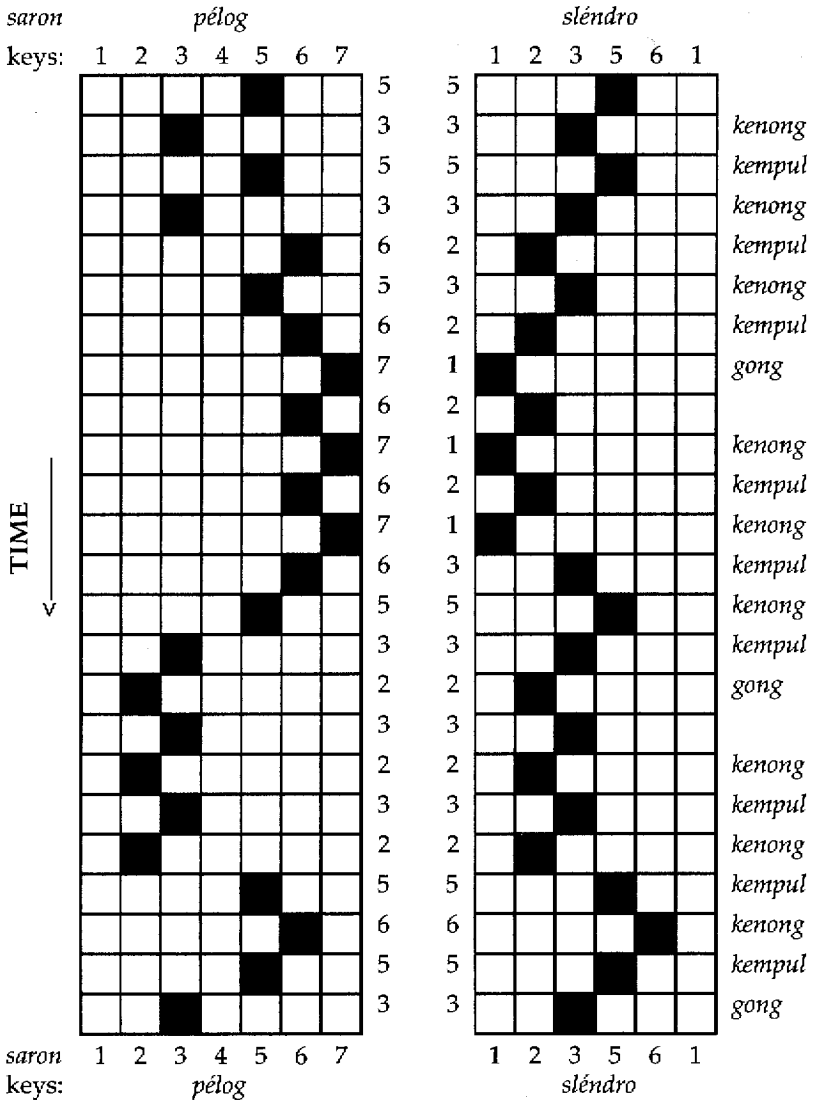

FIGURE 3.7A *Graph of the* balungan *(*saron *melody) for "Lancaran Singa Nebah" in* pélog *and* sléndro *in* irama lancar. *Each column represents a key on a* saron. *Reading from top to bottom, the black squares show the sequence in which the keys are struck. The two central columns of numbers also represent the melody.*

irama lancar: .5.3.5.3.2.3.2.1.2.1.2.1.3.5.3.2.3.2.3.2.5.6.5.3

irama 1: i653i653i653232153215321532135326532653265325653

irama 2: Each pair of notes is played twice. The colotomic pattern is stretched out.

For example: i653 becomes i6i65353

FIGURE 3.7B *"Lancaran Singa Nebah Sléndro."*

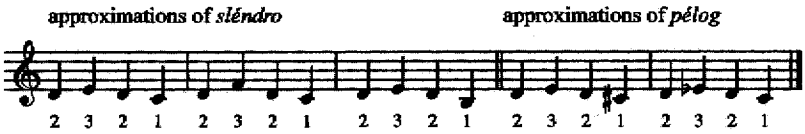

FIGURE 3.8 *Some possible transnotations of 2321 in* sléndro *and* pélog.

specific information about absolute pitch or interval size. For instance, the melodic fragment 2321 can be played in both tuning systems, but its sound differs depending on the tuning system and on the gamelan. Transnotation onto a staff notation could yield any of the approximations shown in figure 3.8. Not one of these would be a completely accurate representation since Javanese tunings never correspond to the chromatic scale. Despite these acoustical variations, the sequence has the same musical meaning or identity. Its contour remains the same, rising a step before falling two steps.

American composer Lou Harrison, who wrote many pieces for gamelan, built his own instruments and tuned them to just intonation. In an article titled "Slippery Slendro," he wrote that he was disturbed by the variability of Javanese tuning because it meant that his pieces would sound different when played on different sets of instruments (Harrison, 1985). I have yet to meet a Javanese musician who is disturbed by this.

ACTIVITY 3.4 *Listen to two versions of "Lancaran Singa Nebah" (CD tracks 19 and 26), played in pélog and sléndro, while following the notation in figure 3.7B (for pélog), the graphic in figure 3.7A, and the notation in figure 2.8 (for sléndro). Now stop the CD and try to sing the melody in each of these tunings. Listen again to check yourself. Do this repeatedly until you can hear and/or feel that the interval from pitch 3 to 5 in pélog is larger than in sléndro while the interval from 5 to 2 is smaller. This is not the only difference between pélog and sléndro, but it is a good place to start.*

Comparing the melodies in figure 3.7A, you probably noticed that they are not precisely the same. The most striking difference is that the *pélog* version uses 7 rather than 1. This causes some other differences in the melody that are useful for understanding certain tendencies in gamelan melodies. Since 7 is the highest pitch on the rightmost key of a *saron*,

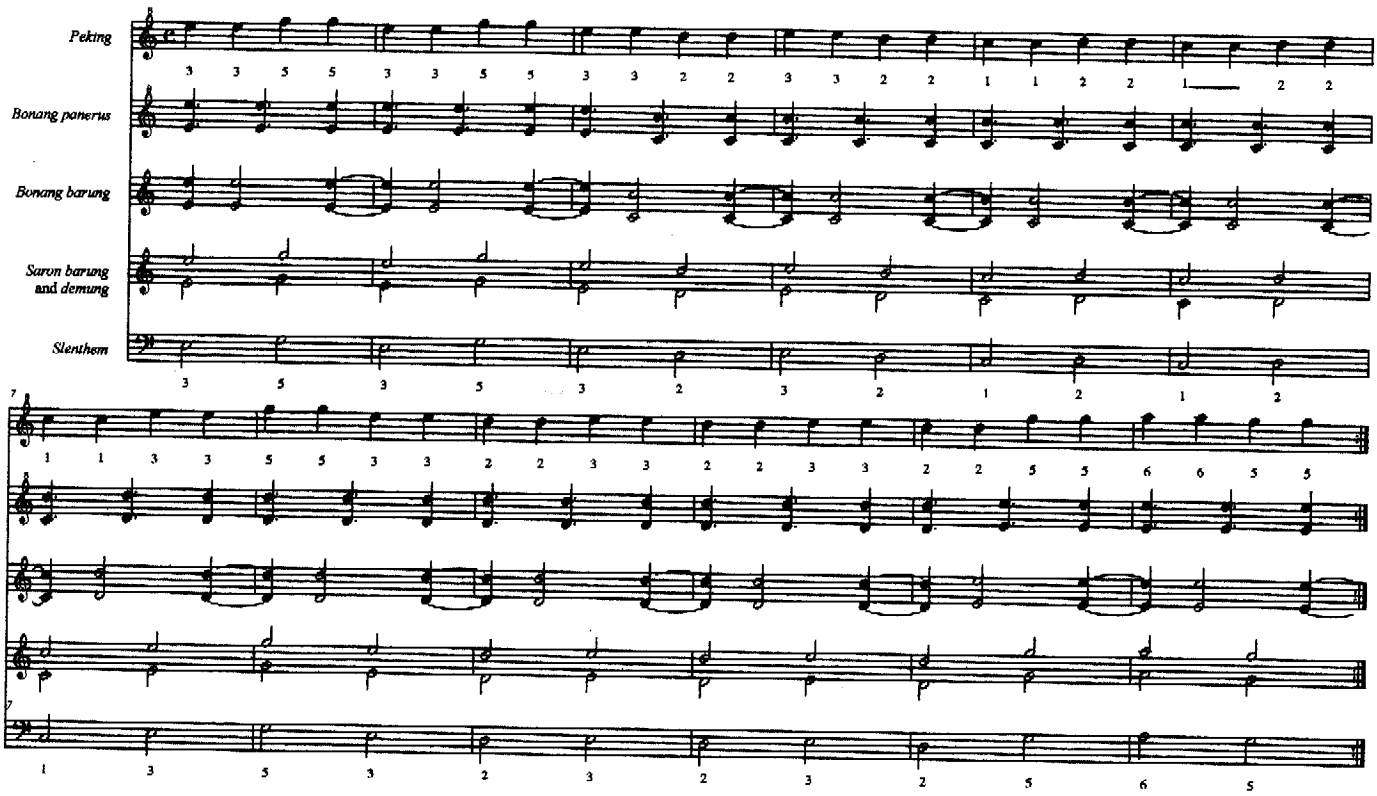

FIGURE 3.9 *Melody and elaboration in "Lancaran Singa Nebah Slendro."*

there is no upper neighbor available. The lower neighbor is substituted to create the melody 6767 instead of 2121 in the *sléndro* version. Taking this a step further, the contour of the melody leading to gong 1 is inverted as 2321 becomes 6567. Look back at the graph in figure 3.7A to see that the *pélog* contour is a mirror image of the *sléndro* contour: The mallet moves left-right-right rather than right-left-left.

MELODY AND ELABORATION

Balungan, Peking, *and* Bonang. The word *balungan* is commonly used to refer to the type of melody I have been discussing, the one that is usually played on the medium and large *saron* as well as the *slenthem*. This is the part that is most often notated, if any part of a piece is committed to writing, and it is the only part that is played by several musicians together. Other musicians play either the sparser colotomic parts or the denser elaborating parts, so called because they tend to fill out the melodic line of the *balungan*. That *balungan* literally means "skeleton" indicates that it may not be the most important or fullest representation of the melody of a piece. Other parts are needed to put "flesh" on the melodic "bones." The *balungan* may be very prominent, particularly in condensed *irama* with a full gamelan; conversely, the *balungan* recedes greatly in prominence in an expansive *irama*. In a piece like "Lancaran Singa Nebah," which is played mainly at the more compressed levels of *irama*, the *balungan* remains prominent and there is relatively little scope for elaboration.

Even in such a simple piece as this *lancaran*, the *balungan* is not the only strand in the texture. In addition to the drumming and the colotomic parts that were described in the previous chapter, there are three additional strands played on the *peking* (small *saron*) and the two *bonang*.

ACTIVITY 3.5. *Study figure 3.9 to see typical ways in which the bonang and peking players create parts to play with the balungan in sléndro. Using this as a model, write out (in numbers) the peking and bonang parts for the following fragment of the balungan in pélog: 5.3.5.3.6.5.6.7. Now listen to CD track 13 and try to hear these parts.*

Here, in the most elemental form, are two principles of elaboration: subdivision of the beat and repetition. The *peking* part elaborates the *balungan* in a very straightforward manner, simply playing each note twice. The *bonang* player, on the other hand, abstracts (or "flattens") the *balungan*

by thinking ahead to the second note of each pair, playing that note twice, in octaves, off the beat (which is much simpler to do than to explain).

Note the timing of the *bonang* part. It changes to the next goal tone (*sèlèh*) before anyone else does; in this sense, it leads or anticipates. The musician seated at the *bonang panerus* plays those same notes (an octave higher, since the instrument is pitched an octave higher) and with a different rhythm, one that interlocks with the rhythm of the larger *bonang* and the *balungan* to enrich the rhythmic texture. So while the *bonang* parts abstract the pitch content of the *balungan*, they elaborate the rhythm.

What happens if the drummer slows the pace and switches from *irama* 1/2 to *irama* 1? The *balungan* players change their melody for this piece (but not necessarily for other pieces) by doubling their pace in relation to the beat and extending the elaboration of the basic *sèlèh*. In this manner 67 becomes 3567, 32 becomes 6532, etc. The fact that the *balungan* changes when the *irama* changes is not unusual, but this particular way of altering it is peculiar to this piece.

When the drummer cues the musicians to shift to a slower, more expansive *irama*, the *bonang* players do not continue to play a reduction of the *balungan* using octave technique; rather, they take pairs of notes and repeat each pair. This technique of elaboration is called *mipil* (literally, to do little by little). The phrase 3532 becomes 35353232 on the larger *bonang*. Note that this is a different type of doubling from that performed on the *peking*. On the smaller *bonang*, the player will base his or her part on a further doubling. In theory, the *saron* melody 35 generates 35353535 on the *bonang*, but in practice, players vary this repetitive figuration by omitting one or more notes. The upper half of figure 3.10 shows these parts for *irama* 1 while the lower shows the parts for *irama* 2, a set of time relationships that is twice as expansive as *irama* 1 (and four times as expansive as *irama lancar*; note that the *bonang* part may vary in some details).

In *irama* 1, the *peking* player continues to double the *balungan*, but if the *irama* expands again to *irama* 2, there is more scope for elaboration. The *balungan* 6532 generates the *peking* elaboration 6655665533223322, for instance.

ACTIVITY 3.6 *Write out the peking and bonang parts appropriate for the balungan 7653 played in irama 1. Now listen to CD track 19, starting at 0:29, and try to hear these parts. Can you formulate rules to explain the relationships between these three parts?*

```
Irama Tanggung (1)
bonang panerus  353.3535323.3232
bonang           3 5 3 5 3 2 3 2
peking             3 3 5 5 3 3 2 2
balungan           3   5   3   2

Irama Dadi (2)
bonang panerus  353.353.353.3535323.323.323.3232
bonang           3 5 3 . 3 5 3 5 3 2 3 . 3 2 3 2
peking             3 3 5 5 3 3 5 5 3 3 2 2 3 3 2 2
balungan               3       5       3       2
```

FIGURE 3.10 Peking, bonang, *and* bonang pancrus *elaboration in irama 1 and 2.*

"Ladrang Asmaradana." "Lancaran Singa Nebah" has provided a starting point for learning about elaboration, but since it is not typical of the majority of Javanese gamelan pieces, I will continue the discussion of melody and melodic elaboration by moving on to "Ladrang Asmaradana," a longer, more complex piece. It is composed in *ladrang* form, based on a colotomic structure of 32 beats (see figure 2.3). All of the common colotomic instruments are sounded in this form, interlocking to form the *ladrang* pattern shown in figure 2.3.

Like any other *ladrang*, "Asmaradana" has a short melodic introduction that may be played solo on the *rebab*, as on CD track 26, or on *bonang* or *gendèr*. The drummer joins for the last eight beats of this introduction, regulating the tempo and cueing the other musicians to begin playing with the gong at the end of the introduction.

A performance of "Ladrang Asmaradana" usually begins in *irama* 1 and continues until the drummer slows to *irama* 2. This may happen in the first cycle or after one or more complete cycles. The drummer can expand the cycle further to *irama* 3 and even to *irama* 4. There are many options for this piece, which can be played in as many as four *irama* levels. The other musicians not only follow the drummer's cue to change tempo and *irama* but may alter the melodies they perform as well. This is most obvious for *bonang* playing technique and elaboration.

The two *bonang* players will use *mipil* elaboration while the drummer plays the large *kendhang gendhing*, but when they hear the *ciblon*, with its more complex playing style, they switch to an interlocking technique called *imbal*. Two *bonang* pitches alternate with two *bonang panerus* pitches to create a continuous rapid ripple of sound. For instance, while one plays pitches 1 and 3, the other plays 2 and 5 (or reverses the order to 5 and 2) in between, resulting in the melody 1235 or 1532. The musicians intersperse so-called flower patterns (*sekaran*) to lead to each *sèlèh* (see figure 3.11). These offer players the opportunity to select from a fairly extensive array of possibilities and even create new melodies. The main constraints on these flower patterns are duration and ending pitch. Interlocking parts are sometimes played on a pair of *saron*. You can hear this on CD track 26 beginning at 0:17 and moving twice as fast as the *balungan*.

On CD track 27, you can hear the drummer switch to the *ciblon* at 0:21 and the *bonang* players shift to *imbal* a few seconds later. They continue until the drummer goes back to the lower-pitched *kendhang gendhing* (with its small partner, the *ketipung*) at 1:17 when they immediately revert to *mipil* elaboration (of the sort shown in figure 3.10). Note that when the drummer started playing *ciblon*, he did not actually change

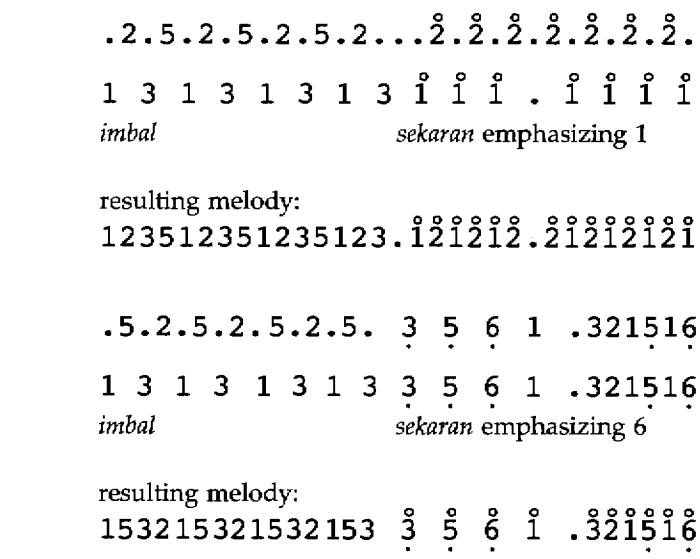

FIGURE 3.11 *Examples of* bonang imbal *(interlocking pattern) and* sekaran *("flower" patterns) that emphasize the* sèlèh *(goal tone). The* bonang panerus *part is shown above the* bonang barung *part and is written relative to its own range. Hence, the low 2 on the* bonang panerus *(with a dot beneath) corresponds to the middle register 2 on the* bonang barung *(with no dot).*

irama, but when he went back to the pair of drums a minute later, he drastically slowed the tempo down to *irama* 2.

The *saron peking* player is less affected by the drummer's shifts. The important consideration is the *irama,* not the liveliness of the drumming. In *irama* 1 the *peking* part doubles each note of the *saron* part. When *irama* 2 is reached, the *peking* player takes pairs of notes from the *saron* part and doubles them in the following manner: 21 becomes 22112211. If the *balungan* is stretched further, the *peking* player creates the same sort of patterning but interpolates neighboring pitches to fill in the spaces in the *balungan*: for . 2 . 1 The most likely *peking* part is 3322332233112211. You might think the *peking* player would play 3322332222112211, but the extensive repetition of 2 in the middle of this sequence breaks a tacit rule.

The *balungan* itself can change when the musicians shift to a more expansive *irama*. How does this work? Much as it did for "Lancaran Singa Nebah" but on a grander scale. As the drummer slows down from *irama* 2 to 3, a process begun eight beats before the gong, the length of each successive beat increases. By the time the gong is reached, the beat is about twice as long as it was at the beginning of the cycle. The *saron* players continue to play at this slower pace for the first *kenongan* (line ending with a *kenong* stroke; see figure 3.12 part B) and then double their pace, effectively returning to the speed they were playing before the drummer led them in the transition to *irama* 3. The colotomic players, however, continue to play at the slower, expanded pace, as you can see by the colotomic markings over the *balungan*.

Compare the *balungan* in part A of figure 3.12 with that in part B. Each of the four *kenongan* of B corresponds to the parallel *kenongan* in section A, but the type of correspondence differs. For instance, in the first *kenongan*, the sequence of notes is identical while the expansion involves replacing 5321 with 61326321 for the first half of the second *kenongan* but leaving the second half unchanged.

ACTIVITY 3.7 *Listen to CD track 27 as you follow the notation in figure 3.12. Write down the timing for each change of speed, and try to identify the irama. Write down which drums you hear in each irama: the medium-size ciblon or the pair of large and small dhodhi. Listen for imbal and imbal played on bonang, noting which type of elaboration is played in each irama. Finally, note when you hear the male chorus and the female singers, singing solo or together. In chapter 4, you will learn more about what they are singing.*

"Ladrang Asmaradana" exemplifies each of the three themes of this book. The piece is immediately recognizable for any Javanese musician, yet there are infinite ways to perform it—the recording on CD track 27 is but one of them. Flexibility characterizes the confluence of piece, performance practice, and musicians. This is manifested, for instance, in the choice of *irama* and the number of repetitions of the gong cycle: The piece may be played in every *irama* except *irama lancar*, but musicians might use just one or two of them; the number of repetitions in a given *irama* is not fixed either. The singers may choose from a number of texts. Musicians playing instruments such as *rebab*, *gendèr*, and *gambang* have substantial flexibility in their choice of notes. All of these choices and

"Ladrang Asmaradana Sléndro Manyura"

buka: 3 2 2 . 3 2 2 3 1 3 2 . 1 . (6)

A) *irama* 1 or 2 (*tanggung* or *dadi*)

[: 2 1 2 6 2 1 2 3

5 3 2 1 3 2 3 1

6 3 2 1 3 2 1 6

5 3 2 1 3 2 1 (6) :]

irama 3 or 4 (*wiled* or *rangkep*) — two versions:

B) a partially expanded *balungan*

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

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

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

5 3 5 3 6 3 2 1 . 3 . 2 . 1 . (6)

FIGURE 3.12 Balungan *and Colotomic Parts for "Ladrang Asmaradana." The* kethuk *and* kempyang *parts are only shown for the first line of each section.*

the possibilities they open up for the musicians are interconnected in numerous complex ways. You caught a glimpse of this when examining the connections between the expanded and condensed versions of the *balungan.*

If everything is so flexible, you may well wonder what is fixed and what distinguishes this piece as "Asmaradana." A sense of appropriateness guides the musicians in their choices. There are numerous performance conventions that dictate what can and cannot be done with this piece and whether "Asmaradana" is an appropriate choice for a given portion of a performance. The gong cycle with its colotomic parts is not

open to substantial modification, so for a given *irama* the number of beats in the cycle is determined. The drum patterns appropriate for one *irama* cannot be played in another. Some patterns allow the drummer considerable scope for embellishment and variation, but their overall outline is fixed. The ratio between the faster moving parts and the beat is not open to individual choice—the *gambang* player, for instance, must play 8 notes to the beat in *irama* 2 and 16 in *irama* 3 while the *peking* player must play 4 and 8, respectively, in those two *irama*. The vocal parts and the playing techniques on instruments such as the *bonang* are also appropriate for one *irama* and not for others. The individual *saron* players do not spontaneously decide to play different versions of the melody simultaneously but strive to play the same version. Finally, the differences between these versions are not significant enough to stray from the basic melodic outline of "Asmaradana."

The *balungan* often serves as a reference point, a core of the piece, but its prominence in the overall sound of the ensemble changes in accordance with *irama* and drumming style. In any case, it is not thought of as *the* melody of the piece; rather, there are many simultaneously sounding melodies that are interdependent manifestations of the melodic essence or potential of the piece (see chapter 5). Among these strands, some of the vocal melodies associated with this piece play a central role in how musicians conceptualize the piece and how listeners perceive it. These melodies are the subject of the next chapter.