INSTRUMENTATION

The bonang barung in contemporary gamelan performance practice

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One of the first elaborating instruments American students of the Central Javanese gamelan learn to play is the *bonang barung* (hereafter, called *bonang*). Many Americans (myself included) have been bewildered by the confusion of styles and regional performance practices involved in bonang playing. Teachers do not always agree on what the bonang does in a particular piece, and the student quickly learns that there is no one way of playing. Ideas about the bonang's function change radically from region to region. As far as I know, nobody has attempted to sort out these differences of style and practice, and most of us have had to muddle through, learning from a particular teacher from a particular region without a clear understanding of the variety of options in playing available to us.

In this paper, I will try to explain how the bonang operates in contemporary gamelan practice. I will focus on the two main gamelan traditions of Central Java, namely Yogyakarta (Yogya) and Surakarta (Solo), and point out how these traditions differ from one another. I will assume that the reader understands the cipher notation used in Java today and that the reader has a basic knowledge of the instrument bonang (layout of pitches, holding the mallets, etc.).

To a limited degree, the bonang is an improvising instrument, but it is constrained by three primary musical factors: *balungan* (the fixed melody), *irama* (tempo relationships), and *pathet* (modal-scalar constructs). Since the bonang part is directly related to the fixed melody, I will first discuss balungan and its diverse permutations.

Balungan and Balungan Types

The basic melodic outline in the music of the Central Javanese gamelan, most commonly referred to as *balungan*, has been discussed in several studies. Works by Kunst (1973/1949), Hood (1954), and Becker (1980) include descriptions and analyses of balungan and how it relates to mode, tempo, form and other aspects of gamelan performance. An important study by Sumarsam (1976) has shown that the initiated listener of gamelan music hears more than the single-octave melodic outline earlier studies have presumed; i.e., the range of the balungan is far greater than the range of the individual instruments in the gamelan.

In both Yogya and Solo, a great number of terms are used to describe what the balungan does both melodically and rhythmically. Most of these terms are drawn from everyday Javanese usage. Thus, the balungan may "walk," "crawl" or "fall." It may even "hang" or "slip." These various associations with movement are important for the musician in learning and memorizing large *gendhing* (gamelan compositions) or series of gendhing. They may describe the overall character of the balungan or reflect particular events in melody or rhythm.

Concepts concerned with the overall character of the balungan of a piece or section of a piece describe the rhythmical relationship between the balungan and an underlying metrical pulse. In Yogya and Solo, musicians recognize three main types of relationships: the balungan is either one half, equal to, or twice (sometimes even four times) the density of the underlying meter. A Western analogy would be the relationship of half notes, quarter notes, and eighth notes to 4/4 meter. The two regions, however, disagree in their use of terms to describe these relationships. In Yogya, the respective relationships are named *lamba* (lit., single), *dados* (lit., to be, ready, done, become), and *mlampah* (lit., to walk). In Solo, on the other hand, they are called *nibani* (lit., to fall), *mlaku* (lit., to walk), and *ngadhal* (lit., to crawl [like a lizard]). To illustrate these relationships, the four-beat *gatra* may be used as a basic unit of measure for the underlying meter. The relationships then would be two, four, and eight strokes of balungan per gatra, respectively. In figure 1, below, "x" refers to a stroke of the balungan.

Yogyakarta	Surakarta	balungan	gatra
lamba	nibani	. x . x	. . . .
dados	mlaku	x x x x	. . . .
mlampah	ngadhal	xxxxxxxx	. . . .

Figure 1. The three main types of balungan and their respective names in Yogyakarta and Surakarta.

The balungan of a piece or section of a piece is not necessarily consistent in its rhythm nor does the balungan always change in tempo when it changes density. The balungan of some pieces changes in density with a change in irama. For example, the Solonese version of *Ladrang Sumyar* is transformed when the piece goes into *irama wilet* (irama III). Sumyar is classified as a *ladrang*, meaning (among other things) that its metrical cycle consists of thirty-two beats (each cycle is marked by a stroke of the gong ageng). In *irama tanggung* (irama I) and *irama dadi* (irama II), the balungan of Sumyar has the same density as its underlying meter (that is, thirty-two beats per gongan). Yet, in irama wilet and *rangkep* (irama IV), the balungan is twice the density of the meter, and, in *irama seseg* [also referred to as *irama lancar*] the balungan is one half the density of the underlying meter. In Figure 2, the three forms of Sumyar are shown in relation to one another. Note that at one point the balungan is briefly four

times the density of the metrical cycle (see the third line of balungan ngadhal).

```
. 3   . 2   . 3   . 2
. 3   . 2   . 5   . 3     balungan nibani
. 7   . 6   . 2   . 7
. 5   . 6   . 3   . 2

7 3   7 2   7 3   7 2
7 3   7 2   7 3   7 2     balungan mlaku
5 7   5 6   5 2   5 7
3 5   7 6   7 3   7 2

7673  7672  7673  7672
7673  7672  5.56  5.53    balungan ngadhal
5.57  5.5676732  6327
3365  2756  7673  7672
```

Figure 2. The balungan of *Ladrang Sumyar*.

A peculiar feature of balungan is that it never actually stops. This is especially apparent in Solonese gendhing. The balungan of a piece may rest at certain points, but only as a sustained tone. The balungan really stops only when the piece stops. In other words, the balungan of a piece is a never-ending cycle, as is the underlying meter. Balungan tones may be sustained through stroke rests, but generally there are no sound rests (i.e., rests in the Western musical sense); a tone is sustained either through rests or reiteration, and it continues to sound until the next tone is played. This suspension of melodic movement in the balungan is referred to as *nggantung* (lit., to hang), shown below in Figure 3.

```
5 6 5 3   .  .  3  .    sustained pitch 3

          2  .  2  1    sustained pitch 2
```

Figure 3. Balungan nggantung.

However, the notion of balungan nggantung is more complex than this. In terms of melodic movement, the balungan is said to be either nggantung or mlaku; that is, either it is suspended or it moves. Musicians who play the elaborating instruments of the gamelan, particularly in Solonese style, must be able to recognize these two types of melodic behavior in the balungan since their parts behave more or less accordingly. This is especially true in certain styles of bonang playing. Knowing when the balungan is either nggantung or mlaku is sometimes difficult since a rest or reiteration may not necessarily mean that the balungan is suspended. However, if we think of the four-beat gatra as being made up of dyads (pairs of notes) with the first beat of each dyad as weak and the second as strong, we can generalize as follows: (1) two rests (or reiterations of a tone) are said to be balungan nggantung; (2) a rest (or reiteration) occurring on a strong beat is said to be balungan nggantung; (3) a rest (or reiteration) occurring on the weak beat followed by a different tone (than the one before the rest) is said to be balungan mlaku; and (4) two different tones are said to be balungan mlaku. See Figure 4.

In a recent study, Marc Benamou (1985) showed that these two aspects of balungan may be fundamental to understanding the aesthetic processes of gamelan music. Mlaku may be seen as the balungan's insistence toward resolution, its tendency to "approach" structural points without ever really arriving (since arrival means movement toward the next structural point): points such as strong beats, ends of gatras, kenong strokes, etc. Nggantung, on the other hand, relates to the suspension of movement through the persistence of sound. Mlaku is a musical idea while nggantung is an acoustical reality: how these two elements of gamelan music are reconciled may be at the basis of Javanese musical aesthetics.

```
2 3 2 1   .  .  3 2    balungan nggantung, pitch 1

2 3 2 1   2  .  3 2    balungan nggantung, pitch 2

2 3 2 1   .  2  3 2    balungan mlaku

2 3 2 1   3  2  1 2    balungan mlaku
```

Figure 4. Differentiating balungan nggantung from balungan mlaku.

What may be seen as a particular kind of nggantung is *balungan mleset*, or "slipping" balungan. This phenomenon usually occurs at important structural points such as kenong or even gong. Balungan mleset is melodic anticipation immediately after such a structural point: a pitch on the second beat of a gatra is anticipated by playing the same pitch on the first beat as well. The pitch may be sustained (either through stroke rests or through reiteration) for several beats. See Figure 5.

Syncopation in the balungan is also recognized by the Javanese. In Solo musicians call this *balungan pin mundur* (lit., backwards dot [rests]); the association with the notation is clear. In Yogya, on the other hand, syncopation in the balungan is called *balungan mingkal* (lit., kicking), using a more traditional association with physical movement. See Figure 5.

```
          .  .  2  .      balungan nggantung
         ..2. 2212

3 5 3 2  6 6   .  .      balungan mleset
3 5 3 2 66.. 6656

2  .  1  .               balungan pin mundur
6.5. 4.2.

 2 1  6 5                balungan ndhelik
2321 6535
 . 1  . 6
```

Figure 5. Types of melodic and rhythmic behavior in balungan.

Previously, I mentioned that the range of balungan is percieved as being far greater than the range of individual instruments in the gamelan. Indeed, the balungan of a gamelan composition may seem to traverse through about three octaves, especially when the melodic movement suggests octave crossing. When octave crossing is implied within a gatra of the balungan it is known as *balungan ndhelik* (lit., hidden balungan). Thus, a passage such as that in figure 5 can be understood as melodic movement from one octave register into a lower octave

register, and that movement tends to be conjunct rather than disjunct.

Thus, we can see that even the most basic element of Javanese gamelan, the balungan, is far more complex than we have previously thought. Musicians who play the elaborating instruments must know exactly what the balungan is doing both melodically and rhythmically. They must know how it relates to the underlying meter, what octave-register it is in, when it crosses from one octave register to another, and whether it is moving or suspended. How the bonang relates to the balungan will be discussed in following sections. However, we will first briefly examine the concept of *irama*.

Irama

I mentioned earlier that the balungan may change in density with a change in the irama. The underlying meter in a gendhing or section of a gendhing, however, does not: it either becomes faster or slower depending on the irama level and, resultantly, more or less subdivided by the elaborating instruments. Using Martopangrawit's approach (1984:10-11), we can ascertain the five irama levels according to the strokes of the *saron peking* (also know as *saron panerus*) for each beat of the underlying meter. The table in figure 6, below, shows the five irama levels using the saron peking as our referent.

irama lancar (seseg)	1 saron peking stroke/metrical beat
irama tanggung (I)	2 saron peking strokes/metrical beat
irama dados (II)	4 saron peking strokes/metrical beat
irama wilet (III)	8 saron peking strokes/metrical beat
irama rangkep (IV)	16 saron peking strokes/metrical beat

Figure 6. The five irama levels.

Bonangan and bonangan types

Just like the balungan, the bonang part, or *bonangan*, may be categorized according to general and specific types. Often, we can predict the bonangan of a gendhing or section of a gendhing based upon the criteria such as: the balungan, irama level, form, and style. For the time being, we will set aside the formal and stylistic criteria and focus on the balungan and the way it is treated *(nggarap)* by the bonang in the five irama levels. We will discuss the three main types of bonang playing found in both Solo and Yogya: *cegatan gembyang* (anticipating octaves), often translated as "octave style" playing; *mipil* (to do one by one), or "walking style" (perhaps from the Yogyanese *bonangan mlampah*); and *imbal* (interlocking style).

Figures 7-11 illustrate the various possibilities for the bonang according to the five irama levels and balungan types. The figures are based upon a study of approximately one hundred gendhing drawn from both commercial recordings and field tapes. The three main types of bonangan discussed here are by no means typical of the way bonang is performed throughout Central Java. Indeed, one has only to travel to Semarang, Banyumas, or Surabaya to hear other styles of bonang playing. Even the palace ensemble of Yogyakarta has a particular style for playing bonang in balungan nibani (known as *balungan lamba* in Yogyakarta). Yet, the three main types do represent a kind of norm for ensembles in and around the Yogya-Solo region. The differences in style between Yogya and Solo will be discussed later in this paper.

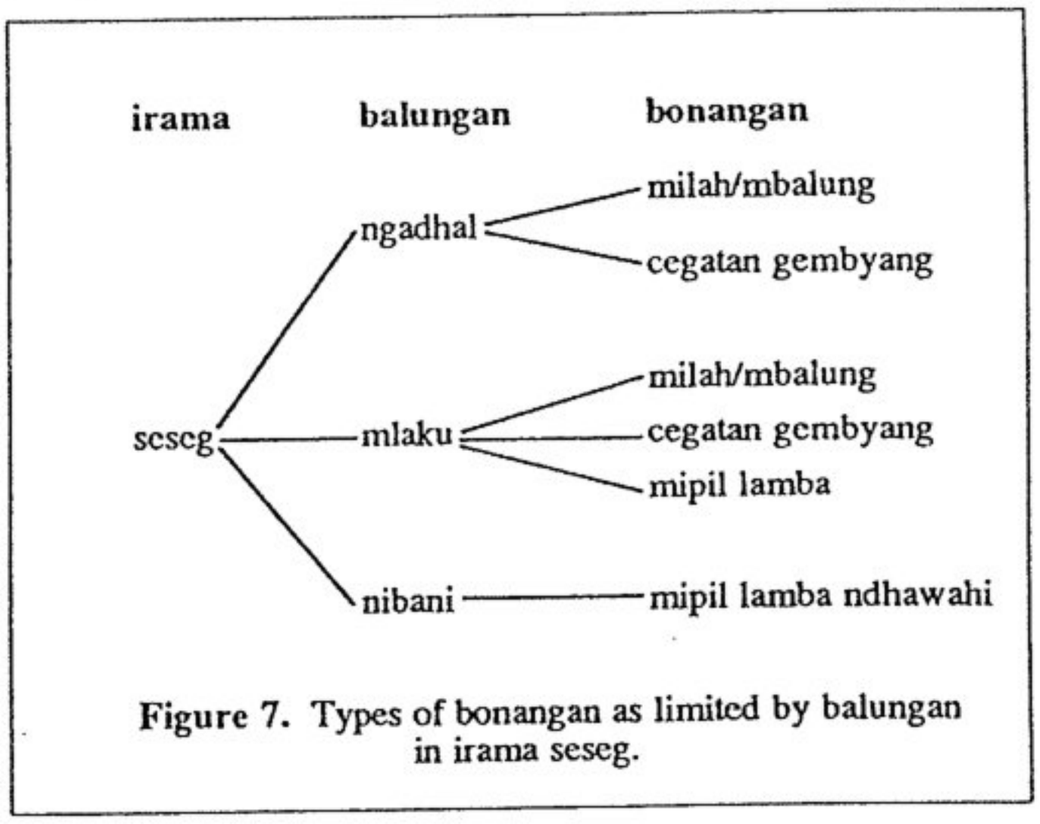

Figure 7. Types of bonangan as limited by balungan in irama seseg.

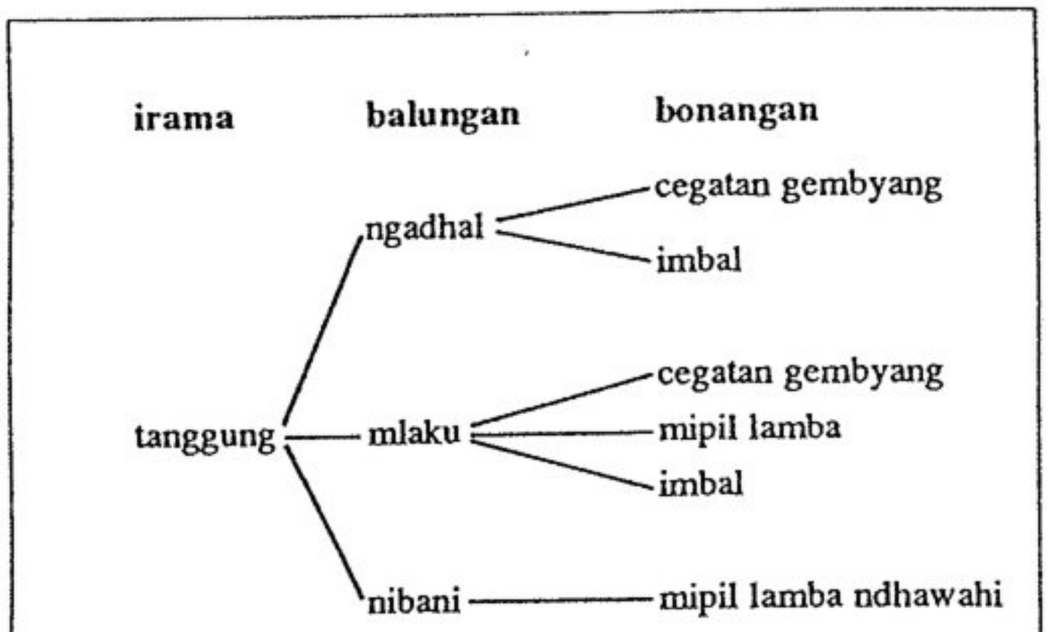

Figure 8. Types of bonangan as limited by balungan in irama tanggung.

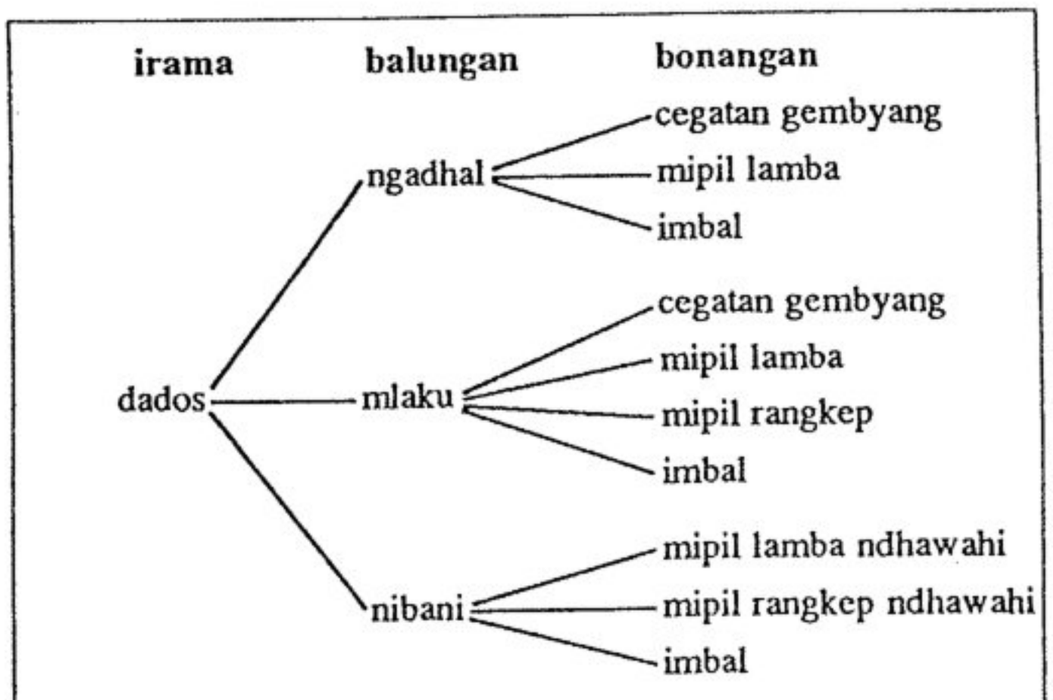

Figure 9. Types of bonangan as limited by balungan in irama dados.

Bonangan cegatan gembyang

Octave style bonang playing, or *bonangan cegatan gembyang*, involves playing pitches (in octaves) on the off-beat of the underlying meter. The pitches are drawn from balungan tones occurring on the second and/or fourth beat of the gatra, as shown in Figure 12.

Octave-style bonang playing is found usually in irama seseg, irama tanggung and, sometimes, in irama dados. In irama seseg and irama tanggung, octaves are played on the off-beats of balungan mlaku and on the weak beats of balungan ngadhal (as shown in Figure 12). In irama dados, octaves are sometimes played on the off-beats of balungan ngadhal. Note that octave-style bonang playing is not normally used in balungan nibani.

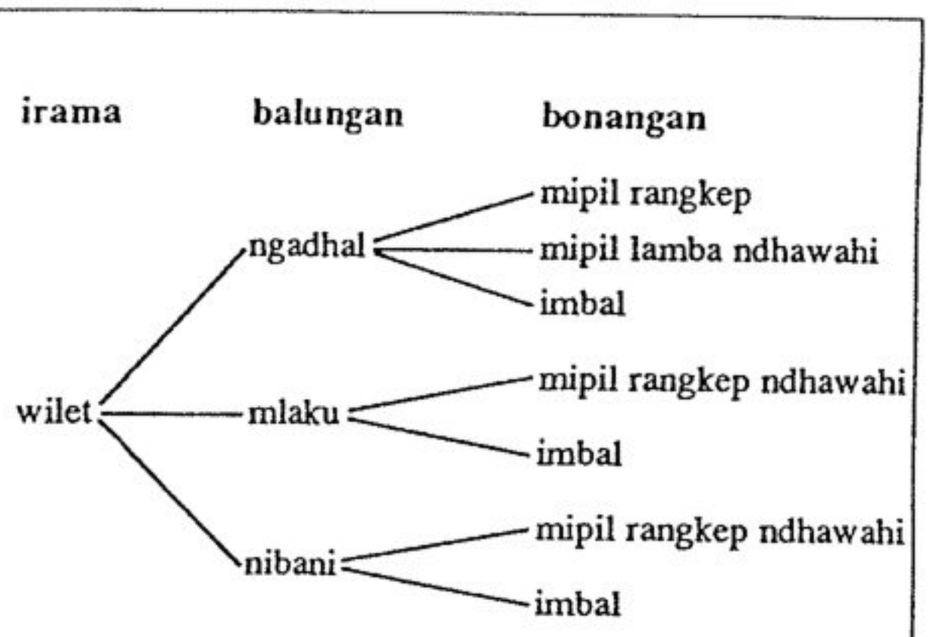

Figure 10. Types of bonangan as limited by balungan in irama wilet.

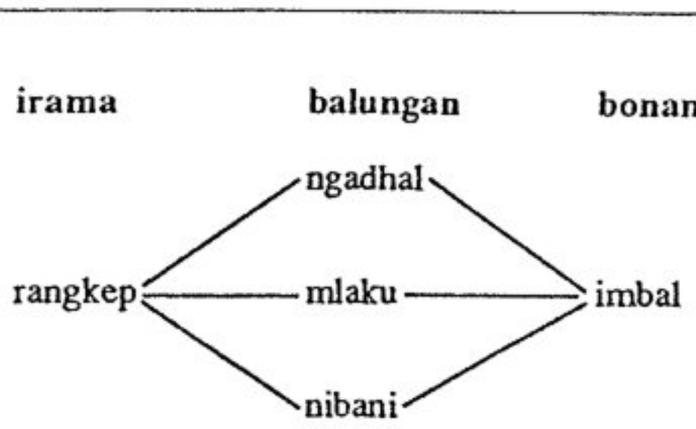

Figure 11. Types of bonangan as limited by balungan in irama rangkep.

```
balungan ngadhal    23212321  23123565
balungan mlaku       2 1 2 1   3 5 6 5
                    . . . .
                    1.1.1.1.  5.5.5.5.
bonangan            1.1.1.1.  5.5.5.5.
                              . . . .
meter               x x x x   x x x x
```

Figure 12. Bonangan cegatan gembyang.

Bonangan mipil

Walking style bonang playing, *(bonangan mipil)* involves elaborating patterns based upon dyads or tetrads of balungan tones. Five kinds of mipil are commonly used in this type of bonang playing: *milah (or mbalung), mipil lamba, mipil rangkep, mipil lamba ndhawahi*, and *mipil rangkep ndhawahi*. In bonangan milah (mbalung), the bonang player simply "plays the balungan" (mbalung), usually at the very beginning of a piece before playing mipil lamba (hence, the name milah; "to begin"). In Figure 13, we can see that, except for octave crossing, the bonang part is identical to the balungan. In terms of rhythmic density, the relationship of the bonangan and balungan is one to one.

```
meter       x x x x  x x x x
balungan    . . . 1 ..654561

bonangan    . . . 1 ..654561
                     ......
```

Figure 13. Bonangan milah/mbalung.

The expression *mipil lamba* does not translate very well, so it may better to think of it as "simple" walking-style bonang playing. Pitches are drawn from pairs of balungan tones (sometimes from tetrads). The bonang part moves at twice the speed of the balungan with a rhythmic density of two strokes of the bonang to one balungan stroke. Two examples of mipil lamba are shown below in Figure 14.

Irama tanggung (I)

```
meter       x x x x
balungan    2 3 2 1

bonangan    23232121
```

Irama dados (II)

```
meter         x   x     x   x
balungan    2 3 2 1   6 5 3 5

bonangan    23232121 65653535
```

Figure 14. Bonangan mipil mlampah.

```
meter       x   x     x   x
balungan    2   3     2   1

bonangan    232..323 212..121
```

Figure 15. Bonangan mipil rangkep.

Bonangan mipil rangkep may be thought of as "doubled" walking-style bonang playing. The pitches of the bonang patterns are, as in mipil lamba, drawn from balungan dyads or tetrads. The bonang part moves at four times the speed of the

balungan, a relationship of four to one.

Bonangan mipil lamba ndhawahi or "falling" simple walking-style bonangan is most commonly heard when the balungan is nibani (that is when the balungan is one-half the density of the meter). In this case, the bonang part differs slightly from the balungan melodically, often using upper or lower neighbor tones. Rhythmically, the relationship is four bonangan strokes to one stroke of the balungan. An example of this style of bonang playing is shown in Figure 16.

```
meter       x   x   x   x
balungan    .   5   .   3

bonangan  5 2 5 . 5 3 5 3
```

Figure 16. Bonangan mipil lamba ndhawahi.

```
meter       x   x   x   x
balungan    .   5   .   3

bonangan  .5.225..252335.3
```

Figure 17. Bonangan mipil rangkep ndhawahi.

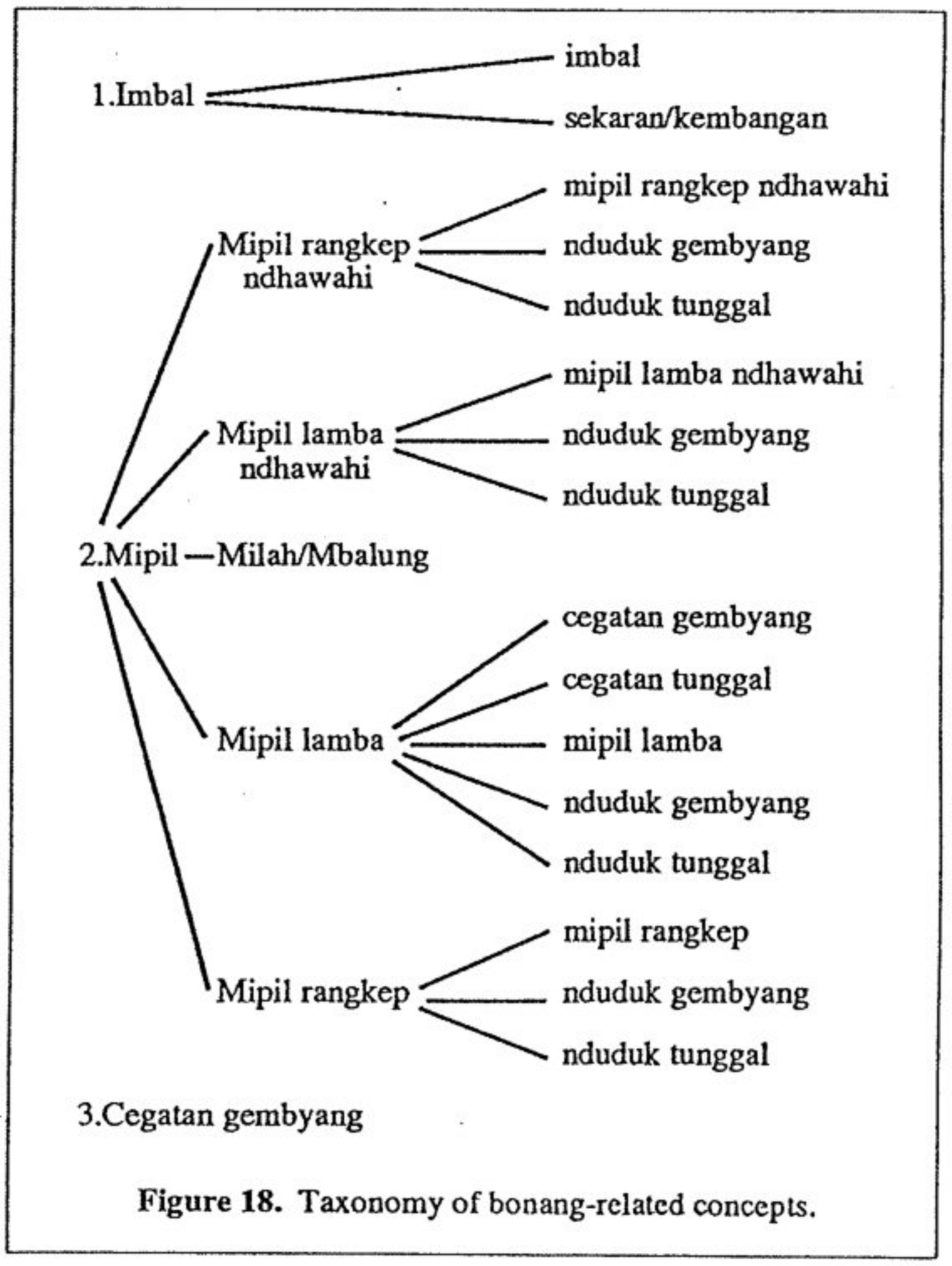

Figure 18. Taxonomy of bonang-related concepts.

Bonangan mipil rangkep ndhawahi, "falling" doubled walking-style bonangan, is the more elaborated version of the previous mipil lamba ndhawahi (falling simple walking-style bonang playing). It also is most commonly found in balungan nibani and it differs from the balungan melodically, with upper and lower neighbor tones. The rhythmical relationship is usually (eight bonangan strokes to one stroke of the balungan. Compare the example of bonangan mipil rangkep ndhawahi in Figure 17 with the bonang part in Figure 16.

The last four styles of bonangan discussed also include more specific types of bonang playing. The taxonomy on the following page shows the various possibilities of specific patterns according to each of the four styles of bonangan (see Figure 18). The four styles of bonangan are also listed with the specific patterns as contrasting sets.

Figure 18 shows that there are two kinds of specific bonangan used sometimes in either of the four "walking" styles of bonang playing. *Nduduk gembyang* ("prodding octaves") refers to octave playing different than cegatan gembyang (off-beat octaves). Here, the octaves are played in rhythmic groupings of three, usually to suggest sustained balungan tones (Figure 19).

Irama tanggung (I)

```
meter       x     x     x     x
balungan    .     .     6     .
                6           6
bonangan  6 6 6 . 6 6 . .
          . . .   . .
```

Irama dados (II)

```
meter       x     x     x     x
balungan    .     .     6     .
            6  6  6  6  6
bonangan  666.66.66.66.66.
          ... .. .. .. ..
```

Figure 19. Bonangan nduduk gembyang.

Bonangan nduduk tunggal ("prodding single [tones]") is identical to nduduk gembyang except that single pitches instead of octaves are employed. Most commonly, these are played to imply sustained low tones in the balungan (Figure 20).

Bonangan imbal

Bonangan imbal, or interlocking style bonang playing, is sometimes called *pinjalan* ("like a flea") in Yogya, and involves both the bonang barung and the bonang panerus. Each of the two bonangs plays a repeating two-tone pattern which interlocks with the other bonang pattern forming a four-tone pattern of conjunct pitches. As Figure 21 shows, the bonang panerus part is reversible while the bonang barung part is not. That is, the upper pitch of the bonang barung part must always occur on the down-beat in relation to the meter.

Interlocking style bonang playing is found in all irama levels except for irama seseg (shown in irama tanggung in Figure 21). However, it should be noted that irama or even balungan does not necessarily determine the use of imbal playing. Hardja

Susilo has remarked in an interview that imbal has closer ties to the type of dance *(kiprahan, golek, tledhekan, bugis, etc.)* it accompanies or simulates to accompany than to any specific musical considerations. Yet in irama wilet (III) and rangkep (IV), the bonangan is almost always imbal.

Characteristically, imbal in irama III is generally preceded by some type of bonangan mipil (depending on the balungan), also in irama wilet. The mipil is no longer than the first kenong phrase and occurs only once in this section of the piece.

Sekaran, or *kembangan*, ("flower-like") patterns are played in bonangan imbal to anticipate key structural points in a piece (such as gong) as well as significant changes of melodic movement in the balungan. They are also of fixed duration. If we use the imbal pattern of the bonang barung as our density referent, we can say that the sekaran patterns are either four or eight strokes in duration. However, the proportionate duration of the sekaran patterns vary in relation to the balungan in different irama settings. The higher the irama level, the slower the tempo of the meter; therefore, the sekaran pattern--in effect--becomes shorter in proportionate duration (Figure 22).

Irama tanggung (I)

```
meter          x     x     x     x
balungan       .     .     6     .

bonangan     6 6 6 . 6 6 . .
             . . .   . .
```

Irama dados (II)

```
meter          x     x     x     x
balungan       .     .     6     .

bonangan     666.66.66.66.66.
             ... .. .. .. ..
```

Figure 20. Bonangan nduduk tunggal.

```
meter          x     x     x     x
balungan       3     2     3     1

bonangan     21532153512351 23
   barung    .1.3.1.3.1.3.1.3
   panerus   2.5.2.5.5.2.5.2.
```

Figure 21. Bonangan imbal.

---

balungan

```
tanggung   .     .     .     .     .     2     3     2     1
dados      .           2           3           2           1
wilet      3                       2                       1
rangkep    2                                               1

                                                 1.1.1...1.1.1.1
bar.  .1.3.1.3.1.3.1.3.1.3.1.3.1.1.1...1.1.1.1
                                 2.2.2.2.2.2.2.2.
pan.  2.5.2.5.2.5.2.5.2.5.2.2.2.2.2.2.2.2.
```

Figure 22. Bonangan sekaran/kembangan

In its most common form, the sekaran pattern is made up of an idiomatic melodic pattern ending with a *seleh* ("to rest, settled") tone which is the same as the anticipated balungan tone. Each pitch of both the slendro and pelog tuning systems has corresponding sekaran patterns. Examples of these patterns for each of the tones were collected by the author and are shown in the appendix to this article.

Although sekaran and imbal exist side by side in gamelan performance, it is important to tremember that the two concepts are different in their function and the manner in which they relate to the balungan. To summarize, sekaran playing can be differentiated from imbal by three main factors: (1) A sekaran pattern defines and anticipates the balungan pitch of a structurally important point in a composition while imbal does not necessarily relate to any specific pitch of the balungan but rather to pathet and register (imbal patterns and their corresponding pathet and register are also shown in the appendix); (2) a sekaran pattern is never longer than one gatra in any of the five irama settings while imbal patterns are, in effect, of indeterminate duration; and (3) the concept of sekaran is based on the idea of interpolation while imbal is based on repetition.

Yogyanese and Solonese styles

Thus far, we have examined characteristics of bonang playing mainly in terms of Solonese performance practice. At first hearing, Yogyanese-style gamelan music seems identical to that of Solo. Yet there are several important differences of style, and some of them are heard in the bonang part. We can generalize that Yogyanese bonang playing tends to be freer in register, rhythm, and melody. This is particularly noticeable in mipil-style bonang playing.

When we listen to Solonese style mipil, we can hear that the bonang closely follows the register of a given composition--indeed, the register is unclear in the balungan as played by the single-octave slenthem, demung, and saron. To the knowledgeable listener, the bonang part will suggest low, middle, or high register in the balungan. Mipil played in the lower octave of the bonang's two-octave tessitura suggests low-octave balungan register while mipil played in the upper octave suggests middle-octave balungan register. High-octave balungan register is sometimes implied by mipil playing in the upper octave of the bonang tessitura. To avoid ambiguity (between middle and high octave register), the bonang player will signal balungan movement into the high register in the following manner: if a gatra of the balungan is in the middle-octave register and ends on pitch 5 or 6, followed by balungan

pitches in the high-octave register, then the bonangan will be nduduk gembyang; or, if a gatra begins in the high-octave register and ends on either pitch 5 or 6, then the bonangan will also be nduduk gembyang. The nduduk gembyang used in this context is slightly different from those discussed earlier. Examples are shown in Figure 23.

In Yogya style mipil playing, the bonang part is not a clear indicator of balungan register. Nduduk gembyang is sometimes

played even when the balungan is not nggantung (sustained) or moving into the upper register. The bonang player sometimes uses nduduk gembyang to anticipate important structural points (such as gong or kenong strokes) or to signal changes in the balungan after repeated sections. Nduduk gembyang may also be used simply to get from the lower-octave to the upper-octave range of the bonang.

Yogyanese style mipil playing (called mlampah in Yogya), particularly in palace performances, is also characterized by its seemingly freer rhythm, heard through syncopated and rolled strokes. The syncopation is accomplished by either delaying or anticipating certain strokes by about one-half pulse (using the bonang part as rhythmic measurement). This brings about a staggered, or limping, effect to the bonang part. Rolled strokes are created by allowing the beater to bounce once on the gong of the bonang. These two types of strokes (syncopated and rolled) are usually combined, the rolled strokes enhancing the effect of the syncopation. Examples of these and the use of octaves (discussed earlier) are shown in Figure 24.

Melodically, Yogyanese style mipil (mlampah) is also apparently freer than Solonese style. The bonang player may simply choose to follow the pitches of the balungan, or they may add an upper or lower neighboring tone. The important rule here, I believe, is to follow the melodic direction of the balungan. Figure 25 is an example of Yogyanese style bonang playing using an upper neighbor tone (pitch 6) while generally following the upward direction of the balungan.

Although Yogyanese style bonang playing may seem rather difficult at first, actually it is readily accessible to anyone taking the time to learn it. Knowing both styles also increases the bonang player's potential repertory of music since they could conceiveably perform either Solonese or Yogyanese gendhing. However, it is important to note that the two regions differ not only in bonang playing style but in the performance of other gamelan instruments as well--even in the manner the balungan is played. The student is advised to listen to as many representative recordings as possible.

```
balungan                3                 5
bonangan    3  5  6  .  3  5  6  5
```

Figure 25. Yogyanese bonangan mlampah.

My discussions have only touched upon some of the most obvious features of bonang playing. Certainly the best teacher is experience and observation. Yet an understanding of the fundamentals of balungan and bonangan will help the student in putting their experiences and observations in a coherent context, to apply them toward learning new gendhing.

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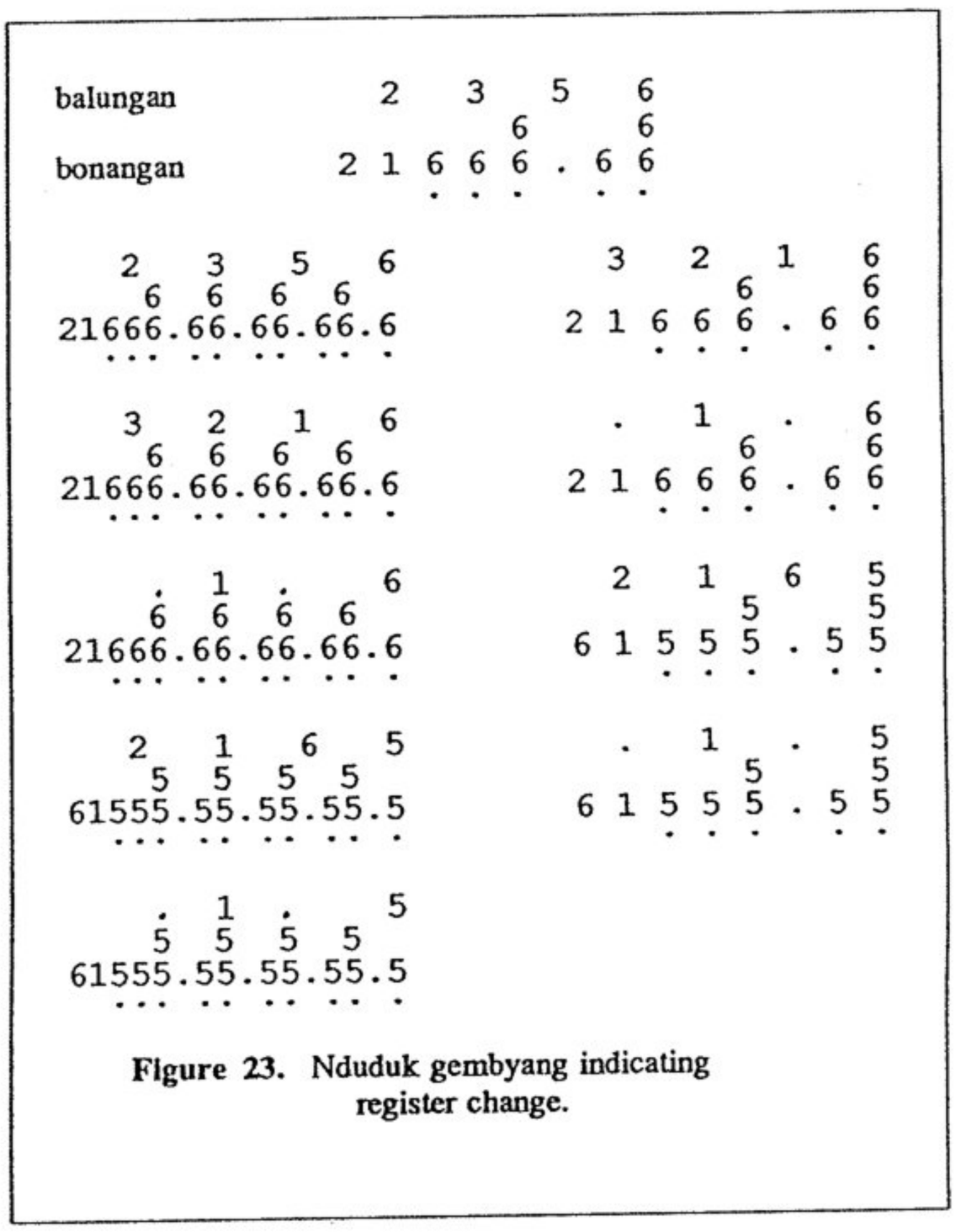

Figure 23. Nduduk gembyang indicating register change.

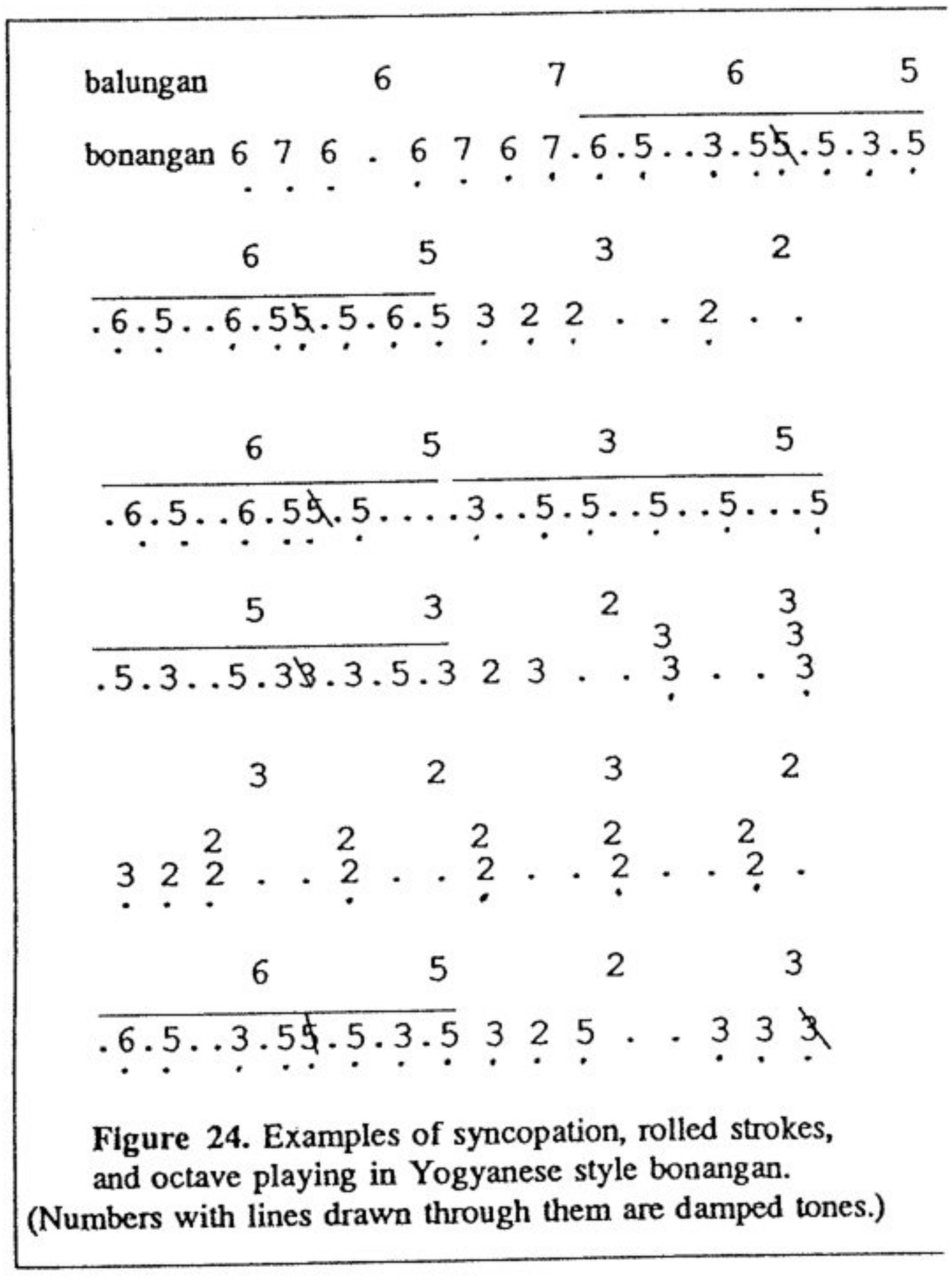

Figure 24. Examples of syncopation, rolled strokes, and octave playing in Yogyanese style bonangan. (Numbers with lines drawn through them are damped tones.)

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APPENDIX 1

Imbal tones

Pathet	Bonang Barung	Bonang Panerus	Implied register
slendro nem	6/2	1/3	low and middle
slendro nem	1/3	2/5	low and middle
slendro nem	2/5	1/3, 3/6	high
slendro nem	3/6	2/5, 5/1	high
slendro sanga	6/2	1/3	low and middle
slendro sanga	2/5	1/3, 3/6	high
slendro sanga	5/1	3/6	high
slendro manyura	1/3	2/5	low and middle
slendro manyura	3/6	2/5	high
pelog lima	6/2	1/3	low and middle
pelog lima	2/5	1/3, 3/6	high
pelog nem	6/2	1/3	low and middle
pelog nem	1/3	2/5	low and middle
pelog nem	1/4	2/5	low and middle
pelog nem	2/5	1/3, 1/4	high
pelog nem	3/6	2/5, 5/1	high
pelog barang	7/3	2/5	low and middle
pelog barang	3/6	2/5, 5/7	high

APPENDIX 2

Examples of Sekaran Patterns

Patterns are indicated as either *sanga, manyura, sanga/manyura,* or *pelog* types. This simply means that they may be used in either pathet sanga (sanga-type), pathet manyura (manyura-type) or both pathet sanga and manyura (sanga/manyura-type). These pathet-types may be transferred to the pelog tuning system (sanga generally becomes *pelog lima* [or *pelog nem*]; manyura, *pelog barang* or *nem*; and nem, *pelog nem*). Any patterns indicated "pelog-type" are found only in the pelog tuning system.

Patterns to Pitch 1
(Note: Pitch 1 is replaced by pitch 7 in pelog barang.)

Pitch 1-Slendro manyura

```
. 1 . 1   . 1 . .   . 1 . 1   . 1 . 1
. 1 . 1   . 1 . .   x 1 . 1   . 1 . 1
                    . 1 . x   x 1 . 1
                    . 3 . 5   . 5 6 1
                    . 6 . 3   5 3 2 1
                    . 6 . 3   ..53.2.1
                    3 5 3 5   6 1 6 1
                    3 5 3 .   3 5 6 1
                    . 3 . 5   3 5 6 1
```

Pitch 1-Slendro sanga

```
..16.5.2   . 5 . 6   . 1 . 5   . 6 . 1
..16.5.2   . 5 . 6   . 1 . 5   6 5 6 1
..16.5.2   5 6 1 .   1 . 5 2   1 . 1 .
..16.5.2   . 5 . 6   .1....52  1 x 1 .
1 6 5 2    . 5 . 6   . 1 . 5   . 6 . 1
```

Pitch 1-Pelog

```
  3     3
2 2 2   6 6 6   5 . 1 4   . 4 2 1
  3     3
2 2 2   6 6 6   . 5 1 4   . 4 2 1
..16.5.2   . 5 . 6   5 . 4 2   1 . 1 .
```

Patterns to Pitch 2

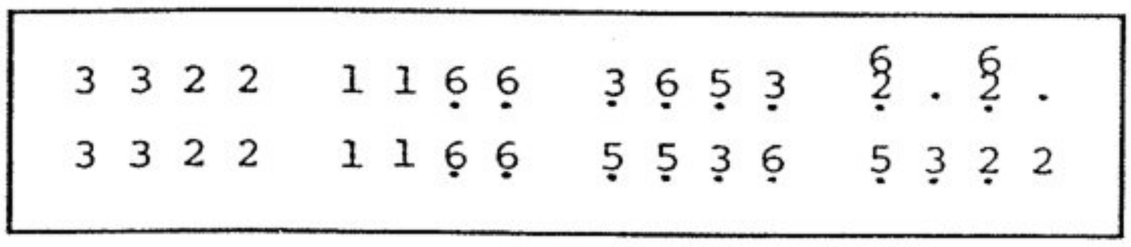
Pitch 2-Slendro sanga/manyura

```
2 1 6 3   . 6 . 1   . 2 . 6   . 1 . 2
2 1 6 3   . 6 . 1   . 2 . 6   3 6 1 2
6 1 6 3   . 6 . 1   . 2 . 6   3 6 1 2
2 1 6 3   . 6 . 1   2 6 2 3   5 6 1 2
. 1 6 3   . 6 . 1   2 6 2 3   5 6 1 2
. 1 6 3   . 6 . 1   . 2 2 3   5 6 1 2
. 1 6 3   . 6 . 1   . 2 2 3   5 6 1 2
2 1 6 3   6 1 6 2   ...2..16  3 6 1 2
..21.6.3  . 6 . 1   ...2..16  5 3 2 2
..21.6.3  . 6 . 1   . 2 . 6   1 6 1 2
..21.6.3  6 . 6 1   6 . 2 3   5 6 1 2
..21.6.3  . 6 . 1   .....216  . 1 . 2
                    2 1 6 3   2 . 2 .
                    ..21.6.3  2 . 2 .
                    2 1 6 3   2 3 2 2
                    2 1 6 3   6 1 6 2
                    6   6
                    2 . 2 3   5 6 1 2
                    . 2 1 6   1 6 1 2
  3     3
2 2 2   6 6 6   . 6 1 6   5 3 2 2
                    6
1 6 1 6   . 1 . 6   . 2 . 3   5 2 . .
```

Pitch 2-Slendro sanga

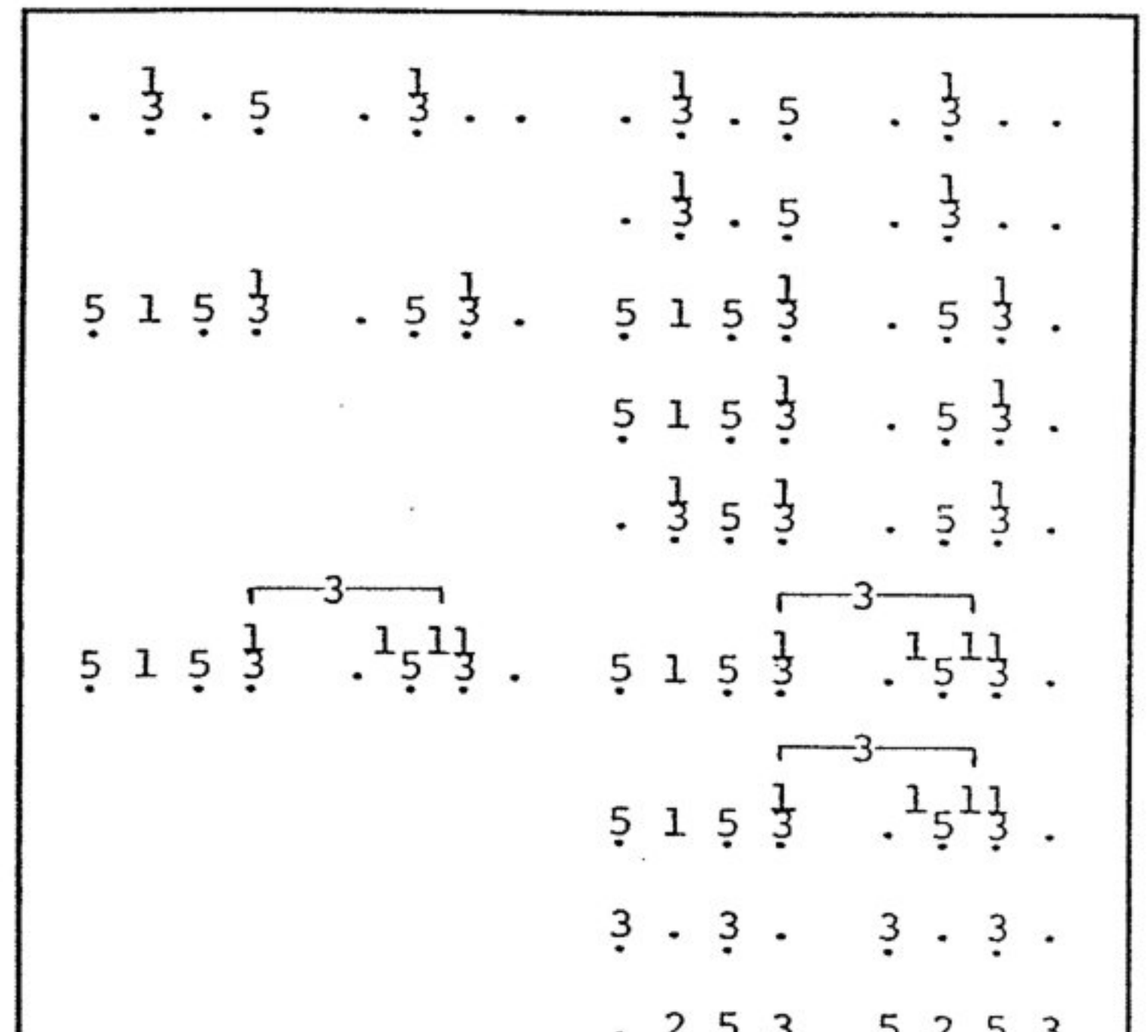
```
                    6 . 6 2   6   6
                              2 . 2 2
. . . 2   . 3 . 5   . 3 . 6   . 3 . 2
. . . 2   . 3 . 5   . 6 1 5   . 3 . 2
```

Pitch 2-Slendro manyura

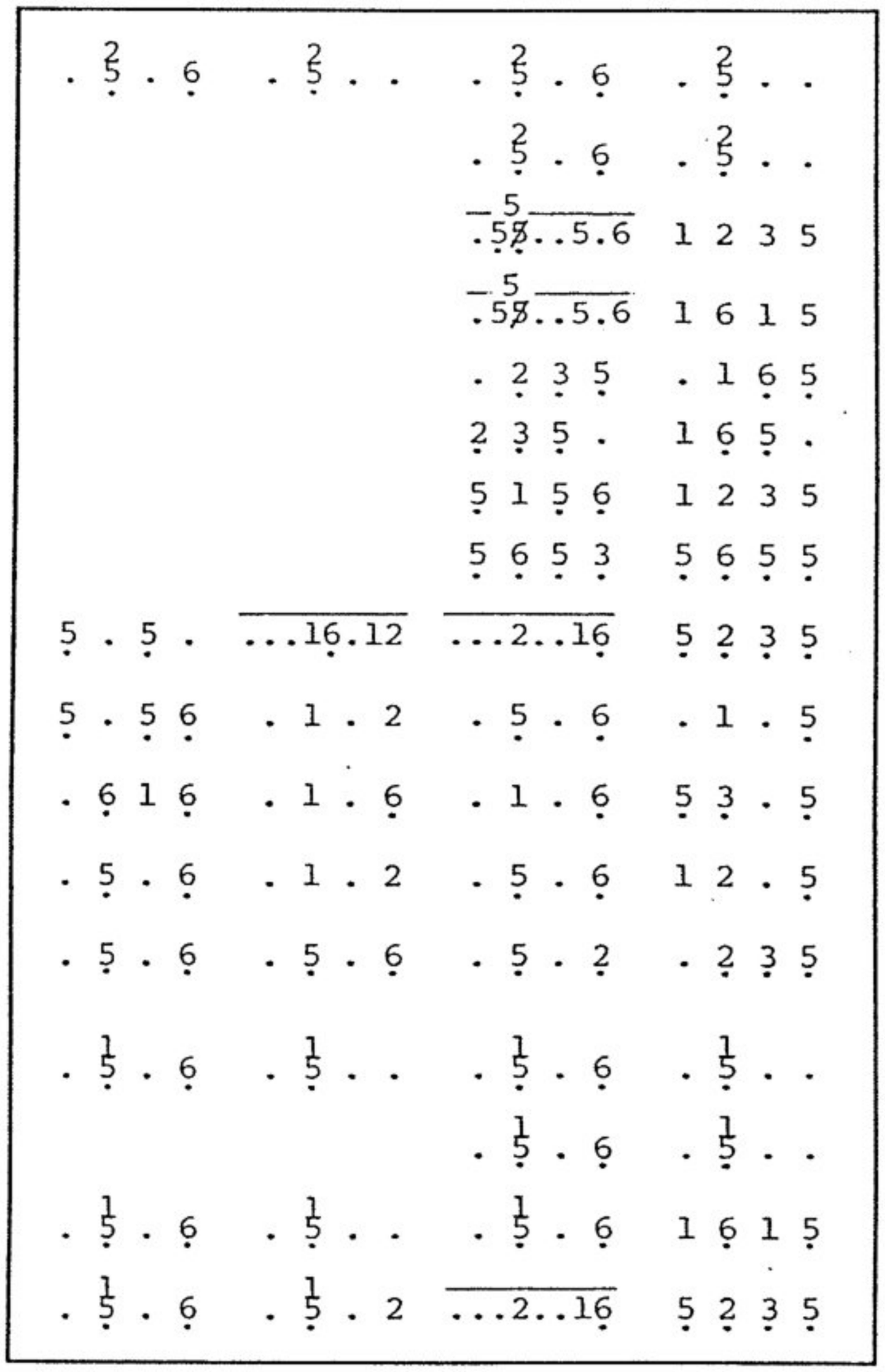


Patterns to Pitch 3

Pitch 3-Slendro manyura

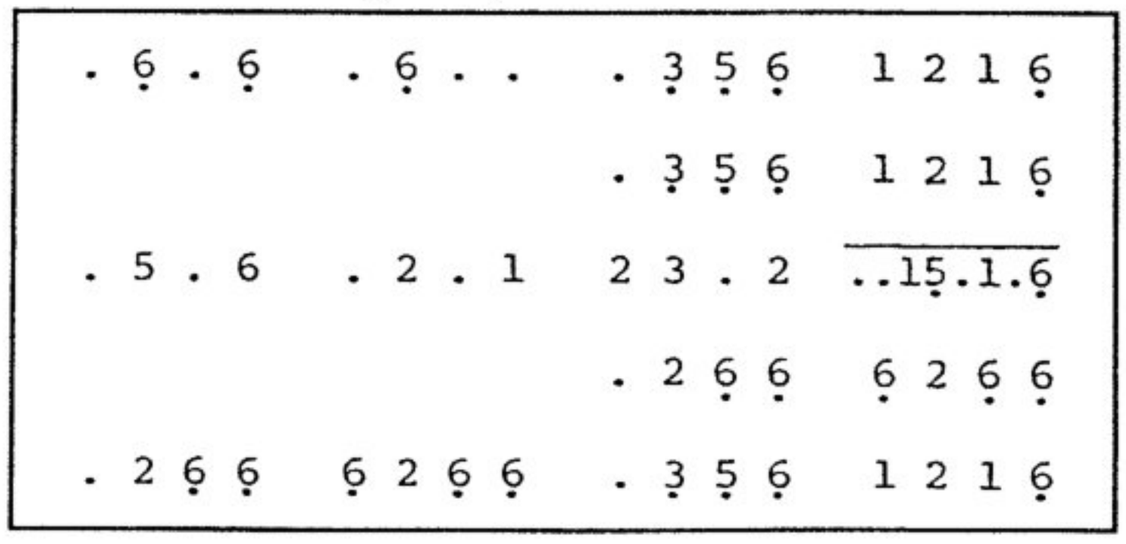


Pitch 5-Slendro sanga

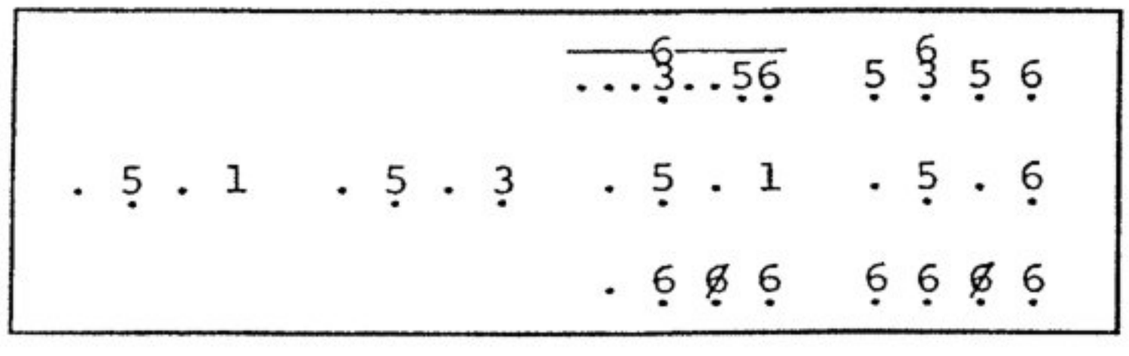


Patterns to Pitch 6

Pitch 6-Slendro sanga/manyura



Pitch 6-Slendro manyura



Patterns to Pitch 5

Pitch 5-Pelog