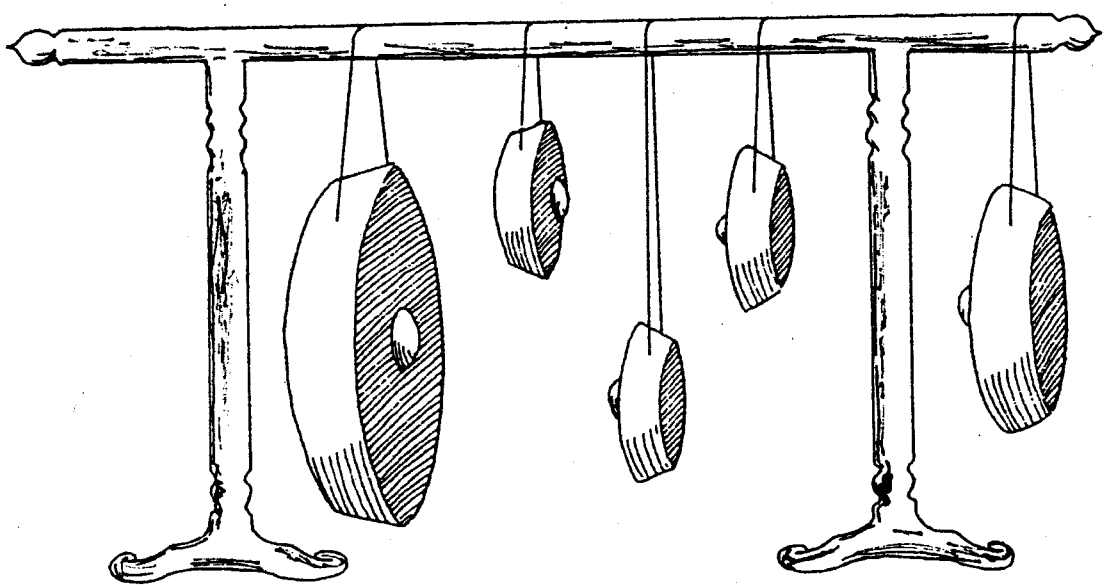
Formal Aspects of Performance Practice In Central Javanese Music



by Roger R. Vetter

FORMAL ASPECTS OF PERFORMANCE PRACTICE IN CENTRAL JAVANESE GAMELAN MUSIC

A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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By

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LIST OF ABBREVIATIONS AND SYMBOLS

Colotomic Events

G	gong ageng or siyem (when siyem is used as a substitute for gong-ageng)
S	siyem
N	kenong
P	kempul
t	kethuk
W	wela (colotomic rest in a structurally important place)
GN or $\frac{N}{G}$	gong and kenong sounding together
$\frac{N}{S}$	siyem and kenong sounding together
$\frac{N}{P}$	kempul and kenong sounding together
$\frac{N}{t}$	kethuk and kenong sounding together
$\frac{N}{P/G}$	kempul or gong sounding with kenong

Structures

lnc	lancaran
brn	bubaran
ldr	ladrang
ktw	ketawang

Structures (Continued)

gd	gendhing
ktw gd	ketawang gendhing

Temporal Units

bp	balungan-pulse
.	balungan-pulse (in diagrams and transcriptions)
cp	colotomic pulse
CM	colotomic module
DR	density referent

Tempo

MM	metronome marking
(bp=)	balungan-pulse metronome marking
(cp=)	colotomic pulse metronome marking
rit	ritardando
accel	accelerando

Irama

ssg	irama seseg
I	irama I
II	irama II
III	irama III
IV	irama IV

Structural Editing

kend	kendelan
( )	deletion brought about by a kendelan
sel	selingan

Tuning Systems

sl	slendro
pl	pelog

Pathet-s

9 or sanga	pathet sanga
mnyr	pathet manyura
6 or nem	pathet nem
br	pathet barang

Melodic Organization

lower case letters (a, b, etc.)	kenongan-s
capital letters (A, B, etc.)	gongan-s
'	first half melodic alteration
"	a different first half alteration
*	second half melodic alteration
n	ngelik gongan
m	mulur gongan

Melodic Organization (Continued)

:__:	a main, repeatable, gongan-cycle
;__;	a secondary, repeatable, gongan-cycle
(__)	optional material
/	separates repeatable gongan-cycles with different structural details

General

#	number
T	transcription
‖: :‖	repeat signs

PREFACE

For a music tradition encompassing as small a geographic area as Central Java, the amount of published and unpublished material available is substantial. Numerous articles and even a few books -- some written by Westerners, others by Javanese -- are devoted in part, or entirely, to the gamelan tradition of Central Java. The nature of these studies runs the gamut from highly technical and scholarly monuments to rather casual, non-technical articles. The two main topics of concern in the majority of these studies have been first of all the instruments that comprise the gamelan and, secondly, the pitch aspect of the music -- emphasizing tuning systems and modes. Although not absent from the many writings, the formal aspects of this music tradition have been given considerably less attention. The purpose of this thesis is to discuss some important formal aspects and examine how they interact to create large scale formal relationships (this interaction will be termed "formal process").

After a brief introduction to the gamelan tradition, the first chapter is concerned primarily with defining what "structure" is in gamelan music, and then classifying and describing the most common structures found in the tradition. The second chapter examines how these structures relate to time, and the ways in which the flow of structure can be modified in performance. Various levels of melodic organization are dealt with in Chapter III. How the elements discussed

in the first three chapters combine and interact in a piece to create relationships on a macro-level, or formal level, will be examined in Chapter IV, while the ways in which the pieces are combined to form medleys will be discussed in the fifth chapter.

The order of the appendices, for the most part, follows the order of the topics in the text which they augment. One exception is Appendix C, which contains all the transcriptions referred to in the text. A tape (Appendix H) of the performances transcribed in Appendix C is deposited with the original copy of this thesis.

Many of the generalizations drawn in this thesis are formulated from the examination and analysis of pieces taken from two kinds of sources -- books of notated pieces and recorded performances. The information and generalizations included in Chapter III were drawn from analyses of 188 pieces, of which 186 were in notated form and only two were taken from sound recordings. Each of these 188 pieces has been assigned a number from 1 to 188 and is listed in Appendix D under the source from which it was taken. The analyses are given in Appendix E using the assigned numbers for purposes of identification.

The majority of the information and generalizations included in Chapters II, IV, and V was drawn from recorded performances listed in the discography of this thesis. Each entry in the discography is assigned a four-digit number from 1001 to 1032 which is used to identify the sound sources of the information contained in Appendices A through F.

All Javanese and Indonesian words have been underlined in the text but not in captions, lists of pieces, titles, or figures. The plural

form of these words is shown by adding a "-s" suffix to the underlined word. The new spelling system, introduced by the Indonesian government in 1972, has been used throughout except for proper names and titles which appear on publications printed in the old spelling system. A guide to pronunciation can be found in Horne (1974:xi-xii).

Within the Central Javanese gamelan tradition there exist several differences between the two music centers, the cities of Yogyakarta (pronounced "Jogjakarta"), or Yogya (pronounced "Jogja"), and Surakarta, or Solo, in regard to musical terminology. Although not of great importance to the nature of this study, many of these differences will be pointed out.

It is hoped that this thesis will be of value to Western music theorists, ethnomusicologists, and people specifically interested in Central Javanese gamelan music. It is written for Westerners by a student of music theory who has had contact with Javanese music over a five-year period, including two study trips to Java. The approach taken is neither totally Western nor totally Javanese, but a blend. The author's immediate goal is to give the reader a basic insight into the formal organization of this old and highly developed orchestral tradition. The long term goal of this thesis is a hope that it might be used in comparative studies along with similar works involving other music traditions and, as a result, add to our understanding of how man organizes sound into music.

CHAPTER I

THE GAMELAN TRADITION AND ITS FORMAL STRUCTURES

The Gamelan Orchestra and its Music Tradition

Throughout Mainland and Insular Southeast Asia there are numerous orchestras such as the pi phat of Thailand, the saing waing ah-pwe of Burma, the pin peat of Cambodia, the kulintang of the Philippines, and the gamelan of Malaysia and Indonesia, which are comprised in part or predominantly of percussion instruments made of metal (bronze, tin, or iron). The construction, composition, style of playing, pitch and formal organization, and repertoire of these orchestras and their traditions differ not only from one country to the next, but often between regions within the same country. Within Indonesia there exist numerous differences between the gamelan orchestras and music traditions found on the island of Bali and those on the island of Java. Indeed, on Java alone there are a number of distinct gamelan orchestra traditions which make it difficult to generalize about a single orchestra tradition of even this one island. Thus, when using the word "gamelan" it becomes necessary to clearly specify which "gamelan" tradition is being referred to. In this thesis "gamelan" will refer to the Central Javanese orchestra and its music tradition.

There are thousands of gamelan-s on the island of Java alone,[1] and the instruments of any one gamelan are not interchangeable with

instruments of other gamelan-s. The casings of the instruments of any one gamelan are carved and painted uniquely, and the chances of finding two gamelan-s tuned exactly alike are quite slim. Gamelan-s are housed in palaces, radio stations, wealthy merchants' houses, business offices, etc. Musicians meet at these places to rehearse and perform rather than owning their own instruments. Each gamelan is unique, and many are given their own name, i.e. Kyai Guntur madu (The Venerable Torrent of Honey), Kyai Udan asih (The Venerable Shower of Love), etc., to express the rasa (emotional feeling) created by its sound.

Flexibility in the Gamelan Tradition

Gamelan music was, until recently, an orally-transmitted tradition. Today the use of notation as a means of preservation and transmission is becoming more accepted, although a standard system of notation is lacking.[2] Gamelan music has built into it a high degree of flexibility, and to appreciate this tradition and understand the limitations of even a detailed notational system one must be aware of its basic nature.

The pitch organization of gamelan music offers a good example of this flexibility. There are two tuning systems used in gamelan music -- slendro, which is pentatonic with approximately equidistant-intervals, and peloq, which is heptatonic with a variety of interval sizes. The exact pitch and intervallic relationships that exist within these two tuning systems differ from one gamelan to the next. Thus, the instruments tuned to slendro of one gamelan will probably not match the slendro pitches of another gamelan, and if measurements of the intervallic size between corresponding steps of the two slendro tunings were

taken, these would most likely differ. The same applies to the pelog tuning system.[3]

The process by which gamelan pieces are realized -- the tradition's performance practice -- is another excellent example of flexibility. On a micro-level, most of the individual instrumental parts can be realized by knowing a few basic details. If the melody, tuning system, and mode (called pathet) of a piece are known, a competent musician should be able to realize a traditionally acceptable part on any instrument he knows (and most experienced gamelan musicians know several instruments well enough to do this). One competent musician's realization of a particular piece on a particular instrument may not be the same as another competent musician's realization, yet both may be acceptable.

On a macro-level, the overall formal result of any one piece can vary from one performance of the piece to the next. Depending on how many times a piece or a section of a piece is repeated, what tempo or tempi it is performed at, whether or not certain variable sections of a piece are performed, and whether or not another piece is inserted into the original piece, performance practice allows for a wide range of acceptable realizations. It is these formal aspects of the gamelan-'s performance practice that will be the concern of Chapters II through V.

Functions of Instruments in the Gamelan

An important way in which the gamelan differs from the Western orchestra is that tradition dictates the function of each instrument in the gamelan, and an instrument's function is basically the same for all pieces in the repertoire. The resulting texture has been described by

Mantle Hood as: "Polyphonic stratification ... a complex musical fabric of as many as twenty-five distinct strata of sound."[4] The instruments can be classified under five functions -- melodic, accentuating, abstracting, elaborating, and tempo leading. Two groups of instruments, one functioning as melodic carriers (balungan instruments) and the other as accentuating instruments (colotomic instruments), will be of primary concern in this chapter.

Balungan Instruments

The melodic instruments of the gamelan are the saron barung, saron demung, and slenthem. They are, for the most part, single octave instruments[5] which play the balungan (lit., skeleton) of the piece. "Balungan" has been variously described as "saron part," "nuclear theme," "fixed melody," "cantus firmus," etc. None of these terms, for one reason or another, is quite satisfactory. Sutton (1975:31) says: ". . . the concept 'balungan' may be defined as a single-octave melodic outline, almost always realized on one or more of the balungan instruments." This is probably the safest definition and the one to be used in this thesis. The balungan-s of most pieces are successions of pitches at a steady, even pulse. Rhythmic variety in a balungan, when present, is created either by sustaining a pitch through one or more balungan pulses or by adding tones between two consecutive balungan pulses in a duple (sometimes quadruple) subdivision. For the remainder of this thesis the term "balungan" will refer to single-octave melodic outlines as they exist in the gamelan repertoire. The term "balungan-pulse" will always refer to the balungan-'s underlying even pulse -- void

of any rhythmic variety..

An important characteristic of the balungan-pulse is the grouping of four pulses to form a unit called a "gatra." Comparing a "gatra" to the Western concept of musical bar or measure is dangerous, mainly due to a difference in metric accent. In a measure of $\frac{4}{4}$ meter the metric accent is understood to be: $\overset{>}{1}\ 2\ \overset{<}{3}\ 4$ (> = primary accent, < = secondary accent) while in a gatra the metric accent would be: $1\ \overset{<}{2}\ \overset{>}{3}\ 4$. Although gamelan musicians do not place extra weight (dynamic accent) on either accented pulse of a gatra, other musical characteristics such as the activities of the accentuating, elaborating, and abstracting instruments reinforce these pulses and create stress. To avoid any confusion that might result from this conflict of metric accent, the gatra, when notated, will be set off as a unit by spacing as shown below.

```
                          1 gatra   1 gatra
balungan-pulse . . . .   . . . .
```

One final concept about balungan is foreign to a Western way of conceiving music. Gamelan music is cyclic in nature, and as a result begins and ends at the same point. Thus, the initial balungan-pulse of a piece is not the first pulse of the first gatra but the last pulse of the piece's introduction (called the "buka"). The balungan-pulse immediately following this initial pulse is the first pulse of the first gatra, as shown below

```
                                first
                          buka  gatra
balungan-pulse     .     . . . .
```

Colotomic Instruments

Although no Javanese name exists for the group of accentuating instruments as a whole, it has become standard in Western scholarly studies to label these the "colotomic instruments."[6] These instruments punctuate the balungan-pulse in patterns of varying designs, to be called "colotomic patterns"[7] and are fundamentally important to the delineation of structure in gamelan music. The members of this group of instruments will be categorized under two types of instruments which are differentiated by their details of construction, suspension, and sound envelope characteristics.

The first category of colotomic instruments is the vertically suspended knobbed-gongs.[8] These instruments are struck with thickly-padded beaters and have a soft attack and long decay of sound. The gong ageng-s, siyem-s, and kempul-s comprise this category of instruments. The gong ageng is the largest and lowest pitched instrument in the gamelan and has a long decay. There are only one or two gong ageng-s in each gamelan. Pitched in the octave above the gong ageng-s are the siyem-s, more formally called gong suwukan. Gamelan-s usually have more siyem-s than gong ageng-s, the exact number varying from one gamelan to the next. The kempul-s are pitched in the octave above the siyem-s and are the smallest members of this category of colotomic instruments. Generally speaking, there are kempul-s for nearly every pitch of both tuning systems, but again there is no fixed number to be found in all gamelan-s.

Since the sound decay period of the gong ageng-s can last for several seconds, it is quite common to substitute the siyem-s, with

their shorter decay period, in pieces with short gong phrases. When serving this function, these instruments will be referred to synonymously as "gong." If the siyem is used in another capacity, it will be referred to as "siyem."

Horizontally suspended knobbed-gongs, which include the kenong-s, kethuk, kempyang, and engkuk-kemong, constitute the second category of colotomic instruments. These instruments differ slightly in construction from the vertically suspended gongs and are struck with thinly-padded, thus relatively harder, beaters. For these reasons the instruments in this category have a sharper, clearer attack and a relatively shorter sound decay period which makes their sound clearly distinct from those of the other category. Pitched two octaves above the kemoul-s are the kenong-s. Most gamelan-s have a kenong for nearly every pitch of both tuning systems. There is only one kethuk for each tuning system, their pitch falling in the octave above the kemoul octave. The kempyang (used only in the peloq tuning system) and the engkuk-kemong (used only in the slendro tuning system) are both pairs of small gongs.[9] Their roles in the delineation and classification of structures are secondary to those played by the other colotomic instruments and will be omitted from this study.

Three terms that will appear frequently throughout this thesis which relate directly to the colotomic instruments are "gongan," "kenongan," and "wela." The first two terms describe the musical units set off by strokes of gong and kenong respectively. A gongan is the musical unit which begins immediately after a stroke of gong and ends on the next stroke of gong. Likewise, a kenongan is the musical unit which

begins immediately after a stroke of kenong and ends on the next stroke of kenong. The term "wela" identifies a structurally important point which does not coincide with a colotomic event.

The Formal Structures of Gamelan Music

Delineation of Formal Structures

Structure, in gamelan music, can be conceived of as the product of the interaction of two musical variables:

1) repeating musical patterns formed by the composite activities of the colotomic instruments, to be called "colotomic patterns," and
2) the number of balungan-pulses in a colotomic pattern.

A colotomic pattern is more than a punctuating rhythmic cycle, for each event comprising it has particular characteristics of timbre and pitch. The timbral characteristics of each of the colotomic instruments were given in the previous section of this chapter. When combined with the tone and octave placement of each colotomic event, a colotomic pattern becomes a complex, multi-dimensional component of the entire gamelan texture. Figure 1 gives the octave placement and tones of each of the colotomic instruments used in the figures and transcriptions throughout the entire thesis as they are found in one typical slendro gamelan.[10] The octave placement of the colotomic instruments in the peloq tuning system is basically the same. When examining figures and transcriptions in this thesis the reader should remember that the symbols used to label the colotomic events stand for the dimensions of

timbre and pitch as well as the rhythmic placement of the events in relation to other events.

		octave				
		low				high
	symbol	1	2	3	4	5
slendro pitches		xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
kenong	N				xxx	xx
kethuk	t				x	
kempul	P		xxx	xx		
siyem	S	x	xx			
gong ageng	G	x	x			

Figure 1. Octave Placement and Pitches of the Colotomic Instruments.

Grouping of the Formal Structures

Most gamelan pieces fit into one of three groups of structures which are differentiated from one another by the designs of their colotomic patterns. The three basic groups are:

1) structures with a two kenongan-per-gongan colotomic pattern;
2) structures with a four kenongan-per-gongan colotomic pattern; and
3) structures with gongan-s of variable length.

The colotomic patterns of the first two groups are complete gongan-s differentiated from one another by the number of kenongan-s each contains. Within a piece with one of these structures the gong will always sound predictably at the end of each repetition of its colotomic pattern. This type of structure is labeled "strict" by Susilo

(1967:8) based upon this regularity of the gong. Under each of these first two groups a differentiation will be made between those structures that use kempul in their colotomic patterns and those that do not.

The design of the colotomic pattern for the group of two kenongan-per-gongan structures, using kempul, is shown in Figure 2. It is best expressed as a circle due to the cyclic nature of the music.[11] This cyclic colotomic pattern, as well as those for the other strict groups to be discussed below, can be conceived of as the result of the composite activities of several subcycles created by the individual colotomic instruments. Figure 3 shows the subcycles for this particular group of structures.

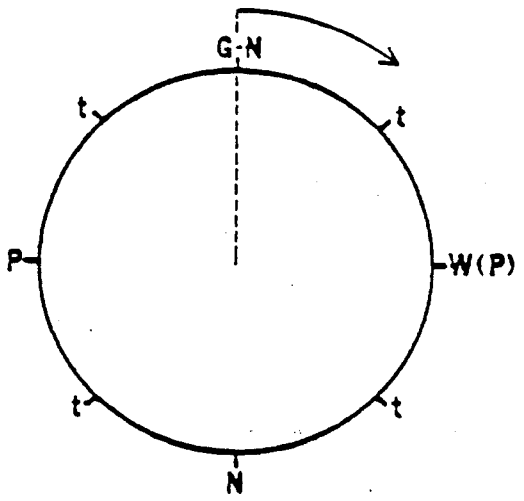


Figure 2. Colotomic Pattern for Two Kenongan-per-Gongan Structures, Using Kempul.

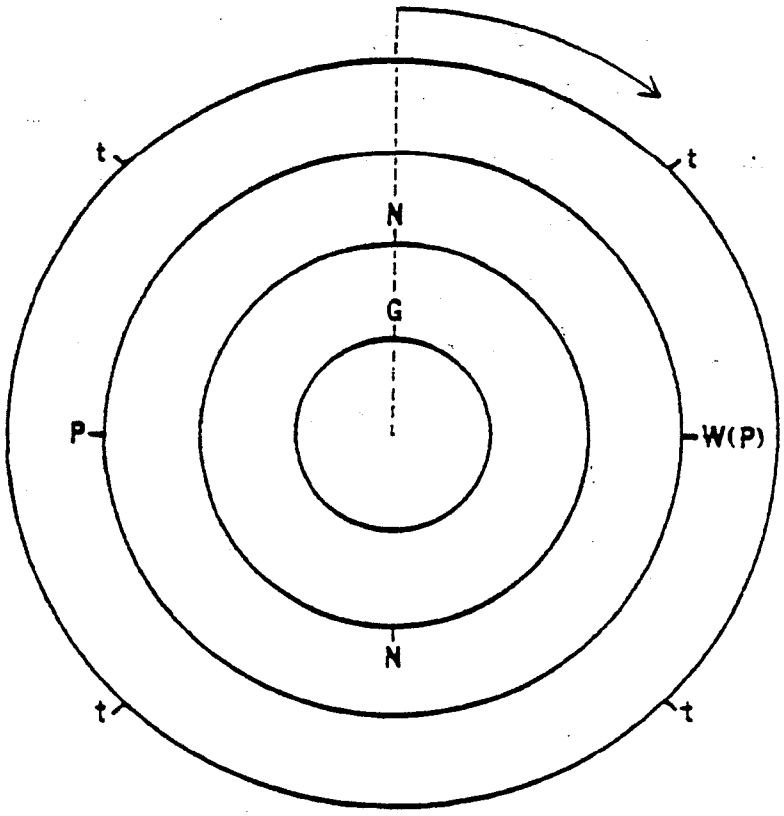


Figure 3. Individual Colotomic Instrument Subcycles for the Group of Two Kenongan-per-Gongan Structures, Using Kempul.

Figure 4 shows the design of the colotomic pattern for the group of two kenongan-per-gongan structures, not using kempul. Although not shown in this diagram, the kethuk plays a very important role in this colotomic pattern. But, since the design of the kethuk subdivision varies within and between structures in this group, the details of kethuk subdivision will be presented in the last section of this chapter which will deal with descriptions of the individual structures.

The colotomic pattern for the group of four kenongan-per-gongan structures, using kempul, is shown in Figure 5. The basic cyclic design of the colotomic pattern for the group of four kenongan-per-gongan structures, not using kempul, is given in Figure 6. Again, due to the several possible kethuk subdivisions of the gongan, they will be discussed in the final section of this chapter.

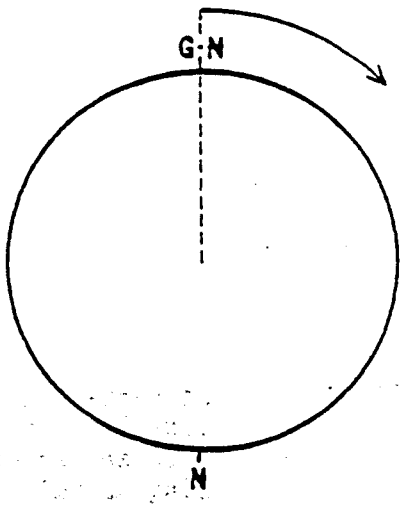


Figure 4. Colotomic Pattern for Two Kenongan-per-Gongan Structures, Not Using Kempul.

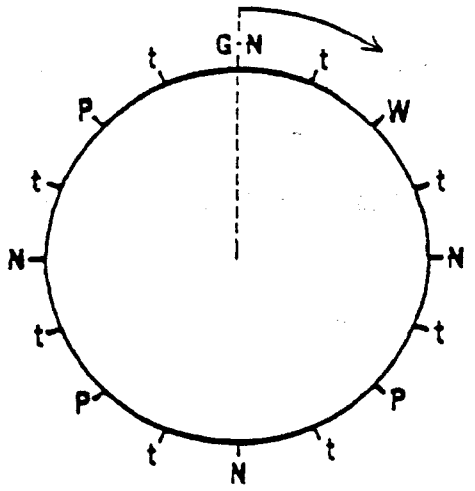


Figure 5. Colotomic Pattern for Four Kenongan-per-Gongan Structures, Using Kempul.

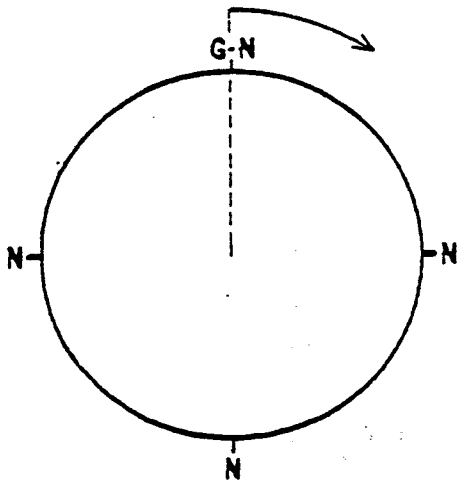


Figure 6. Colotomic Pattern for Four Kenongan-per-Gongan Structures, Not Using Kempul.

The colotomic pattern for the third group of structures, unlike those for the first two groups, does not constitute a gongan. This pattern, diagrammed in Figure 7, is repeated a number of times before gong is struck instead of kemoul at the end of the pattern, as shown in Figure 8. This modular construction of the gongan allows for gongan-s of variable length within a piece. Structures with this type of colotomic pattern are called "free" by Susilo (1967:8). Because of the modular nature of the colotomic pattern in these free structures, this particular pattern will be referred to as "colotomic module" (abbreviated "CM") throughout the remainder of this thesis.

$$\overset{N}{}\ \overset{N}{P}$$

Figure 7. Colotomic Module for the Group of Structures with Gongan-s of Variable Length.

$$\|: \overset{N}{}\ \overset{N}{P} :\| \quad \times \text{ number of times until } \overset{N}{}\ \overset{N}{G}$$

Figure 8. A Gongan in the Free Structures

Figure 9 summarizes the various groups to which the formal structures of gamelan music belong.

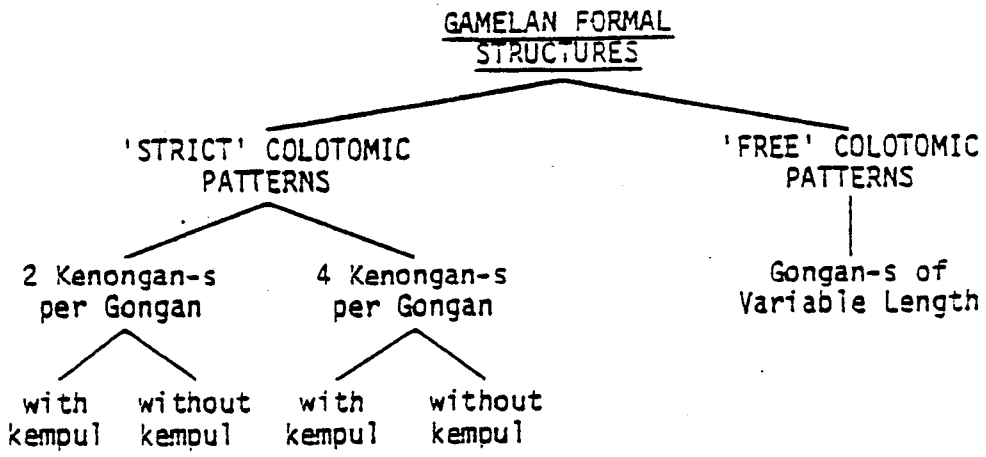


Figure 9. Groups of Gamelan Formal Structures

Descriptions of the Formal Structure

In the gamelan tradition there are several formal structures, some of which are used by several pieces and others which are unique to one or a few pieces in the repertoire. It is the former set of structures that will be described in this section using the classification set forth in the previous section. The latter set of structures are, for the most part, variants of structures belonging to the former set. Although of interest, these structures which are unique to one or a few pieces will not be discussed in this thesis.

Two Kenongan-per-Gongan Structures, Using Kempul

Ketawang: This structure has sixteen balungan-pulses per gongan grouped into two 8-balungan-pulse kenongan-s. Figure 10 shows the Solonese version of this structure, with the kempul sounding in the middle of the second kenongan only. In Yogya, the kempul is sounded in the middle of both kenongan-s, as shown in Figure 11.

t W t N

t P t GN

Figure 10. Solonese Ketawang Structure.

t P t N

t P t GN

Figure 11. Yogyanese Ketawang Structure.

Four Kenongan-per-Gongan Structures, Using Kempul

Lancaran: This structure has eight balungan-pulses per gongan grouped into four 2-balungan-pulse kenongan-s. Figure 12 diagrams this structure.

tWtNtPtN tPtNtPtGN

Figure 12. Lancaran Structure.

Bubaran or Bibaran (Yogya) or Lancaran Mlaku (Solo): This structure has sixteen balungan-pulses per gongan grouped into four 4-balungan-pulse kenongan-s. In Solo this structure often uses the same drumming pattern as does the lancaran structure, thus making it closely related to that structure. In Yogya, the bubaran structure has its own

specific drumming pattern and is considered a more autonomous structure. This structure is diagrammed in Figure 13.

```
. . . .   . . . .
t W t N   t P t N

. . . .   . . . .
t P t N   t P t GN
```

Figure 13. Bubaran or Lancaran Mlaku Structure.

Ladrang: This structure has thirty-two balungan-pulses per gongan grouped into four 8-balungan-pulse kenongan-s. The ladrang structure is diagrammed in Figure 14.

```
. . . .   . . . .
t   W     t   N

. . . .   . . . .
t   P     t   N

. . . .   . . . .
t   P     t   N

. . . .   . . . .
t   P     t   GN
```

Figure 14. Ladrang Structure.

Two and Four Kenongan-per-Gongan Structures, Not Using Kempul

The structures belonging to these two groups have two sections, the first called merong and the second inggah (Solonese) or ndawah (Yogyanese). Structurally these two sections differ in the number of kethuk strokes per kenongan and/or the number of balungan-pulses per kenongan

and gongan. The exact size and design of these structures can be discerned by knowing three facts:

1) the number of kenongan-s per gongan;

2) the number of kethuk strokes per kenongan; and

3) the position of the kethuk strokes within the kenongan.

If a structure is labeled "ketawang gendhing" it has two kenongan-s per gongan, and if it is called simply "gendhing" it has four kenongan-s per gongan.[12]

The number of kethuk strokes per kenongan in these structures will be either 2, 4, 8, or 16, and they display a symmetrical growth in subdivision of the kenongan, as shown in Figure 15. Wela-s are recognized midway between strokes of the kethuk except where the kenong sounds. Generally speaking, the larger the structure the more need there is for a greater number of kethuk strokes to serve as secondary structural markers to the structurally more important, but less frequent, kenong strokes.

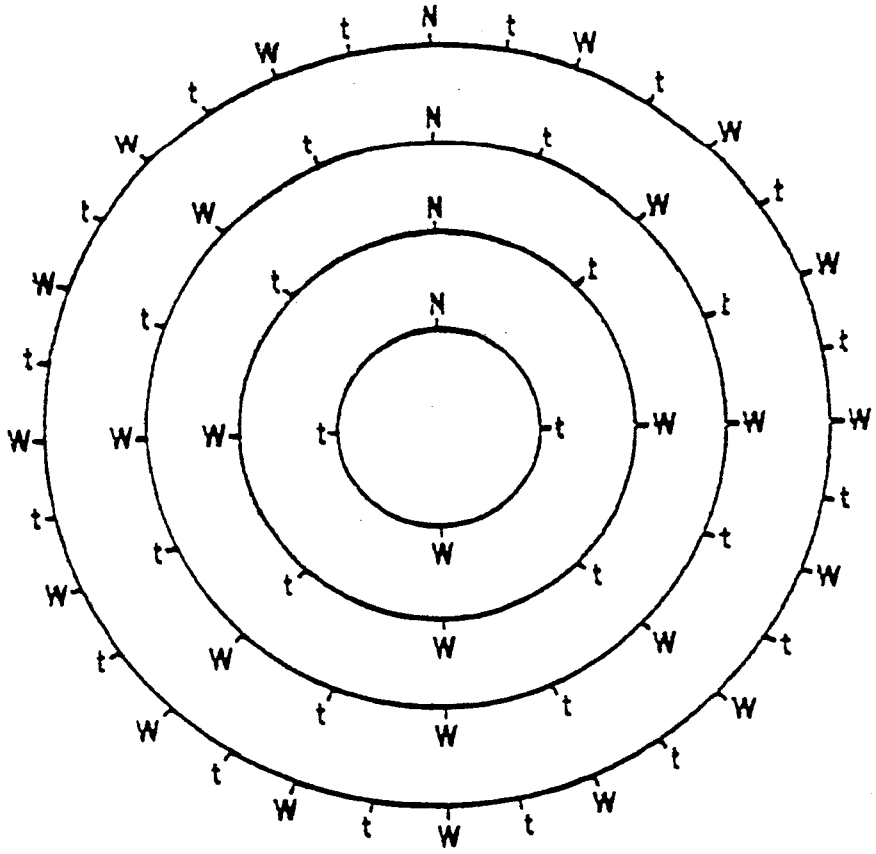


Figure 15. The Various Kethuk Subdivisions of the Kenongan in 'Strict' Structures Not Using Kempul.

There are three positions of kethuk strokes which are designated and defined as below:

kethuk = the kethuk sounds in the middle of each gatra of the kenongan

kethuk kerep = the kethuk sounds at the end of every other gatra starting with the first gatra of a kenongan ("kerep" means "frequent")

kethuk arang = the kethuk sounds at the end of every fourth gatra starting with the second gatra of a kenongan ("arang" means "infrequent")

There are nine different kenongan-types found in two and four kenongan-per-gongan structures not using kempul. These are listed and grouped in Figure 16 according to the number of balungan-pulses each type has per kenongan.[13]

Generally speaking, the merong section of these structures has half as many kethuk strokes per kenongan and a different position of kethuk strokes than its inggah section. An exception to this proportion of kethuk strokes in each section occurs when a piece in a strict structure using kempul, represented by the kenongan-type 1 (kethuk 2), is used as the inggah section. This is a common occurrence in ketawang gendhing-s and is also found in four-kenongan gendhing-s. Figure 17 lists the various ketawang gendhing and gendhing structures encountered in the research.

8 balungan-pulse kenongan-s

type 1: kethuk 2

```
. . . . . .
t   P   t   N
```

16 balungan-pulse kenongan-s

type 2: kethuk 2 kerep

```
. . . . . . . . . . . . . . . .
    t       W       t       N
```

type 3: kethuk 4

```
. . . . . . . . . . . . . . . .
t   W   t   W   t   W   t   N
```

32 balungan-pulse kenongan-s

type 4: kethuk 2 arang

```
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
            t                   W                   t                   N
```

type 5: kethuk 4 kerep

```
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
    t       W       t       W       t       W       t       N
```

type 6: kethuk 8

```
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
t   W   t   W   t   W   t   W   t   W   t   W   t   W   t   N
```

Figure 16. Nine Kenongan-Types Found in Two and Four Kenongan-per-Gongan Structures Not Using Kempul.

64 balungan-pulse kenongan-s

type 7: kethuk 4 arang

```
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
                t               W               t               W

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
                t               W               t               N
```

type 8: kethuk 8 kerep

```
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
        t       W       t       W       t       W       t       W

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
        t       W       t       W       t       W       t       N
```

type 9: kethuk 16

```
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  t   W   t   W   t   W   t   W   t   W   t   W   t   W   t   W

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  t   W   t   W   t   W   t   W   t   W   t   W   t   W   t   N
```

Figure 16. Nine Kenongan-Types Found in Two and Four Kenongan-per-Gongan Structures Not Using Kempul. (Continued)

	merong section	# of bp per gongan	inggah section	# of bp per gongan	or inggah section	# of bp per gongan
ketawang gendhing-s	kethuk 2 kerep	32	kethuk 2	32	kethuk 4	64
	kethuk 4 kerep	64	kethuk 2	32		
	kethuk 8 kerep	128	kethuk 16	128		
gendhing-s	kethuk 2 kerep	64	kethuk 4	64	kethuk 2	32
	kethuk 2 arang	128	kethuk 4	64	kethuk 2	32
	kethuk 4 kerep	128	kethuk 8	128	kethuk 2	32
	kethuk 4 arang	256	kethuk 8	128		
	kethuk 8 kerep	256	kethuk 16	256		

Figure 17. Two and Four Kenongan-per-Gongan Structures Not Using Kempul.

Structures With Gongan-s of Variable Length

As mentioned previously, the colotomic module for these free structures can be repeated a number of times before a gong sounds at the end of a module. Individual structures within this group are differentiated by the number of balungan-pulses per repetition of the colotomic module. The naming of the individual structures in this group is confusing due to differences in terminology between Yogya and Solo. Here they will be introduced by the number of balungan-pulses per colotomic module, with their respective Yogyanese and Solonese names given under each structure.

Eight balungan-pulses per colotomic module: This structure, called ayak-ayak in Yogyakarta, is shown in Figure 18. This structure does not

exist in Solo.

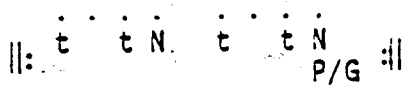


Figure 18. Yogyanese Ayak-Ayak

Four balungan-pulses per colotomic module: This structure, diagrammed in Figure 19, is called slepegan (or srepegan) in Yogya and ayak-ayak in Solo. Solonese pieces labeled "bentuk kemuda" also have this structure.

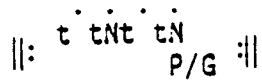


Figure 19. Yogyanese Slepegan, Solonese Ayak-Ayak and Bentuk Kemuda.

Two balungan-pulses per colotomic module: This structure, shown in Figure 20, is called sampak or playon in Yogya and slepegan in Solo.

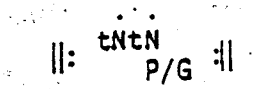


Figure 20. Yogyanese Sampak and Playon, Solonese Slepegan.

One balungan-pulse per colotomic module: This structure, diagrammed in Figure 21, is considered a stage of Yogyanese sampak called "sampak gara-gara," and is called sampak in Solo.

$$\|: \begin{matrix} \cdot \\ \text{NN} \\ \text{tP/G} \end{matrix} :\|$$

Figure 21. Yogyanese Sampak Gara-Gara, Solonese Sampak.

Notes to Chapter I

[1]See Kunst (1973:546-571).

[2]For a summary of notation systems employed in Java see Kunst (1973: 346-355). A discussion on the effect of notation on the music tradition can be found in Becker (1972:30-60).

[3]The pitches, expressed in vibrations-per-second, and interval sizes, expressed in cents, for thirty-nine pelog gamelan-s and forty-six slendro gamelan-s are given by Kunst (1973:572-575).

[4]Harvard Dictionary of Music, pages 436-437.

[5]The pelog melodic instruments have an open octave while the slendro saron-s, depending on where the gamelan was made, will have either a closed octave or a closed octave plus one pitch. The slendro slenthem always has a closed octave plus one pitch.

[6]See Kunst (1973:296), Hood and Susilo (1967:16), and Susilo (1967:9).

[7]In this study the term "colotomic pattern" refers only to this pattern of colotomic events and is not to be confused with the term "colotomic structure." See below, pages 9-10.

[8]See Hood and Susilo (1967:16-18) for pictures of these instruments.

[9]In some gamelan-s the engkuk-kemong are vertically suspended.

[10]Kyai Gandrung, a Yogyanese gamelan housed in the Music Department of the University of Hawaii.

[11]The idea of using circles to notate cycles in Javanese gamelan comes from Hoffman (1975).

[12]The word "gendhing" can also mean "gamelan piece." In this thesis it will only be used in its structural meaning.

[13]In Yogyakarta the terms "alit," "tengahan," and "ageng" are used to identify pieces with 16, 32, and 64 balungan-pulse kenongan-s respectively.

CHAPTER II

STRUCTURAL FLEXIBILITY

The structures of gamelan music were introduced in Chapter I void of any real-time reference and flexibility. How these elements are manifested in performance practice to create time frameworks and to allow for change within, and modification to, structures will be the concern of this chapter. The final section of this chapter examines three recorded performances to illustrate the nature of structural flexibility as realized in performance practice.

Irama

In the gamelan tradition the relationships created between a musical unit and the units that divide it are fundamental to the delineation of several musical phenomena. The division of the gongan into kenongan-s or colotomic modules, and balungan-pulses, is essential to the identification of the many structures discussed in Chapter I. Thus far, the balungan-pulse has been the smallest unit of division discussed, functioning only on structural levels (those levels of the musical hierarchy involving units larger than the balungan-pulse, i.e., gatra, kenongan, colotomic module, and gongan). This same pulse is subdivided by certain instruments[1] which play at a higher density. The fastest subdividing pulse of any given musical texture is called the "density referent" by Mantle Hood (1971:114). The density referent in

gamelan music is of particular importance to the delineation of what is called "irama." Irama, defined by Sutton (1975:50) as ". . . the rhythmic relationship between the balungan beat (pulse) and the parts which subdivide it," can be expressed as a ratio of the number of density referents (abbreviated DR) to one balungan-pulse (abbreviated bp). The number of DR per bp is determined by the tempo of the bp, in other words, irama is a function of the bp tempo.

The number of DR per one bp can be either 2, 4, 8, 16, or 32. These five rhythmic relationships are most commonly called irama-s seseq, I, II, III, and IV, respectively[2] (see Figure 22). The rate of the DR in all five irama-s tends to be the same, although differentiations can be made between slow, moderate and fast tempi for each irama. The general effect on the tempo of the bp is one of doubling with each successive irama, i.e., the bp tempo in irama I is twice that of irama II because it has half as many DR.

irama	# of DR	to	bp
seseg	2	:	1
I	4	:	1
II	8	:	1
III	16	:	1
IV	32	:	1

Figure 22. Rhythmic Relationships of the Five Irama-s.

A survey of metronome readings (abbreviated MM) from sections of several performances reveals the range of tempi for each irama which are summarized in Table 1. The average bp-MM and average DR-MM are also

given. Two tendencies are apparent: first, when going from a higher irama (one with fewer DR) to a lower irama (one with a greater number of DR) the tempo of the bp will always be slower; and second, the rate of the DR can be the same, slightly faster, or slightly slower when going from one irama to another (notice that there seems to be a preference for the rate of the DR to be faster in irama-s I and IV than in the other irama-s).

irama	# of samples	range of bp-MM	average bp-MM	average DR-MM
seseg	6	116-144	128.3	256.6
I	9	80-104	95.1	380.4
II	15	27-44	32.7	261.6
III	8	14-17	16.1	257.6
IV	6	10-11	10.1	322.6

Table 1. Balungan-Pulse Tempo Survey

The effect of irama on a structural level is a magnification of what happens on the bp level. This can be demonstrated by deriving performance times for one gongan of the ladrang structure in all five irama-s, using the average bp-MM given in Table 1. The results would be:

irama	gongan time
seseg	15"
I	20"
II	59"
III	1'59"
IV	3'10"

Regardless of whether the performance time for one gongan takes fifteen seconds or more than three minutes, it is still a ladrang structure so long as the criteria set forth for this structure in Chapter 1 are met.

Not all gamelan structures are realized in all irama-s. In general, pieces with smaller structures (in terms of the number of bp per gongan) are performed in the higher irama-s and pieces with larger structures in the middle and lower irama-s. Table 2 lists the irama-s possible for each structure as encountered in the research.

			irama-s			
		ssg	I	II	III	IV
STRICT STRUCTURES	2 Kenongan-s per Gongan					
	ketawang		x	x	x	
	gendhing ket. merong		x	x		
	4 Kenongan-s per Gongan					
	lancaran	x	x	x		
	lnc. mlaku and bubaran	x	x	x		
	ladrang	x	x	x	x	x
	gendhing merong		x	x		
	inggah		x	x	x	x
FREE STRUCTURES						
	ayak-ayak	x	x	x	x	
	slepegan	x	x	x		
	sampak	x	x			

Table 2. Irama-s Possible for each Gamelan Structure.

Irama Change

In the process of realizing a piece it is common to change from one irama to another. Generally speaking, irama changes are made between adjacent irama-s and in either direction, e.g., seseq to I, I to seseq, I to II, II to I, etc. There are two basic ways to change irama:

1) Slow down or speed up the bp tempo to a point where the instruments creating the DR must either double or cut in half their density. Sutton (1975:53) graphs this as shown in Figure 23.

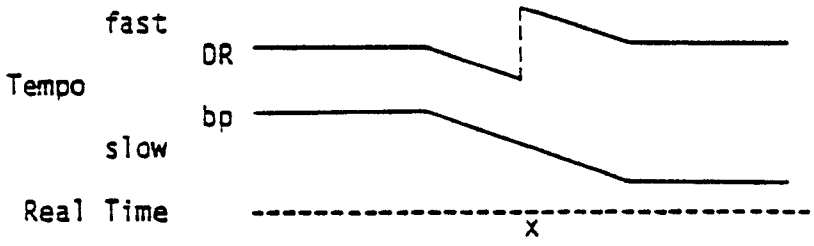


Figure 23. Type 1 Irama Change.

"x" marks the point of irama change. This graph can be read in either direction -- from left to right it shows the change from a higher irama to a lower one and from right to left from a lower to a higher irama.

2) Double or halve the bp without breaking the DR. This type of irama change occurs frequently when changing from irama IV to III (Figure 24) and at points of structural transition in the free structures (Figure 25).

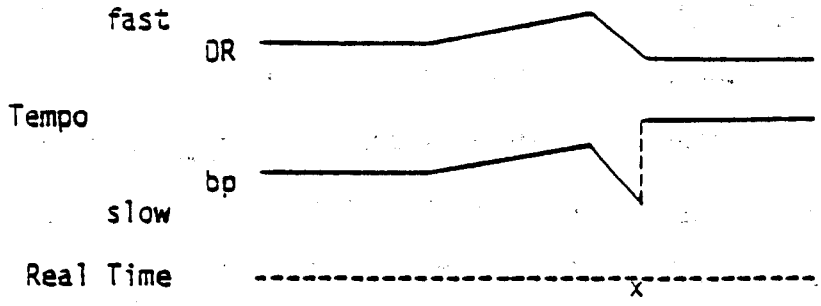


Figure 24. Type 2 Irama Change from Irama IV to III.

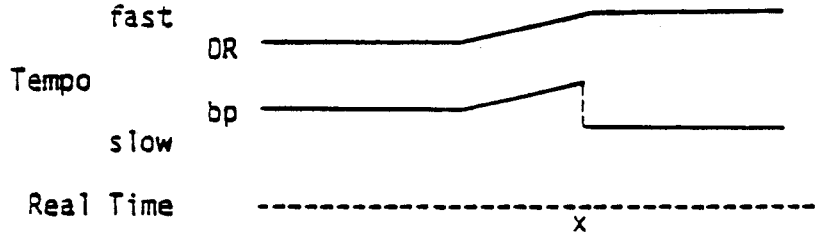


Figure 25. Type 2 Irama Change in Free Structures.

Type 1 irama changes do not have to take place at specific structural points nor do all the instruments operating at the DR have to change simultaneously (although they do so in close proximity). This type of change occurs only when the rate of the DR becomes uncomfortably fast or slow for each individual musician. Type 2 irama changes usually take place at structurally important points, such as a stroke of gong, with all of the balungan instruments changing their density together. The perception of these two types of change is quite different due mainly to the way in which the tempo of the bp is changed, which is gradual in Type 1 changes and sudden in Type 2. Both types of irama

change provide smooth, seamless means of transiting from one irama to the next without interrupting the continuous flow of the texture. This ability to move between different time frameworks and yet retain structural identity is an outstanding characteristic of gamelan music.

Free-Structure Change

It is common in performance practice to hear the three free structures -- Solonese ayak-ayak, slepegan, and sampak (or their Yogyanese equivalents) -- played in a sequence from the largest (in terms of the number of bp per CM) to the smallest. The interesting aspect of this sequence is that in changing from one structure to the next the CM never breaks its density but simply accelerates. Due to sudden accelerandi, the bp-density halves at each point of structural transition (see Figure 26) to create the different bp to CM relationships necessary to delineate the different structures. The mechanics and tendencies of these free-structure changes are identical to those of Type 1 irama changes (compare Figure 26 to Figure 23, read from right to left), with the bp and CM in the free-structure changes behaving respectively like the DR and bp in irama changes. The main difference between these two types of change is the level of the musical hierarchy on which they occur.

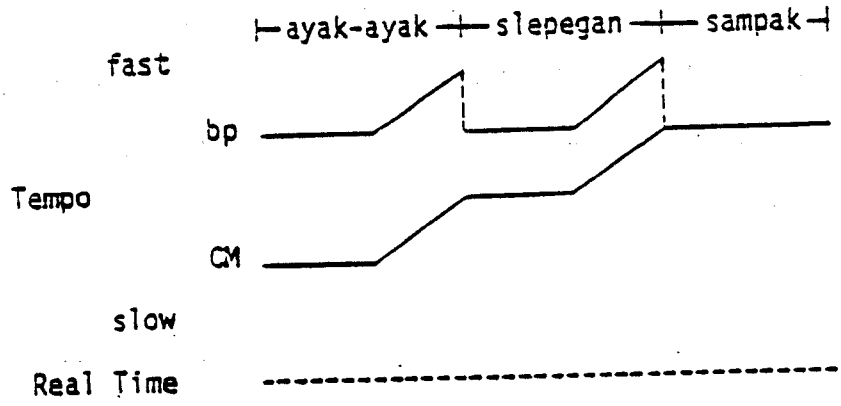


Figure 26. Free-Structure Changes

Structural Editing

Whereas irama describes the passage of colotomic structures within time frameworks, structural editing refers to interruptions to the cyclic flow of structure. This is manifested in gamelan in two ways -- kendelan and structural infix.

Kendelan

Kendelan (from kendel: lit., to stop, halt), or mawi mandeg (with stopping), is an internal structural stop -- an act of temporarily interrupting the flow of the texture and structure of the music. Kendelan-s occur at structurally important points such as at strokes of kethuk, kempul, kenong, and at wela-s, but never at a stroke of gong. This stopping is not the same as ending a piece (suwuk: lit. to stop), which always coincides with a stroke of gong.

A kendelan is always initiated with a special drum signal and is usually, but not always, completed with a short and sudden ritardando. The word "kendelan" refers to both the act of stopping and the

structural point at which the stop occurs. They occur most frequently in the strict structures[3] and are the result of two variables:

1) appropriate points in the structure of a specific piece where they may occur; and
2) if the drummer signals for a kendelan at those points.

The former is a function of tradition-developed preferences and the latter of the realization process, and both must be present for a kendelan to take place.

Table 3 lists the various locations of kendelan-s as found in a survey of forty-three recorded performances. Some structures have three or four kendelan locations, each assigned a type number for purposes of identification later on in the thesis. This table is not to be taken as a complete listing of all possible kendelan-types in the tradition, although it probably includes a high percentage of all and most of the common possibilities. Appendix A contains a complete listing of the pieces used as data for this table, their sources, exact location of kendelan-s, and the irama-s in which the kendelan-s occurred.

structure	type	kendelan	irama
ketawang	1	WN^1	II
	2	PN^2	II
lancaran	1	N^2	I
ladrang	1	t^1N^1; t^1N^2; t^1N^3	III, IV
	1a	t^2N^1	ssg, I
	2	PN^4	III, IV
	1-2	t^1N^2; t^1N^3; PN^4	IV
	3	WN^1	II
	4	N^3	III, IV
structures not using kempul:			
16 bp per kenongan	1	W^3N^1; W^3N^2	III, IV
	2	N^3	III
	3	t^1N^1; t^2N^1; t^1N^2; t^2N^2	III
	3a	t^3N^1; t^3N^2; t^3N^3	III
32 bp per kenongan	1	W^7N^1; W^7N^2; W^7N^3	III, IV

key: The kethuk and wela superscripts refer to the stroke of kethuk or the wela in a kenongan, the kenongan superscripts refer to the kenongan in a gongan.

Table 3. Kendelan Location.

A few generalizations can be made as to the occurrence of kendelan-s:

1) they occur most frequently in the larger structures, i.e., ladrang and the structures not using kempul;
2) in structures not using kempul they occur most frequently in the inggah section;[4]
3) they occur most often in irama-s III and IV; and
4) the placement of kendelan-s seems to depend on the musicians' knowledge of the treatment of each particular piece rather than on specific rules associated with individual structures.

Structural Infix

Structural infix occurs when something is inserted into the structure of a piece during performance. The insertion will be of one of two kinds:

1) a short vocal solo that occurs after a kendelan and which leads back into the piece's structure at a later point; or
2) musical material (or occasionally conversation) of substantial length.

The first kind of infix seldom lasts more than fifteen or twenty seconds and is a stereotyped melodic pattern. Part of the structure of a piece is deleted as a result of such an infix, the amount varying according to

the structure and the placement of the kendelan. The data for such instances of infix found in the corpus is listed under "kendelan location" in Appendix A.

The second kind of infix is often termed "selingan" (lit., to intersperse) by the Javanese. The nature and length of this material varies greatly but can be grouped into four basic types as listed below.

1) Pieces in strict and free structures; these include ladrang and ketawang structures as well as a special variety of pieces labeled "gendhing dolanan." These latter pieces are usually in lancaran, ladrang, or free structures, and due to the non-serious nature of their texts are enjoyed by children and adults alike.
2) Palaran or uran-uran; the colotomic pattern of these pieces is the same as the basic pattern found in the free structures, but balungan-s are not present. A single melodic line, sung by a soloist, floats over a series of drones played on the kenong-s and the kempul-s, with the siyem or gong marking the end of each phrase of text.
3) Macapat; sung poetry performed by a solo vocalist with only the gender (one of the elaborating instruments) providing a sparse, improvised accompaniment for pitch reinforcement. The poetry is in traditional Javanese verse structure and can be of substantial length,

taking up to three or four minutes to deliver in a rhythmically free, ornate, and often melismatic manner.

4) Conversation; often of a humorous nature and can be interspersed with some singing and occasionally a palaran (one example in the corpus is found on source 1003).

Selingan-s are incorporated in the structure of the main piece in one of two ways, either:

1) by means of sharing a gong with the main piece at the beginning and/or the end of the selingan, or
2) after a kendelan.

Sixteen occurrences of selingan were found in the corpus and are listed in Appendix B according to the type of material infixed. A few generalizations can be made about selingan-s:

1) part of the structure of the main piece usually, but not always, is deleted in the process of infixing material;
2) the infixed material and the main piece do not have the same structure; and
3) its occurrence is relatively infrequent and often associated with special treatments of particular pieces.

The effect of infixed material on the structure of a piece is one of diversion, and its inclusion in a performance situation would, in most cases, have to be agreed upon by the musicians beforehand.

Structural editing, as manifested by kendelan and structural infix, affects structure in a different manner than does irama. Irama expands and contracts structure from within by affecting the duration of a component of structure -- the balungan-pulse. Structural editing affects the structure externally by interrupting its cyclic flow by infixing contrasting musical material. The application of irama and structural editing adds dimensions of flexibility to the structures of gamelan music.

Examples of Structural Flexibility

Transcriptions 1, 2, and 3, contained in Appendix C, demonstrate various facets of structural flexibility. Each transcription contains the bp and its tempo markings (the distance between the bp attempts to approximate visually the real time interval between pulses), and the names of pieces or sections of pieces as well as indications of points of structural interest (i.e., kendelan-s, selingan-s, etc.). Each transcription is discussed below to augment and summarize the information they contain.

Transcription 1: Ladrang Sekar Gadung seling Ketawang Lebdosari

This performance displays irama-s I, II, and III, both types of irama changes, and selingan. The irama I portion is used as a transition from the beginning tempo to irama II. This change from I to II,

as well as the next from II to III, are both Type 1 irama changes. In the irama III section of Sekar Gadung, at the third kenong, ketawang Lebdosari (in irama II) is infixed. The irama change at this point is of Type 2, for the DR neither breaks nor changes tempo. At the end of one complete round of Lebdosari, which is five gongan-s in length, a return is made to Sekar Gadung (still in irama III). Lebdosari is once again infixed in the same manner as before.

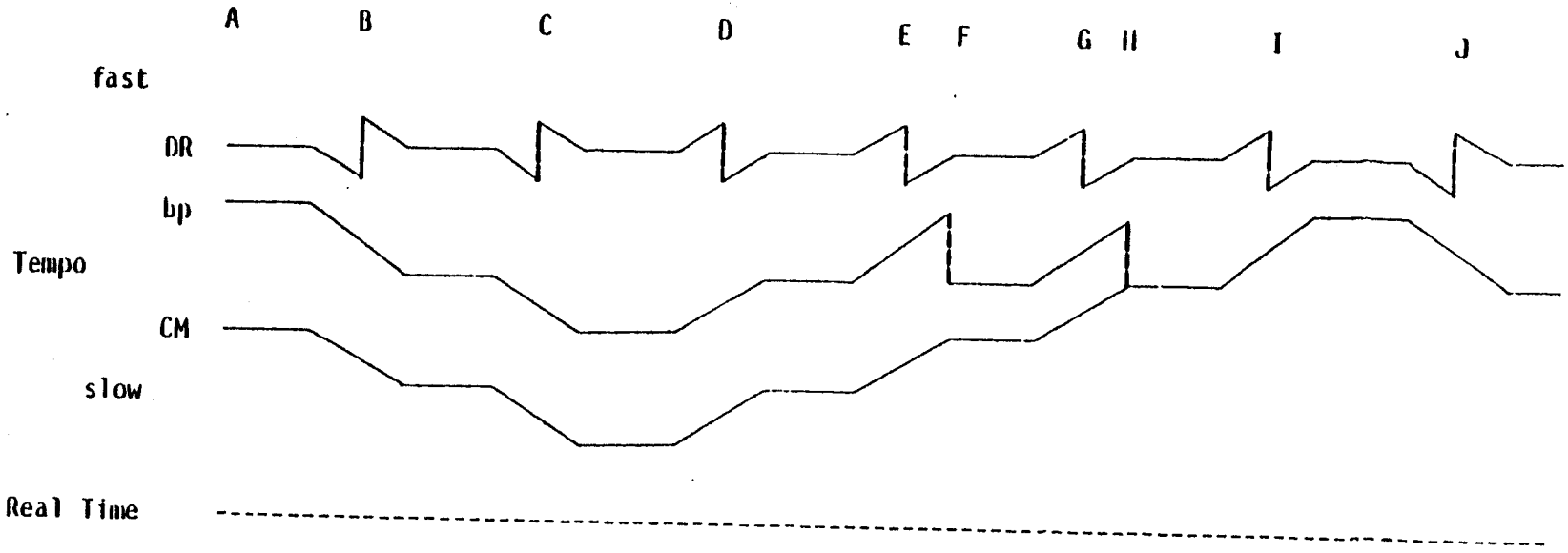
Transcription 2: Ayak-Ayak, Slepegan, Sampak. (Solonese style)

The main feature of this performance is what was described earlier as free-structure change, although irama changes of both types are abundant throughout. The irama changes at the points of structural change are of Type 2, while all the rest are of Type 1. Figure 27 graphs the various rhythmic relationships between the DR, bp, and CM as found in this performance.

Transcription 3: Ladrang Pangkur seling Palaran

This performance displays kendelan, selingan, and all five irama-s. The irama seseg and II sections are short and used as transitions to the more substantial sections in irama-s I and III respectively. All irama changes in this performance are of Type 1. In the first gongan of irama IV there are two kendelan-s (ladrang Type 1). The parentheses following each of these notate the placement of bp which are deleted from the structure as a result of the kendelan-s and the short infixed vocal solos which follow them. At the first kethuk of the first kenongan of the second gongan in irama IV there is another kendelan, this time followed by a palaran. This selingan replaces the rest of the

gongan of Pangkur and, when completed, leads directly back into Pangkur (in irama III).



A = ayak-ayak irama seseg
B = ayak-ayak irama I
C = ayak-ayak irama II
D = ayak-ayak irama I
E = ayak-ayak irama seseg
F = slepegan irama I
G = slepegan irama II
H = sampak irama I
I = sampak irama seseg
J = sampak irama I

Figure 27. Rhythmic Relationships Found in Transcription 2.

Notes to Chapter II

[1]Instruments that serve an elaborating function. Names, descriptions, and photographs of these instruments are presented in Hood, Susilo (1967:22) under "improvising instruments." There can be, and often is, more than one level of subdivision of the bp by these instruments.

[2]Other names for the irama-s found in the research were:

irama seseq or setunggal
irama I or satu, lancar, karotugel
irama II or dua, kalih, tanggung
irama III or tiga, telu, wiled, dadi
irama IV or empat, rangkep, papat

[3]There can be kendelan-s in the Solonese ayak-ayak structure in irama III. An example of this is found on source 1021.

[4]The author knows of at least two gendhing-s (Montro and Lobong) which can kendelan in the merong section.

CHAPTER III

MELODIC ORGANIZATION IN PIECES WITH STRICT STRUCTURES

This chapter will discuss how the balungan-s of gamelan pieces with strict structures are organized at various structural and formal levels. Patterns of melodic repetition and contrast of balungan phrases within the gongan will be considered first, followed by a section dealing with melodic relationships of gongan-s within pieces, and a final section examining how gongan-s are grouped into repeatable cycles which in turn become the building blocks of large-scale formal relationships.

Patterns of Kenongan Repetition Within the Gongan

The balungan of any gongan in any piece belonging to a strict structure is divided into phrases of equal length by the strokes of kenong, thus setting off melodic units parallel to the structural kenongan. For the remainder of this thesis the terms gongan and kenongan will denote both the structural meaning previously assigned them as well as the melodic material (balungan) they contain.

The balungan-s of pieces in the gamelan repertoire are often not fixed. In printed sources as well as live performances one frequently finds differences in melodic detail of a piece's balungan, thus making a study of melodic organization on the consecutive-pitch level difficult. However, there is seldom any discrepancy found between sources as

to the relationship of the kenongan-s within a gongan. Thus a gongan may start out with a kenongan (to be labeled a) which is repeated (also a), followed by a contrasting kenongan (to be labeled b) and another, different, contrasting kenongan (labeled c). Sources will all tend to agree on the kenongan-pattern of this gongan as being aabc even though their interpretations of a, b, and/or c might differ slightly. This section of Chapter III will be dealing specifically with these patterns of kenongan repetition within the gongan.

Any kenongan can relate to a previous kenongan in one of four ways: it can be

1) an exact repetition of a previous kenongan;
2) a partial repeat of a previous kenongan with the alterations occurring in the first half of the kenongan;
3) a partial repeat of a previous kenongan with the alterations occurring in the second half of the kenongan; or
4) of totally contrasting material.

The reason for differentiating between first- and second-half alteration is that an alteration in the first half of a kenongan is of less melodic consequence (in terms of melodic direction) than one in the second half. This end orientation is a basic characteristic of gamelan music and is an outgrowth of the phenomenon of gatra accent mentioned in Chapter I (page 5). As a result, kenongan-s with first-half alterations will be viewed as related to kenongan-s that are exact repeats of previous kenongan-s, and kenongan-s with second-half alterations as related to kenongan-s of totally contrasting material.

The symbols used to notate these relationships are given below.

lower-case letters = kenongan-s

' = an alteration to the first half of the kenongan represented by the letter preceding this superscript

" = another first-half alteration, different from the one above

* = an alteration to the second half of the kenongan represented by the letter preceding this superscript

These superscripts are additive, so that when a letter has two superscripts the letter plus the first superscript identifies a previous kenongan while the second denotes the nature of the alteration to that previous kenongan.

Structures with Four Kenongan-s per Gongan, Using Kemoul

These structures will be divided into two groups, the first including lancaran-s, lancaran mlaku-s, and bubaran-s, and the second group, ladrang-s. The structures in the first group have short kenongan-s of only two or four balungan-pulses. Because of this, each note has considerable melodic importance. Pieces with the ladrang structure have 8-balungan-pulse kenongan-s and can be analyzed for more subtle melodic relationships to previous kenongan-s.

Table 4 presents the kenongan-patterns of 93 different gongan-s as taken from thirty lancaran-s, lancaran mlaku-s, and bubaran-s.

Repetition, when it occurs, is most frequently found between adjacent kenongan-s and either at the beginning of or middle of the gongan -- seldom at the end. The notable exception among the frequently occurring patterns is abba, in which the repetition of a is separated by two kenongan-s. Regardless of this, abba still displays the standard characteristics of adjacent, repeated kenongan-s (b) in the middle of the gongan.

kenongan patterns	# of occurrences
abcd	23
aabc	23
aaab	14
abbc	12
abba	10
abac	5
abca	2
abcc'	1
aabb	1
aaba	1
abab	1
total	93

Table 4. Frequency of Kenongan-Patterns for Lancaran-s, Lancaran Mlaku-s, and Bubaran-s.

Although the kenongan-patterns for ladrang-s are more complex than those found in Table 4, they can be grouped into basic kenongan-patterns similar to those found in that table by applying two assumptions:

1) kenongan-s that are first-half altered are related to their unaltered versions; and

2) that a second-half alteration tends to create an effect of contrast despite its first-half relationship to a previous kenongan.

Thus, a pattern like aa'a'b will be considered as basically aaab, and a pattern such as aaa*b as aabc. Table 5 presents the detailed kenongan-patterns found in this survey of ladrang-s and groups them into their more basic kenongan-patterns. The survey included 131 different gongan-s taken from 49 ladrang-s.

The large number of patterns found in this table demonstrates the variety of melodic relationships that exist within the gongan, yet reinforces the same generalizations made about the first group of structures represented in Table 4. Proportionally, the patterns abcd, aabc, aaab, and abbc are approximately the same for both groups, while the number of occurrences of abba is considerably fewer in the ladrang group. Thus, these two groups of structures, which share the same colotomic pattern, also display a strong tendency towards similar patterns of melodic organization within the gongan.

Structures with Four Kenongan-s per Gongan, Not Using Kempul

Table 6 lists the frequency of kenongan-patterns found in 166 different gongan-s taken from 52 pieces. The majority of these pieces have 64-bp gongan-s, although fourteen 128-bp and three 256-bp-per-gongan pieces are represented. Although the same patterns that had the highest occurrence in Tables 4 and 5 are still the most common, the pattern aabc clearly predominates. Not only is the basic kenongan-pattern abcd proportionally less frequent than in the other structures,

kenongan patterns	# of occurrences	basic kenongan patterns	# of occurrences
abcd	31	abcd	37
abcb*	2		
aa*bc	2		
aa*bb*	2		
aabc	18	aabc	34
aaba*	2		
aaa*b	6		
aa'bc	5		
aa'a'*b	1		
aa'bb*	2		
aaab	15	aaab	21
aa'a'b	5		
aaaa*	1		
abbc	6	abbc	10
abb'c	4		
abca	3	a__a	9
abba	1		
abb'a	1		
abb'a'	1		
aaba'	1		
aba'a	2		
aabb'	2	aabb	5
aa'bb	1		
aa'bb'	2		
aaaa	2	aaaa	5
aa'aa'	1		
aa'aa"	2		
abcc	2	abcc	4
abcc'	2		
abac	1	a_a_	3
aba'c	2		
abcb'	2	_b_b	3
aa*aa*	1		
total	131		131

Table 5. Frequency of Kenongan-Patterns for Ladrang-s.

kenongan patterns	# of occurrences	basic kenongan patterns	# of occurrences
aabc	27	aabc	57
aaa*b	18		
aa'bc	8		
aa'a'*b	4		
abcd	19	abcd	34
abb*c	3		
aa*bc	12		
aaab	15	aaab	31
aaa'b	1		
aa'a'b	12		
aa'a'a'*	1		
aa'a"b	2		
abbc	14	abbc	27
abbb*	2		
abb'c	10		
abb'b*	1		
abca	2	a__a	9
aa*ba	1		
abca'	1		
abba	2		
aaba'	2		
aba'a"	1		
aaaa'	3	aaaa	4
aa'a'a"	1		
aba'a'*	1	a_a_	2
aa*a'b	1		
aa*bb'	1	abcc	1
abcb'	1	abcb	1
total	166		166

Table 6. Frequency of Kenongan-patterns for Pieces with Four Kenongan-s per Gongan, Not Using Kempul.

but the pattern aa*bc, which demonstrates partial repetition and a resemblance to aabc, is considerably more frequent than in the other four-kenongan-per-gongan structures. This greater overall preference for repeated kenongan-patterns can, at least in part, be attributed to the larger gongan size of these structures.

Table 7 summarizes the results of this survey of kenongan-patterns for structures with four kenongan-s per gongan. Under each structural group is given the percentage of the total number of gongan-s surveyed for each of the four most common patterns as well as the total percentage of the less frequent patterns.

	bp per gongan		
pattern	8, 16	32	64, 128 256
abcd	24.7	28.3	20.5
aabc	24.7	26.0	34.3
aaab	15.1	16.0	18.7
abbc	12.9	7.6	16.3
other	22.6	22.1	10.2
total	100.0	100.0	100.0

Table 7. Percentages of Total Gongan-s Surveyed With Most Common Kenongan-Patterns.

Upon examination of Table 7 and the contents of Tables 4, 5, and 6, several generalizations can be made concerning the basic melodic organization of the balungan within the gongan for four-kenongan structures:

1) kenongan repetition, both partial and complete, is quite common in these structures;
2) repetition most frequently occurs between adjacent kenongan-s;
3) repeated kenongan-s are most frequently located in the first three kenongan-s;
4) repeated kenongan-s are relatively infrequent in the final two kenongan-s of a gongan;
5) patterns beginning and ending with the same kenongan occur but are relatively infrequent;
6) the most common kenongan-patterns involving repetition are aabc, aaab, and abbc, in that order; and
7) the larger the structure the greater the frequency of the most common patterns.

Structures with Two Kenongan-s per Gongan, Using Kempul

A total of 207 gongan-s taken from forty-five pieces in the ketawang structure were examined for patterns of kenongan repetition. With only two kenongan-s per gongan in this structure, there exist only four possible patterns. The pattern ab was found in nearly ninety percent of these gongan-s, completely dominating the patterns displaying partial or complete kenongan-repetition (see Table 8).

This preference for ending a gongan with different material appeared also in four kenongan-per-gongan structures. In fact, the most common four-kenongan patterns (abcd, aabc, aaab, and abbc) can

be derived from the two-kenongan pattern ab by infixing two new or repeated kenongan-s (see Figure 28).

pattern	# of occurrences
ab	187
aa	11
aa*	7
aa'	2
total	207

Table 8. Frequency of Kenongan-Patterns for Ketawang-s.

two-kenongan pattern	infixed kenongan-s	becomes the four-kenongan pattern
"a" and a contrasting kenongan	bc	abcd
	ab	aabc
	aa	aaab
	bb	abbc

Figure 28. Derivation of Four-Kenongan Patterns.

Structures with Two Kenongan-s per Gongan, Not Using Kemoul

Eleven pieces with a total of 62 gongan-s in the ketawang gendhing structure were the source for the kenongan-patterns tabulated in Table 9. Although there is a proportionally greater number of occurrences of the patterns aa, aa*, and aa' than found in ketawang-s, the pattern ab is still clearly dominant.

pattern	# of occurrences
ab	49
aa*	6
aa	4
aa'	3
total	62

Table 9. Frequency of Kenongan-Patterns in Ketawang Gendhing-s.

In summarizing the organization of the balungan within the gongan for structures with two kenongan-s per gongan it can be said that repetition, both partial and complete, of kenongan-s is rare, although more frequent in the larger structures of this group.

Melodic Relationships of Gongan-s Within Pieces

Most gamelan pieces have more than one gongan, thus creating the possibility of melodic relationships between gongan-s. The kinds of relationships found in pieces with strict structures are summarized below by means of generalizations drawn from melodic analyses ("formal designs," diagrams of formal organization on a macro-level) of 187 pieces which are contained in Appendix E (Tables 12-16).

1) Any gongan can relate to a previous gongan in one of four ways: it can be
   a) an exact repetition;
   b) a partial repeat with the alterations occurring in the first half of the gongan;

c) a partial repeat with the alterations occurring in the second half of the gongan; or

d) of totally contrasting material.

2) The melodic effects of first- and second-half alteration on the gongan level are parallel to those discussed for kenongan-s.

3) Partial and complete repetition of melodic material on the gongan level is more common in pieces with small structures (those using kempul) than in pieces with large structures (those not using kempul).

4) Partial and complete repetition most frequently occurs between adjacent gongan-s.

Three important kinds of melodic relationships that occur frequently but are not covered by the above generalizations are discussed below:

1) Mulur (lit., to stretch, expand) is a term applied to the irama III and IV versions of balungan-s, most often for pieces in the ladrang structure. The balungan in these irama-s might be exactly the same as in the higher irama-s, but is quite often altered. The density of the balungan notes in a mulur gongan is frequently twice, and occasionally quadruple or half, that of the balungan-pulse. A mulur gongan, regardless of balungan alterations, is always closely related to the regular

(or higher irama) balungan, especially at structurally important points.

2) Umpak minggah (transition to the inggah section, also called Pangkat ndawah) is a melodic alteration that occurs during the transition from the merong section to the inggah section of a piece's structure. The last one-half to two kenongan-s of the final merong gongan is altered, quite frequently to match the balungan located in the corresponding position of the inggah section.

3) Inter-gongan repetition of kenongan-s. There were a substantial number of kenongan repetitions found in the pieces surveyed in which the first kenongan of a gongan was a partial or complete repetition of the final kenongan of the gongan immediately preceding it. This occurs in pieces in all of the strict structures. In two kenongan-per-gongan structures this kind of repetition is as common as the various "inner-gongan" patterns discussed previously. Although found less frequently in the four kenongan-per-gongan structures, more variants exist. Two of the more common patterns are given below.

first gongan: aabc
second gongan: ccde

and

first gongan: aaab
second gongan: bbbc

This latter pattern is sometimes sequenced through all of the gongan-s of a piece:

first gongan: ||:aaab
second gongan: bbbc
third gongan: cccd
fourth gongan: ddda:||

Grouping of Gongan-s into Repeatable Gongan-Cycles

The degree of flexibility left to gamelan musicians in the course of realizing a piece is much greater than their Western orchestral counterparts are allowed. This flexibility, apparent in many aspects of gamelan music, is perhaps nowhere more obvious than in the range of formal relationships possible for any piece. The number of times each section or the entire piece is repeated, how many and which irama-s it is played in, and what kind of structural editing takes place are the most important variables that are left to the performers and which interact to create a variety of possible formal outcomes. Thus, to do justice in a formal sense to a gamelan piece, one must examine the formal possibilities it possesses as well as the formal outcome of each performance. The former approach will be taken here, while the latter will be pursued in the next chapter by comparing transcriptions of four performances of one piece.

One hundred eighty-seven pieces, representing most of the strict structures, were examined for cycles of repeated gongan-s as well as for melodic relationships between gongan-s. The results, found in Appendix E, are expressed as formal designs which, when combined with the information pertaining to irama and structural editing, begin to give a fairly complete idea of the complexity of the realization process and the range of possible formal relationships for any one gamelan piece.

The following discussion is concerned only with the ways in which gongan-s are grouped together into repeatable cycles within pieces. Five symbols, explained below, are needed to construct the formal schemes which will be discussed in this section.

: : The gongan-s enclosed by colons constitute a main repeatable, gongan-cycle. In performance, the enclosed gongan-s can be played either once or repeated any number of times.

; ; The gongan-s enclosed by semicolons constitute a repeatable gongan-cycle that is contained within a main gongan-cycle. This cycle, likewise, can be played once or repeated a number of times.

n The gongan-s with this superscript are played only upon a special melodic signal (played by one of the elaborating instruments) and are called ngelik.

( ) The section of a scheme enclosed by parentheses is optional.

/ The slash separates main gongan-cycles, within a piece, that have different colotomic patterns (i.e., merong section/inggah section).

Appendix E contains a more detailed list of the symbols used in the formal designs it contains.

Gamelan pieces in the strict structures always have a section (or sections) of one or more gongan-s which is repeatable; that is, it can be played either once or repeated a number of times. All of the pieces surveyed for this thesis belong to one of two basic formal schemes:

1) schemes with one main, repeatable, gongan-cycle; or
2) schemes with two main, repeatable, gongan-cycles.

A repeatable gongan-cycle is most commonly from one to five gongan-s in length (sometimes even more) and may be preceded or followed by other gongan-s which are played only once. Gongan-cycles with ngelik gongan-s possess the possibility of not having the same number of gongan-s with each repeat, a possibility not present in cycles without a ngelik gongan. The ngelik gongan in some pieces is optional in performance.

Formal Schemes with One Repeatable Gongan-Cycle

Pieces with one repeatable gongan-cycle will belong to one of two formal schemes:

1) one repeatable gongan-cycle without ngelik gongan(-s); or

2) one repeatable gongan-cycle with ngelik gongan(-s).

The first scheme can be expressed as:

:__:

which is interpreted as having one main gongan-cycle which can be played once or a number of times. This formal scheme is most commonly found in pieces with lancaran, lancaran mlaku, bubaran, and ladrang structures. The number of gongan-s per cycle in the pieces surveyed with this scheme ranged from one to seven.

The second scheme is diagrammed as:

:;__;_^{n}:

Within the repeatable cycle of pieces with this scheme there is a gongan, or gongan-s, which can be played either once or, theoretically, any number of times (seldom more than twice in practice) before the ngelik signal is given and the ngelik section played. After the ngelik section, a return is made to the beginning of the entire cycle. Most pieces in the ketawang structure have this formal scheme, as well as some pieces in the ladrang and lancaran structures. The ngelik section of pieces with the ketawang structure most frequently has three gongan-s, while pieces with the ladrang structure usually have one or two.

Pieces with one repeatable gongan-cycle generally end (suwuk) at the end of the repeatable cycle, although some pieces can end in any

of the gongan-s within the cycle. A few pieces must end in a specific gongan either within the cycle or, very rarely, a special gongan outside of it. This suwuk-placement variability can be, at least in part, explained by the fact that these pieces are often used to accompany dance and theater that require them to end at a dramatically satisfactory point which could occur at any stroke of gong in a piece.

Formal Schemes with Two Repeatable Gongan-Cycles

Pieces with two repeatable gongan-cycles will belong to one of four formal schemes:

1) two repeatable gongan-cycles which are structurally identical and contain no ngelik gongan;
2) two repeatable gongan-cycles which are structurally identical and contain a ngelik gongan in the second cycle;
3) two repeatable gongan-cycles which are structurally different and contain no ngelik gongan; or
4) two repeatable gongan-cycles which are structurally different and contain a ngelik gongan in the first cycle.

Pieces with two structurally identical gongan-cycles, not including a ngelik gongan, can be expressed as:

:__::__:

Certain pieces in the ladrang and lancaran structures belong to this scheme. The main difference between the two gongan-cycles other than melodic content is one of irama -- the first cycle being in a higher irama than the second. In some pieces with the ladrang structure the second cycle is the mulur gongan. Although the first cycle can be returned to after the second cycle, it is more common not to make this return and simply end in the second section.

Pieces with two structurally identical gongan-cycles with a ngelik gongan in the second cycle have the following scheme:

$$:\_\_::(;\_\_;\_^{n})\_\_:$$

This scheme is found in some pieces with the ladrang structure. Like the previous formal scheme, the main difference between these two cycles is one of irama. The ngelik gongan, which is optional, will always be preceded and followed by at least one non-ngelik gongan.

Pieces with a formal scheme containing two gongan-cycles which are structurally different and contain no ngelik gongan can be diagrammed as:

$$:\_\_:/:\_\_:$$

Most pieces with two and four kenongan-per-gongan structures, not using kempul, have this scheme. The structural differences between the two cycles can be either slight, such as different numbers of kethuk strokes per kenongan, or marked, such as having a different number of balungan-pulses per gongan or using a structure from a different group of structures for the second section (see pages 20 and 23). The cycle to the

left of the slash is the merong section, and to the right, the inggah section. The merong cycle usually contains one or two gongan-s, sometimes up to six (in some ketawang gendhing-s), while the inggah cycle from one to three. The merong section is not returned to once the inggah section has begun.

The formal scheme containing two structurally different gongan-cycles with a ngelik gongan in the first cycle can be expressed as:

$$:(;\_\_;\_^{n})\_\_:/:\_\_:$$

Like the previous scheme, only pieces with two or four kenongan-per-gongan structures, not using kemoul, can have this scheme. The ngelik gongan is optional and, if performed, is always preceded and followed by at least one non-ngelik gongan. Pieces with this scheme generally have only one gongan (other than the ngelik gongan) in each cycle. The merong section is not returned to once the inggah section has begun.

In summary, the large-scale formal relationships that result from the realization of a gamelan piece can vary greatly from one performance to the next due to variables such as repetition of gongan-cycles, choice of irama-s, and instances of structural editing. This final section has shown how melodic repetition is organized on a macro-formal level in terms of cycles of gongan-s which can be played a variable number of times before stopping or going on to another cycle. Gamelan pieces with strict structures can be categorized under six formal schemes which are differentiated by their number of cycles, structural detail, and whether or not the cycles contain ngelik gongan-s. Figure 29 is a diagram of

these schemes and includes lists of the structures of pieces which can have each scheme.

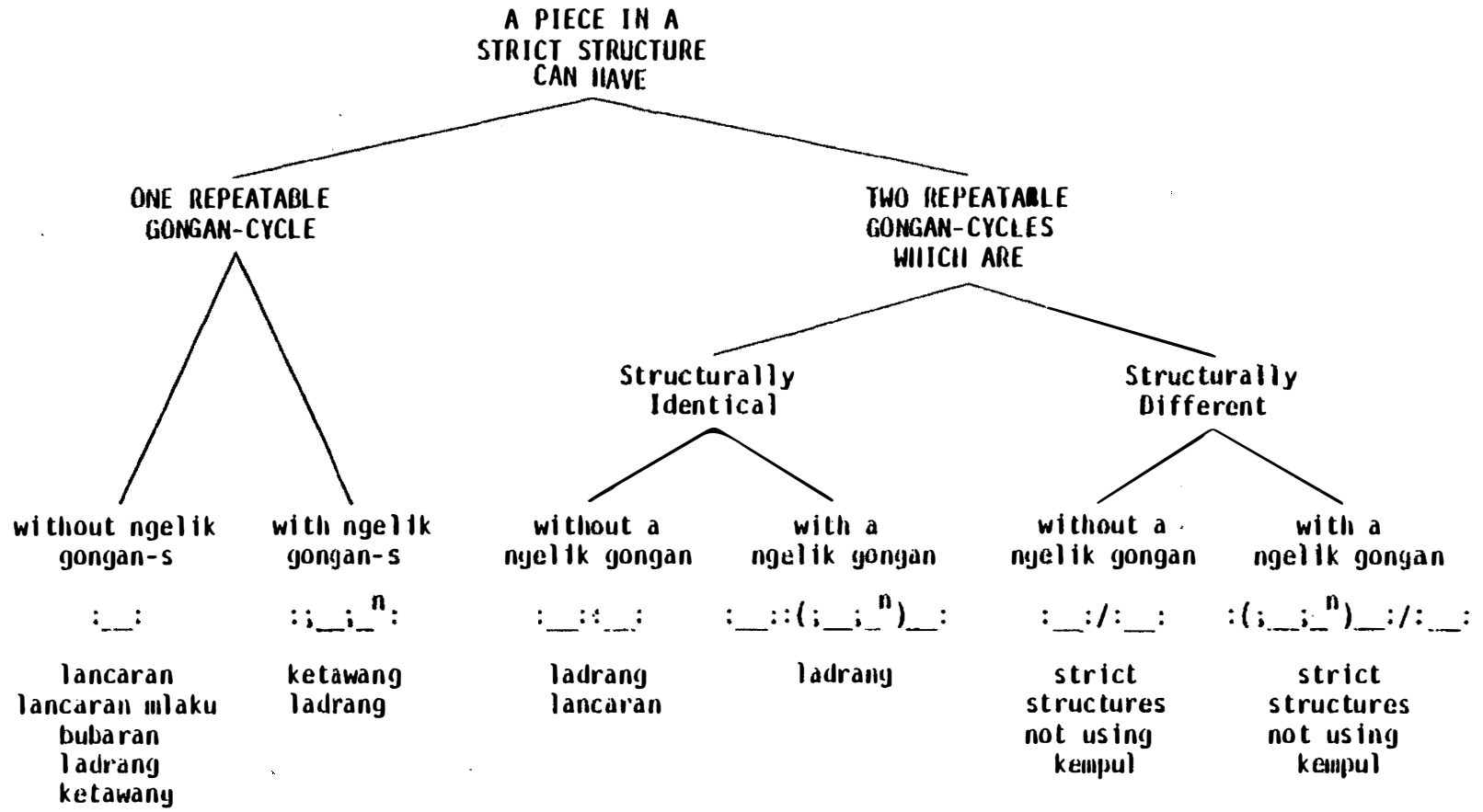


Figure 29. Formal Schemes for Pieces with Strict Structures.

CHAPTER IV

PERFORMANCE PRACTICE FLEXIBILITY

The first three chapters of this thesis have dealt with various principles and variables of formal organization in Central Javanese gamelan music. Due to the nature of the performance practice in this tradition, most of the preceding discussion has been concerned with the formal options pieces possess, not the specific formal consequences resulting from their realization. This chapter will examine four performances of one piece to demonstrate how the performance practice variables can interact to create considerably different formal results.

Pangkur, in the ladrang structure, is the piece examined here. It has the two gongan-cycle formal scheme :__::(;__;_^{n})__:. Due to its popularity, Pangkur is heard frequently at live performances and is found on several commercial recordings. Of the many performances of Pangkur contained in this discography, four were chosen for their completeness and clarity, non-theatrical function, and striking formal differences. Transcriptions of these four performances are found in Appendix C (listed as Transcriptions 3, 4, 5, and 6, and abbreviated T3, T4, T5, and T6, respectively), while the discussion and comparison of the transcriptions will follow below.

Discussion and Comparison of the Transcriptions

Table 10 is a summary of important structural and formal information from the transcriptions and serves as an intermediary step between the transcriptions and the discussion to follow.

Tuning Systems and Balungan-s

There are two tuning systems used in gamelan music: slendro and pelog (see page 2). Each of these tuning systems has three main modes, called pathet-s, which are listed below.

SLENDRO	PELOG
pathet nem	pathet lima
pathet sanga	pathet nem
pathet manyura	pathet barang

Some gamelan pieces can be transposed, in separate performances, from one pathet to another within the same tuning system. For instance, Pangkur can be played in pathet sanga or pathet manyura in slendro, or in pathet nem or pathet barang in pelog.[1] All four of these pathet-s are represented in these performances.

Figures 30, 31, and 32 present, respectively, the regular, mulur, and ngelik balungan-s of Pangkur as found in the four transcribed performances. The numbers represent the pitches in each tuning system: the slendro scale is represented by the numbers 1, 2, 3, 5, and 6, and pelog by the numbers 1, 2, 3, 4, 5, 6, and 7.

Figure 30 compares the balungan-s for the regular gongan of Pangkur as found in the four performances. This is the only gongan in the first

		TRANSCRIPTION			
		3	4	5	6
MODAL ORGANIZATION	tuning system	pl	sl--pl--sl	sl	sl-pl-sl
	pathet	br	mnyr br mnyr	9	9 6 9
# OF GONGAN-S	in irama seseg	1		1	
	in irama I	7			4
	in irama II	1	1	3	4
	in irama III	3	4	4	4
	in irama IV	1	1		2
	total	13	6	8	14
# OF NGELIK GONGAN-S	in irama III		1		
	in irama IV	1	1		1
	total	1	2	0	1
# OF KENDELAN-S	in irama seseg			2	
	in irama I				2
	in irama IV	3	2		3
	total	3	2	2	5
SELINGAN	infixed material	palaran			
PERFORMANCE TIME	first cycle	3:17	:39	2:11	4:06
	second cycle	11:46	10:22	6:55	13:04
	total	15:03	11:01	9:06	17:10

Table 10. Data Drawn From the Pangkur Transcriptions.

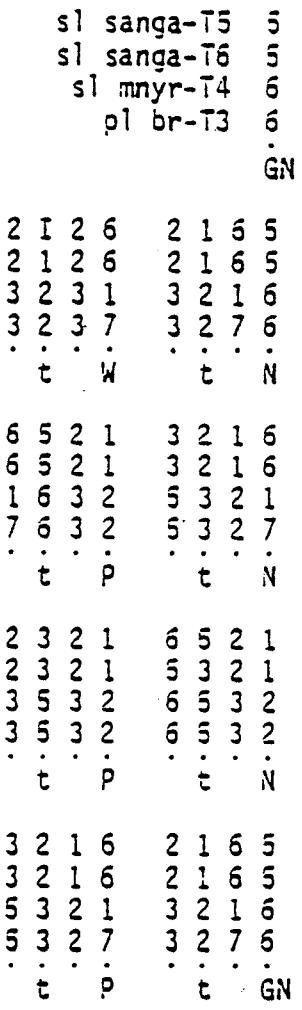


Figure 30. Comparison of the Balungan-s for the Regular Gongan of Pangkur.

cycle of Pangkur-'s formal scheme and it can be performed in irama-s seseg, I, and II. Transcriptions 3 and 4 are basically transpositions of the Transcription 6 balungan. Transcriptions 5 and 6 are both in slendro pathet sanga and are identical except for two pitches found in the third kenongan. The balungan-s for Transcriptions 3 and 4 are the same for pitch 1 in slendro becomes pitch 7 in pelog pathet barang.

Figure 31 compares the various mulur balungan-s found in the performances. The mulur gongan is the main gongan in the second cycle of Pangkur-'s formal scheme and can be performed in irama-s III and IV. In general, the balungan-s found in Transcriptions 3 and 4 are transpositions of those found in Transcriptions 5 and 6, although a number of versions exist for the second and third kenongan-s. These various interpretations never alter the final note of a gatra.

Figure 32 compares the various ngelik balungan-s. The ngelik gongan is an optional gongan in the second cycle of Pangkur-'s formal scheme and can be performed in irama-s III and IV. Remembering the transposition, the first two-and-one-half kenongan-s display considerably different interpretations of the balungan, although there are again no discrepancies found at the end of gatra-s. Pitch 4 is sometimes used instead of pitch 5 in pelog pathet barang.

The preceding observations demonstrate that performers have some degree of flexibility in interpreting the melodic dimension of a piece, but whichever interpretation is used for any one performance must be agreed upon by all the performers.

In two of the performances there are changes made from one tuning system to the other in the course of the performance. This changing, called molak-malik (lit., to keep changing), is similar in process and effect to mutation and occurs only between pathet-s which share the same gong-tone number and, for the most part, the same pitch numbers throughout. Examples of molak-malik are found in Transcription 4 (slendro pathet manyura to pelog pathet barang and back to slendro

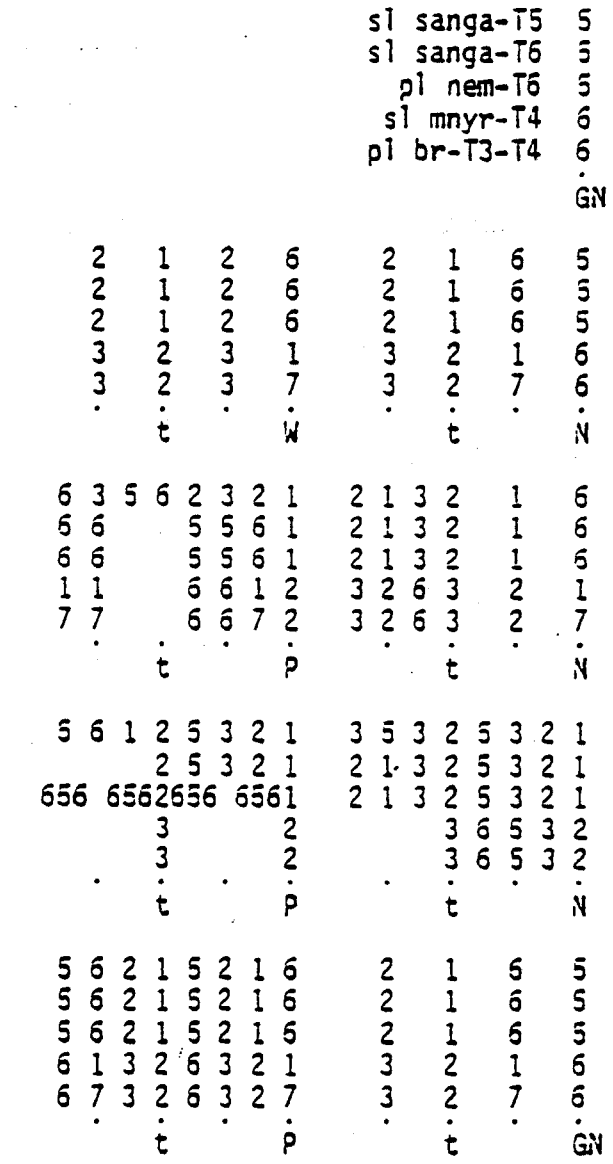


Figure 31. Comparison of the Balungan-s for the Mulur Gongan of Pangkur.

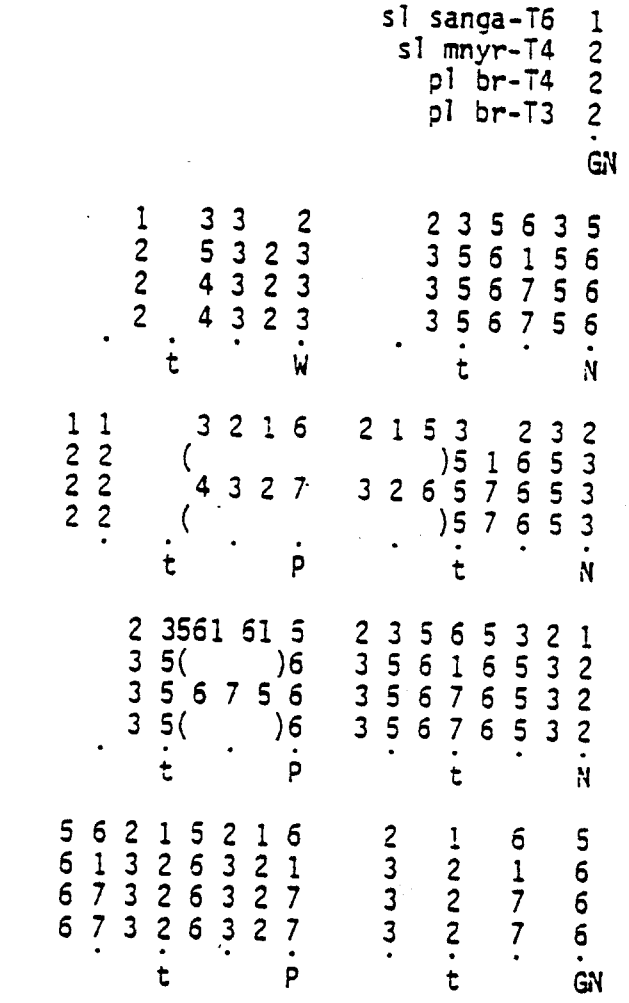


Figure 32. Comparison of the Balungan-s for the Ngelik Gongan of Pangkur.

pathet manyura) and Transcription 6 (slendro pathet sanga to pelog pathet nem and back to slendro pathet sanga).

At this point another aspect of performance practice flexibility is apparent, that of modal choice and organization. The performers must know which pathet-s a piece can be performed in and if it is traditionally acceptable to molak-malik. With this knowledge the

performers can choose in which pathet to perform the piece and whether to stay in that pathet throughout the entire performance (as in Transcriptions 3 and 5) or to molak-malik (as in Transcriptions 4 and 6). If the performers molak-malik, obvious formal relationships are created on a macro-level which would otherwise not be present in performances that stay in the same tuning system throughout.

Structure

The structure of Pangkur is ladrang: four 8-beat kenongan-s per gongan, using kempul. It is not uncommon in gamelan performance practice to modify the colotomic pattern to imitate a style of gamelan playing outside the immediate tradition, thus creating structural variants. Ladrang structural variants are found near the beginnings of Transcriptions 3 and 6. The treatment which brings about these particular variants is called "kebar," which is an imitation of "village style" gamelan playing. Kebar treatment is performed only in irama I and includes the use of specific drumming patterns, specific functions in certain elaborating and melodic instruments, and additional kempul strokes. Figure 33 compares the regular ladrang structure to the two kebar colotomic structures found in these transcriptions. The two variants differ from one another only in the last four beats of the gongan, at which point a syncopated rhythmic relationship is produced with the balungan-pulse to create a stronger cadential feeling than is present in the regular ladrang structure. The inclusion of kebar treatment and which variant is used is a decision of the performers and is initiated by a signal from the drummer.

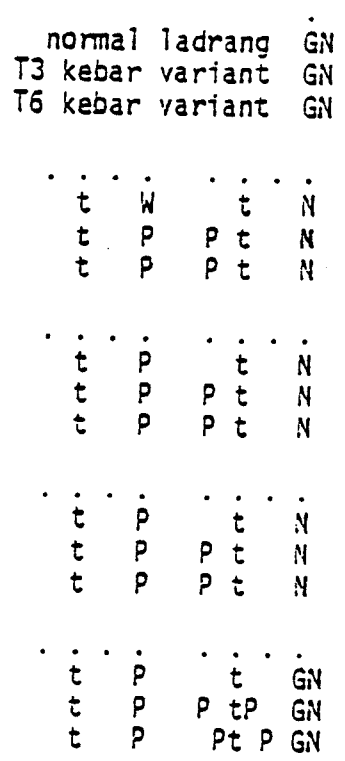


Figure 33. Ladrang Structure and Kebar Variants.

Irama

Pangkur can be performed in all five irama-s: the regular gongan in irama-s seseg, I, and II, and the mulur and ngelik gongan-s in irama-s III and IV. Table 10 lists the number of gongan-s in each irama found in each of the four transcriptions. Some gongan-s had as many as three irama-s (these were transitional gongan-s) and, like all of the gongan-s in these performances, are listed under the irama which was in effect for the largest part of the gongan.. Two important points reinforced by this data are:

1) although Pangkur can be performed in all five irama-s, it does not have to be performed in all of the irama-s in each performance, and
2) that choices such as which irama-s are performed and how many gongan-s are performed in each irama are variables left to the performers.

The combined effects of irama choice and repetition of gongan-s result in vastly different performance times for each performance. Not only do the total timings vary greatly, but also the proportion of time spent in the first gongan-cycle to that in the second gongan-cycle (see Table 10).

Irama changes are abundant throughout these performances. Type 1 irama changes (see page 31) are found in each performance, most commonly from a higher irama to a lower irama (i.e., seseg to I, I to II, etc.) although one example of this type of irama change in the opposite direction is found in the final gongan of Transcription 5. Type 2 irama changes occur in Transcriptions 3, 4, and 6 when changing from irama IV to irama III, in Transcription 5 from irama I to irama seseg, and in Transcription 6 from irama II to irama I.

Structural Editing

All four of the transcribed performances have kendelan-s[2] (see Table 10), and of the total of twelve there are two each found in irama-s seseg and I and eight in irama IV. The author has never heard a kendelan in irama II for Pangkur, but tradition permits kendelan-s in irama III -- however, none occurred in these particular performances.

The two kendelan-s found on page 5 of Transcription 6 require some comment, for they occur a half balungan-pulse later than normal. This is a special treatment in which the drum and some of the elaborating instruments play a short cadential idea, ending with a stroke of sivem, past the expected structural point of kendelan. These particular kendelan-s are not preceded by a tempo ritardando.

At the point of kendelan found on the third page of Transcription 3 a palaran (see page 38) is inserted, the only example of structural infix in these transcriptions. The end of the final phrase of the palaran coincides with the continuation of Pangkur in irama III. Thirty of the thirty-two balungan-pulses in this gongan of Panckur are deleted as a result of this structural infix.

Melodic Organization

Both the regular and the mulur gongan-s of Pangkur have the kenongan pattern abca'. The mulur gongan, regardless of the various renditions found in these transcribed performances, is an interesting combination of melodic repetition, elaboration, and abstraction of the regular gongan of Pangkur, as shown in Figure 34 (the peloq pathet barang balungan-s are used here). It should be noticed that the balungan pitches at every stroke of gong, kenong, and kempul (and wela), as well as at half of the strokes of kethuk, are the same in both versions, confirming the melodic similarity between these two balungan-s.

The ngelik gongan has the kenongan pattern defa'. To get to the ngelik gongan from the mulur gongan the pitches in the last two balungan-pulses of the mulur gongan are altered to arrive at a different

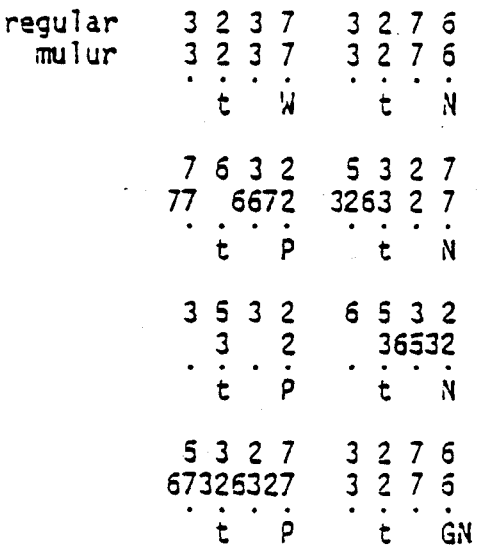


Figure 34. Comparison of the Regular and Mulur Balungan-s for Ladrang Pangkur.

gong-tone. The ngelik balungan clearly differs from the mulur balungan until the last two balungan-pulses of the third kenongan, from which point they are identical (see Figure 35).

Thus, Pangkur-'s balungan is melodically very unified, since the regular and mulur gongan-s are basically the same (the latter an elaboration of the former), and since the ngelik gongan, although obviously contrasting, nonetheless has the same final kenongan as the mulur gongan.

Pangkur-'s formal scheme has two repeatable cycles of gongan-s. The first cycle consists simply of one gongan, the regular gongan, to be labeled A. This gongan can be played either once or several times and expressed as :A:. The second gongan-cycle of Pangkur has one basic gongan, the mulur gongan, as well as the possibility of the ngelik

mulur	3 2 7 6
ngelik	3 2 672
	t GN
3 2 3 7	3 2 7 6
2 4323	356756
t W	t N
77 6672	3263 2 7
22 4327	32657653
t P	t N
3 2	36532
356756	35676532
t P	t N
67326327	3 2 7 6
67326327	3 2 7 6
t P	t GN

Figure 35. Comparison of the Mulur and Ngelik Balungan-s for Ladrang Pangkur.

gongan. If the mulur gongan is represented by the symbol A^m, then the second gongan-cycle, in its simplest form, can be expressed as $:A^m:$. The possibility of the inclusion of the ngelik gongan can be expressed as $(;A^m*B^n;)$, with A^m* representing the mulur gongan with the alteration leading to the ngelik gongan, B^n representing the ngelik gongan, the semicolons representing the possibility of repetition, and the parentheses the fact that it is optional. Thus, Pangkur-'s second gongan-cycle can be expressed, with all its possibilities, as $:(;A^m*B^n;)A^m:$. Table 11 shows the entire formal design of Pangkur and the number of times the gongan-s in each part of the design were performed in each of the four transcribed performances.[3] The range in terms of the number of

	first gongan-cycle	second gongan-cycle		total # of gongan-s
	:A:	:(;A^{m}*B^{n};)A^{m}:		
T3	9	1	2	13
T4	1	2	1	6
T5	4		4	8
T6	8	1	4	14

Table 11. Gongan Repetition in the Transcribed Performances of Ladrang Pangkur.

gongan-s in each section attests to the flexibility of performance practice in gamelan music.

The preceding discussion of structural, melodic, and temporal organization demonstrates the nature and flexibility of the performance practice of Central Javanese gamelan music. The form of a gamelan piece, which is created during the realization process, is the result of the interaction of a number of musical variables which can be combined in several ways to create numerous renditions of the same piece.

Notes to Chapter IV

[1]*Pangkur* can also be performed in *pelog pathet nyamat*.

[2]In the corpus there is one performance of *Pangkur* (source 1001) that does not have any *kendelan*-s.

[3]One time through (;A^m*B^n;) is two *gongan*-s long, two times through is four *gongan*-s long.

CHAPTER V

STRUCTURAL ORGANIZATION IN SEQUENCES OF PIECES

Gamelan pieces are frequently strung together in performance to form sequences of pieces. Although no written principles or guidelines exist to dictate how pieces are sequenced, after hearing numerous performances one begins to recognize certain modal (pathet) and structural relationships as recurrent and significant. For instance, with few exceptions, all of the pieces in any one sequence belong to the same pathet.[1] How the structures of the pieces forming a sequence are ordered and connected is somewhat more complex and will be the topic of this chapter.

The information presented here is drawn from forty-four performances selected from the corpus and summarized in Appendix F. The performances are, in the author's estimation, representative of the performance tradition as it exists today in Central Java.

Talu Sequence

The most elaborate sequence of structures found in gamelan music is the one used for the talu (overture) to theatrical productions such as wayang kulit-s (shadow puppet plays) and wayang orang-s (human actor-dancer plays). Which structures are used and in what order they appear in the talu sequence is fairly standardized.[2] Figure 36 lists these structures and the order in which they occur.

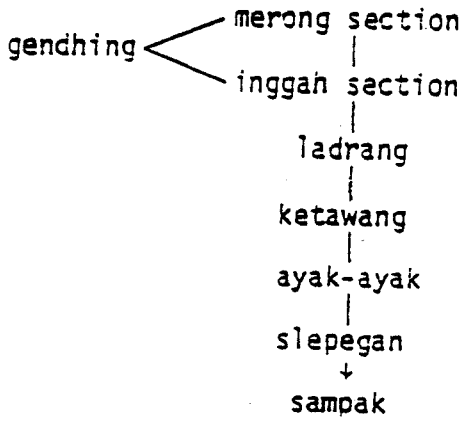


Figure 36. Sequence of Structures Found in the Talu.

The first structure in this sequence has four kenongan-s per gongan, not using kempul, with either 64 or 128 balungan-pulses (possibly 256 bp) per gongan. This is followed by a piece with the ladrang structure (32 bp per gongan) and then by a piece with the ketawang structure (16 bp per gongan). Following the ketawang structure are the free structures of ayak-ayak, slepegan, and sampak. All of the structures in this sequence are connected without interruption between the individual structures.

Two important structural tendencies are apparent in the talu sequence. The first is a progression from pieces with large structures to pieces with small structures, and the second is that the sequence begins with strict structures and ends with free structures. These two tendencies seem to be important organizing principles for sequences of pieces in general, as will be demonstrated in the next section.

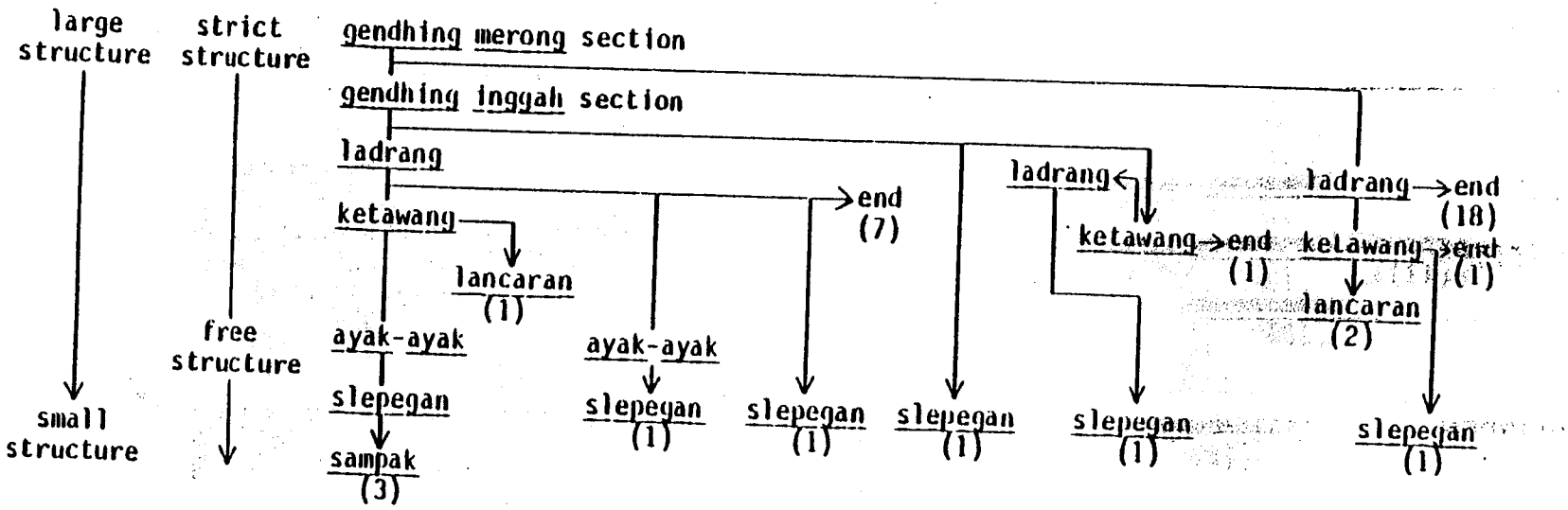
Talu-Related Sequences

Of the forty-four performances examined, only three were talu-s for wayang kulit performances (sources 1009, 1014, and 1017) with the sequence of structures shown in Figure 36. The remaining forty-one can be divided into two groups: those performances

1) with structural sequences that bear some degree of relationship to the talu sequence, to be called "talu-related sequences;" and those
2) with structural sequences that do not bear a clear relationship to the talu sequence.

The first group, to be discussed in this section, is represented by thirty-five performances in the corpus. The second group will be discussed in the final section of this chapter.

All of the talu-related sequences discussed here are from non-theatrical situations, that is, they are intended simply for listening pleasure. Figure 37 charts the various talu-related sequences as found in the performances. The left side of the chart from top to bottom shows the talu sequence and its structural tendencies, with all of the deviations from this sequence found to the right. All but one of the eleven talu-related sequences represented follow the tendencies of the talu sequence. In this one exception a piece in the ladrang structure was played after a piece in the ketawang structure. Three of the performances contained pieces in the lancaran (or lancaran mlaku) structure which, although not found in the talu sequence, nonetheless took a



key: the numbers in parentheses indicate the number of performances found in the discography for each particular sequence

Figure 37. Talu and Talu-Related Sequences.

logical position in their respective sequences as implied by the tendencies of the talu sequence. Perhaps the exclusion of the lancaran structure from the talu sequence is due to the similarity of structural and melodic organization of the lancaran and ladrang structures as discussed in Chapter I (page 12 and Figure 5) and Chapter III (page 49).

Although the underlying tendencies of the talu sequence are followed by these related sequences, the only structure they all share in common is the merong section of a four kenongan-per-gongan or two kenongan-per-gongan structure, not using kemoul. This initial structure can be of any size, but only one piece in this structure group is used. After the merong section of the initial piece is played, either its inggah section, the inggah section of another piece, or a piece in the ladrang structure follows. The possible choices after this point become more numerous, often skipping one or more of the structures found in the talu sequence and frequently ending the sequence before all of the possible structures are used (five of the sequences do not include any free structures).

The means by which the structures within the talu-related sequences are connected are occasionally more complex than in the talu sequence itself. Whereas the talu sequence is performed without interruption between structures, it is not uncommon for talu-related sequences to contain some kind of interruption. These interruptions, when they occur, usually happen somewhere after the first two structures of a sequence and are of one of two types:

1) a piece in the sequence ends (suwuk) and is immediately followed by the introduction (buka) of the next piece in the sequence; or

2) a piece in the sequence ends (suwuk) and is followed by a solo vocal piece of substantial length which either leads directly into the next piece of the sequence or is followed immediately by the next piece's buka.

Regardless of the nature of the interruption, it is no more than a temporary break in the flow of the structures within the entire sequence. Such interruptions are similar in process and effect to kendelan and structural infix.

The individual pieces within a sequence are subject to the variables of structural flexibility discussed in Chapter II (irama and structural editing) as well as the variables of repetition as discussed in Chapter III (grouping of gongan-s into repeatable gongan-cycles). Not only do these intra-piece variables of realization create the possibility of numerous formal relationships for each piece, but they also contribute to the large-scale formal relationships created when the individual pieces are placed together to form sequences.

Other Sequences

Only six of the forty-four performances in the discography did not have talu or talu-related sequences. Four of these performances consisted simply of two ladrang-s, while the remaining two performances

began with a piece in the lancaran structure followed by a ladrang and returning to the initial lancaran (one of these performances after this point went to another piece in the ladrang structure). Figure 38 presents these sequences.

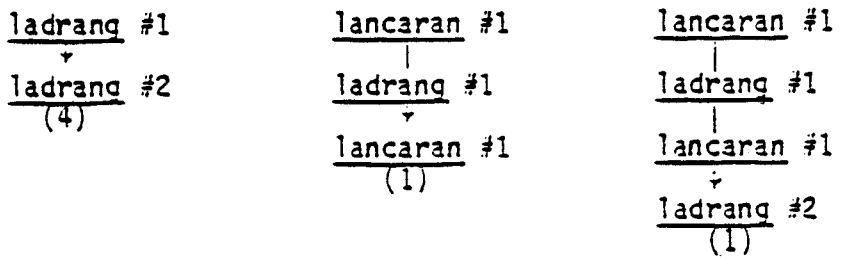


Figure 38. Non Talu-Related Sequences.

The first of these sequences, to the author's knowledge, is found only in performances for listening pleasure and has no theatrical origin or use: the two pieces simply complement one another. The latter two sequences, on the contrary, show obvious influences from dance accompaniment situations. The basic sequence of lancaran to ladrang (sometimes ketawang) to lancaran is used for the accompaniment to several dances such as Gambir anom, Klana, Ekoorawiro, and others.

Notes to Chapter V

[1]The author has been told of a few instances in which a piece in one *pathet* is followed by a piece in another *pathet*, but this is very rare.

[2]This is true in Solo more than in Yogya. In Solo, the specific pieces used for the *talu* are fairly standardized according to Kunst (1975: 341). The same sequence of pieces mentioned by Kunst is found in source 1009 and listed in Appendix F.

CHAPTER VI

CONCLUSION

The Formal Process

The word "composition" has been purposely avoided throughout this thesis in favor of the word "piece." When we talk of a composition it usually refers to a specific product of an individual's creative activity. Many of the musical relationships within a composition are fixed before performance through notation, although the perception of these relationships can be affected to a degree by the performance itself. In a Central Javanese gamelan piece only a few musical relationships exist before performance. Thus, the formal relationships resulting from a number of performances of the same piece can be, and usually are, markedly different.

The process by which a gamelan piece is realized is a complex interaction between a number of musical elements -- some fixed and others variable. The fixed elements of a piece include its structure, melodic outline (balungan), and formal design, while the variable elements include repetition, tempo (as determined by specific rhythmic relationships), and structural editing. These variable elements are restricted by the tradition's performance practice and, along with pieces' fixed elements, must be known by all of the musicians in order to facilitate realization. The musical elements and interactions

discussed in this thesis that participate in the formal process of gamelan music are diagrammed in Figure 39.

Important Formal Aspects

A few specific formal aspects of Javanese gamelan music justify mention for they seem to express basic musical tendencies and preferences of this particular tradition.

Accent

Accent in gamelan music cannot be perceived according to the same criteria as in Western music. The most common means of creating stress in Western music: tonic, dynamic, and agogic accent, are not present in gamelan music -- yet there does exist a hierarchy of stress within melodic units. This hierarchy is created by what might be termed unisonal and colotomic accent. Unisonal accent is brought about when a pitch in a melodic unit is reinforced by the elaborating and abstracting instruments more than other pitches within the same unit. Colotomic accent occurs when a stroke of one or more of the colotomic instruments coincides with a melodic pulse. The combination of these two types of accent create similar patterns of stress on several different levels of the music. Regardless of the size of the melodic unit (gatra, kenongan, or gongan), the greatest stress is found on the final beat, a secondary stress in the middle, and an absence of stress at the beginning.

Melody

There appears to be a correlation between the relative importance of melodic variation and its placement in relation to the patterns of

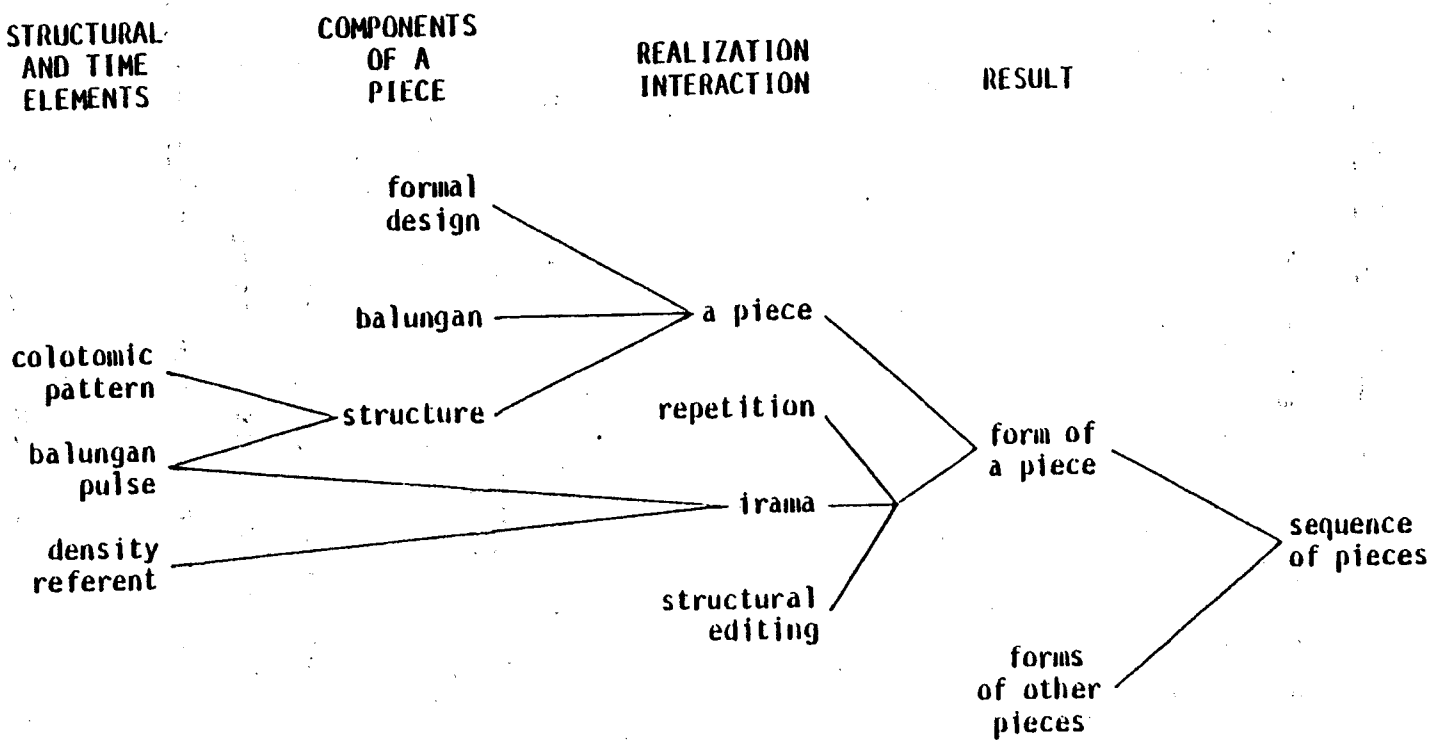


Figure 39. The Formal Process in Gamelan Music.

melodic accent. Variation found at the end of a unit creates a greater feeling of contrast to a previous unit than does variation at the beginning, while melodic restatement at the end of a unit is more important in establishing similarity to a previous unit than is restatement found at the beginning. The research has also shown a fairly strong preference for ending a gongan with different melodic material than it was begun with.

Sectionalization

Gamelan pieces are either uni- or bi-sectional with each section consisting basically of a repeatable cycle of gongan-s. The number of times a cycle is repeated can vary with each performance and, in combination with irama choice, is an important factor in creating relationships on higher formal levels. Sectionalization in medleys is brought about by change of piece and structure.

Irama

The Javanese concept of irama discussed in this thesis is certainly not new to anyone who has researched or studied gamelan music. However, most writings have been concerned with merely defining what irama is on a single, melodic, level -- ignoring its effect and importance on structural and higher formal levels. When a single structural concept can be proportionately expanded to fill two, four, eight, or sometimes sixteen times its shortest duration in time, the means of expansion (irama) itself becomes an important parameter of structure. Likewise the effect of irama choice, in combination with repetition of gongan-cycles, is

fundamentally important in the creation of macro-formal relationships within pieces as well as within medleys.

Interruption

Interruption to the flow of music and structure seems to play an important role in performance practice. Momentary suspension of musical activity and, occasionally, insertion of contrasting musical material occurs within pieces and medleys. Although not necessary in a performance, interruptions do occur frequently in practice and, in the case of inserted material, can have a noticeable effect on higher formal levels.

Gamelan music represents an old and highly refined, but still very much alive, orchestral tradition. In order to be understood and appreciated, this music must be listened to according to the principles on which it is predicated. This thesis has dealt with only some of the most fundamental formal aspects of the performance practice and has not concerned itself with the subtleties pertaining to the realization of parts for various non-balungan instruments and the vocalists, improvisation, details of texture and orchestration, or pieces that do not have colotomic structures -- any of which would make excellent and challenging topics for other studies.

APPENDIX A

DATA ON KENDELAN-S AND STRUCTURAL INFIX

structure	piece	source	kendelan location -- point of continuation	irama	type
lancaran	Tahu Tempe	1019	N^2-S	I	1
ketawang	Sinom Rog-Rog Asem	1018	WN^1-N^1	II	1
	Angleng	1026	PN^2-G	II	2
ladrang	Pangkur	1003	t^1N^1-WN^1; t^1N^2-t^2N^2; t^1N^3-PN^3	IV	1
	Perkutut Manggung	1002	same as above	IV	1
	Clunthang Mataraman	1020	t^1N^1-t^2N^1	III	1
	Clunthang Rinengga	1001	same as above	III	1
	Puspanjana	1008	t^1N^1-t^2N^1; t^1N^2-t^2N^2	III	1
	Larasdriya	1022	t^1N^2-t^2N^2; t^1N^3-PN^3	IV	1
	Pangkur	1003	t^2N^1-PN^2	ssg	1a

structure	piece	source	kendelan location -- point of continuation	irama	type
ladrang	Pangkur	1003	same as above	I	1a
	Ayun-Ayun	1015	PN^4-t^2N^4	IV	2
	Cangklek	1008	same as above	III	2
	Eling-Eling	1012	same as above	IV	2
	Eling-Eling Kasmaran	1020	same as above	IV	2
	Ginonjing	1018	same as above	III	2
	Ginonjing	1001	same as above	IV	2
	Janti	1027	same as above	III	2
	Kapidondong	1002	same as above	IV	2
	Pacul Gowang	1020	same as above	IV	2
	Sumyar	1032	same as above	III IV	2
	Sumyar	1008	same as above	IV	2
	(name not given)	1022	same as above	IV	2
	Loro-Loro Topeng	1020	PN^3-t^2N^3	III IV	2

structure	piece	source	kendelan location -- point of continuation	irama	type
ladrang	Eling-Eling Kasmaran	1019	t^1n^2-t^2n^2; t^1N^3-PN^3; PN^4-t^2N^4	IV	1-2
	Dendang Semarangan	1019	WN^1-N^1	II	3
	Modatama	1002	same as above	II	3
	Gandrung Manis	1016	N^3-t^2N^4	IV	4
	Ilir-Ilir	1028	same as above	III	4
	Srundeng Gosong	1019	same as above	IV	4
	Wani-Wani	1028	same as above	III	4
	Gonjang-Ganjing Leto	1010	N^2-t^2N^4	III	4
16 bp per kenongan, no kempul	Onang-Onang	1007	W^3N^1-t^4N^1; W^3N^2-t^4N^2; W^3N^4-t^4N^4	IV	1
	Gambir Sawit	1025	W^3N^1-t^4N^1; W^3N^2-t^4N^2	III	1
	Titipati	1007	same as above	III	1
	Widasari	1013	same as above	IV	1
	Gambir Sawit Sembunggilan	1026	W^3N^1-t^4N^1	III	1

structure	piece	source	kendelan location -- point of continuation	irama	type
16 bp per kenongan, no kempul	Rondhon Cilik	1006	W^3N^2-t^4N^2	III	1
	Majemuk	1012	W^3N^3-t^4N^3	III	1
	Budeng-Budeng	1024	N^3-t^4N^4	III	2
	Kembanggayam	1025	t^1N^1-W^1N^1; t^2N^1-W^2N^1; t^1N^2-W^1N^2; t^2N^2-W^2N^2	III	3
	Kinanthi Juru Demung	1008	t^3N^1-t^4N^1; t^3N^2-t^4N^2; t^3N^3-t^4N^3	III	3a
32 bp per kenongan, no kempul	Lambang-sari	1008	W^7N^1-t^8N^1; W^7N^2-t^8N^2; W^7N^3-t^8N^3	III	1
	Menyan Kobar	1006	W^7N^1-t^8N^1; W^7N^2-t^8N^2	III	1
	Rondhon	1021	same as above	III	1
	Sambul Jilik	1006	same as above	III	1

APPENDIX B

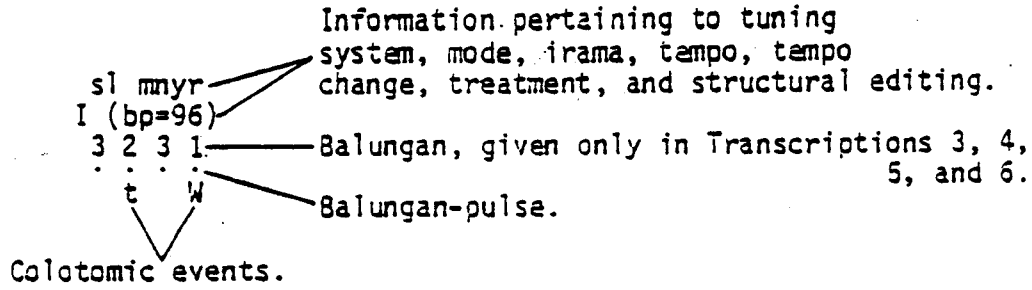
DATA ON SELINGAN

main piece	infixed material	source
Ladrang Eling-Eling	macapat	1012
Ladrang Eling-Eling Kasmaran	macapat	1019
Gendhing Budeng-Budeng	macapat	1024
Ladrang Kapidondong	dolanan Salaki, Kendela	1002
Ladrang Cangklek	Lagu Dolanan Pendisil	1008
Ladrang Ginonjing	dolanan Ledung-Ledung	1001
Ladrang Sekar Gadung	Ketawang Lebdosari	1024
Gendhing Kinanti Juru Demung	Ladrang Puspanjana	1008
Ladrang Pangkur	palaran	1016
Ketawang Angleng	palaran	1026
Slepegan Slendro Manyura	palaran	1018
Slepegan Pelog Barang	palaran	1018
Slepegan Slendro Sanga	uran-uran	1015
Slepegan Slendro Sanga	uran-uran	1010
Slepegan Slendro Nem	uran-uran	1012
Ladrang Pangkur	conversation	1003

APPENDIX C

TRANSCRIPTIONS

Format Key



Abbreviations and Symbols

See the list of abbreviations and symbols in the preface.

Performance Sources

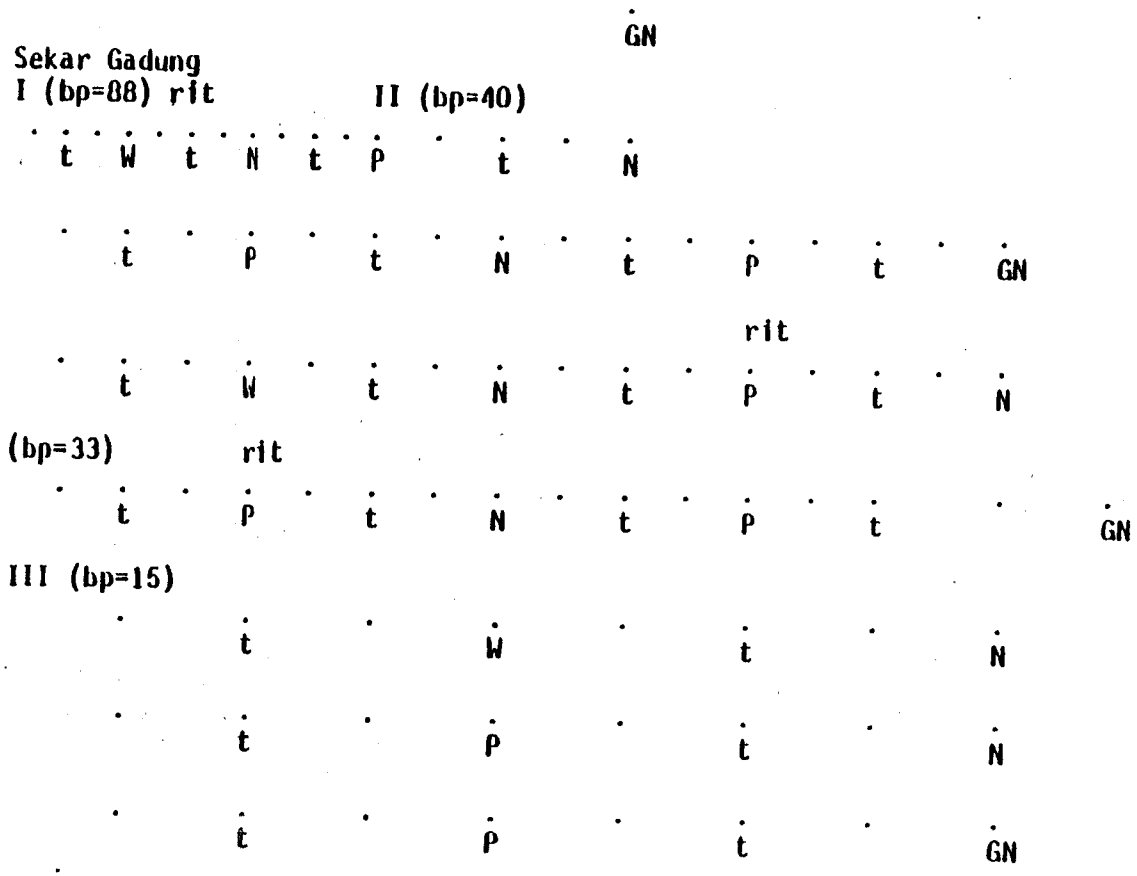
transcription	source	side	selection
1	1024	2	1
2	1014A	1	excerpt
3	1016	1	excerpt
4	1002	1	1
5	1003	1	2
6	1003	1	3

Tape Format

The performances are recorded quarter-track stereo at 7.5 ips on two seven-inch reels.

TRANSCRIPTION I: Ladrang Sekar Gadung seling Ketawang Lebdosari

note: the balungan sounds on every other bp starting with gong in Ladrang Sekar Gadung



TRANSCRIPTION 1 (page 2)

sel ktw Lebdosari
II (bp=30)

t W t N t P t GN

t W t N t P t GN

t W t N t P t GN

t W t N t P t GN

t W t N t P t GN

ldr Sekar Gadung
III (bp=15)

t W t N

t P t N

t P t GN

TRANSCRIPTION 1 (page 3)

sel ktw Lebdosari
II (bp=30)

t W t N t P t GN

t W t N t P t GN

t W t N t P t GN

accel

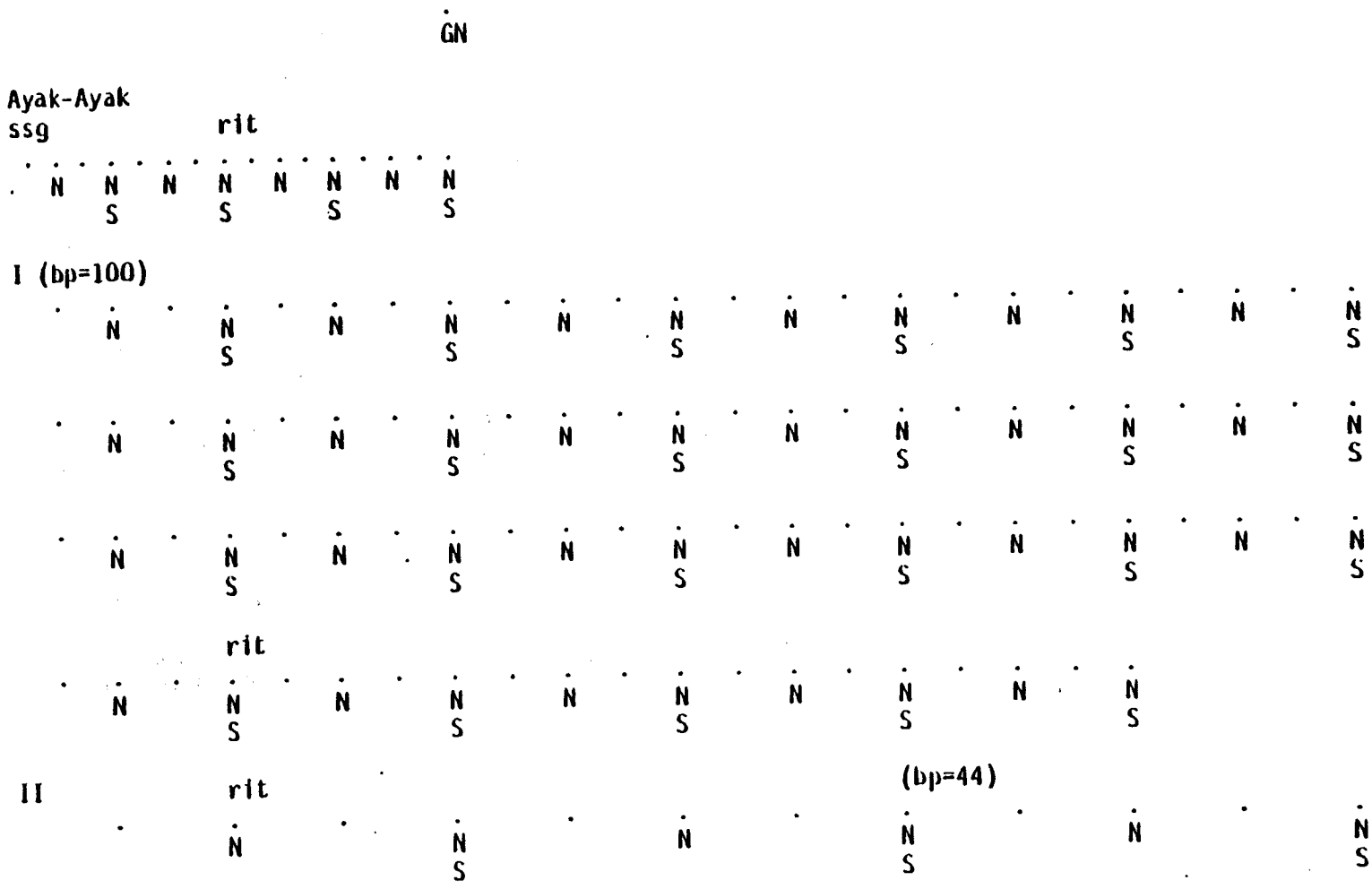
t W t N t P t GN

(bp=32) rit

t W t N t P t GN

performance time 10'14"

TRANSCRIPTION 2: Ayak-Ayak, Slepegan, Sampak



TRANSCRIPTION 2 (page 2)

N NS N NS N NS N NS

N NS N NS N NS N NS

N NS N NS N NS N NS

N NS N NS N NS N NS

N NS N NS N NS N NS

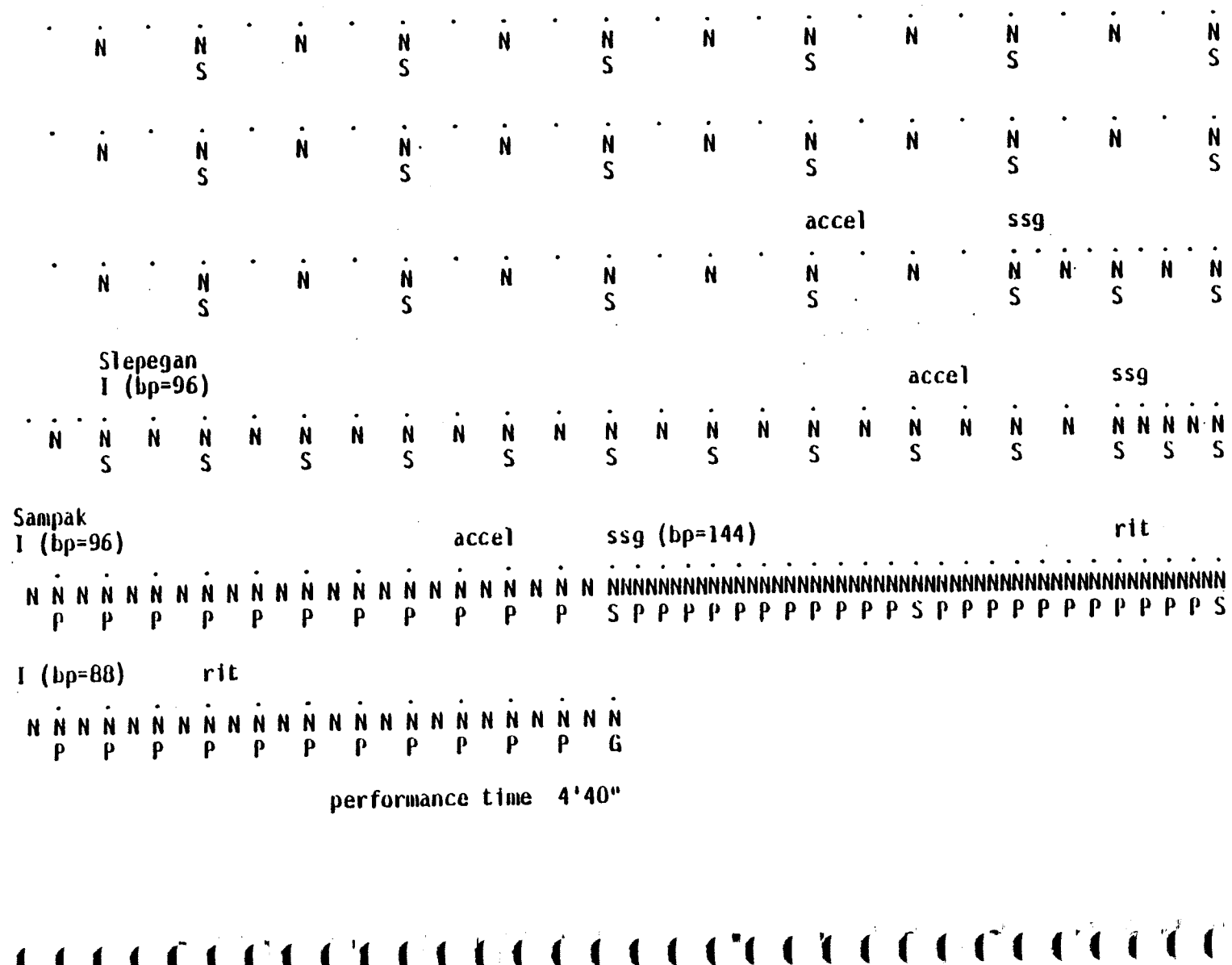
accel

N NS N NS N NS N NS

I (bp=104)

N NS N NS N NS N NS N NS N NS N NS

TRANSCRIPTION 2 (page 3)



TRANSCRIPTION 3: Ladrang Pangkur seling Palaran

6
GN

pl br
ssg (bp=116) rit
3237327676325327353265325327 3276
t W t N t P t N t P t N t P t GN

I (bp=96) kebar
‖:3 2 3 7 3 2 7 6 7 6 3 2 5 3 2 7 3 5 3 2 6 5 3 2 5 3 2 7 3 2 7 6:‖ 5 times
t P P t N t P P t N t P P t N t P P tP GN

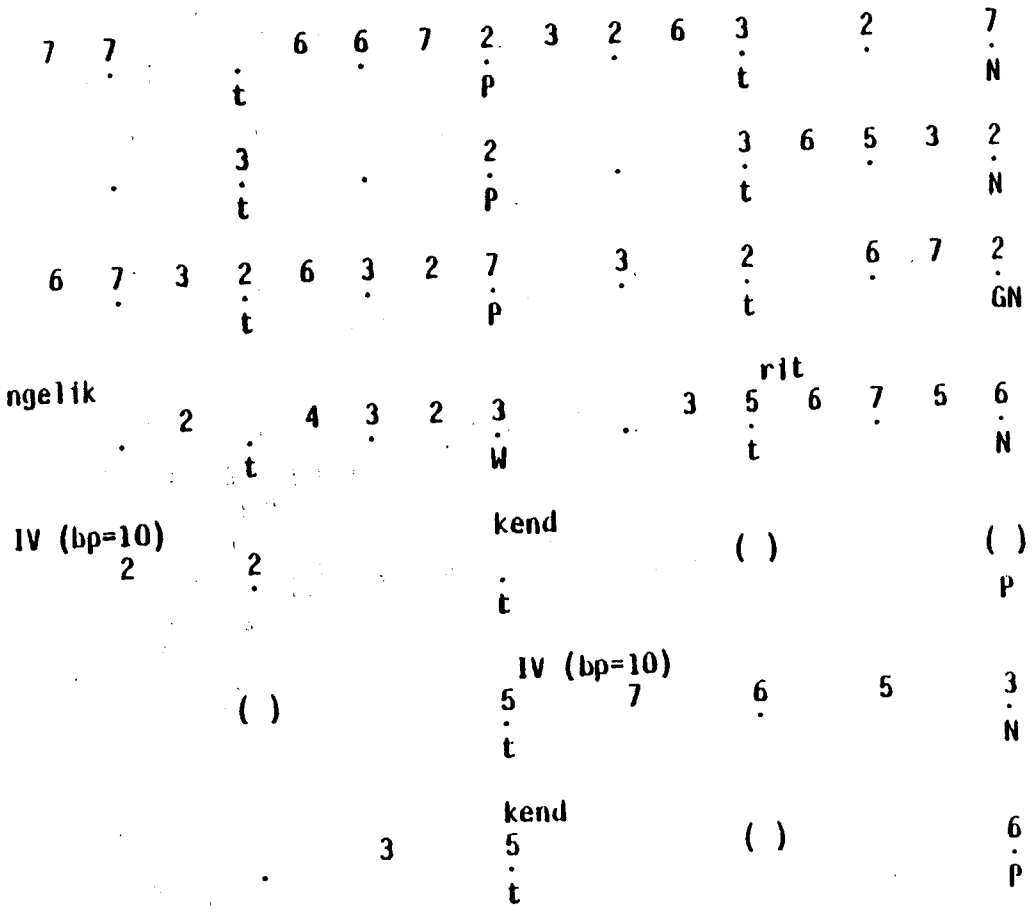
accel
3 2 3 7 3 2 7 6 7 6 3 2 5 3 2 7 3 5 3 2 6 5 3 2 5 3 2 7 3 2 7 6
t P P t N t P P t N t P P t N t P P tP GN

rit
3 2 3 7 3 2 7 6 7 6 3 2 5 3 2 7
t W t N t P t N

II rit III rit
3 5 3 2 6 5 3 2 5 3 2 7 3 2 7 6
t P t N t P t GN

(bp=16)
3 2 3 7 3 2 7 6
t W t N

TRANSCRIPTION 3 (page 2)



TRANSCRIPTION 3 (page 3)

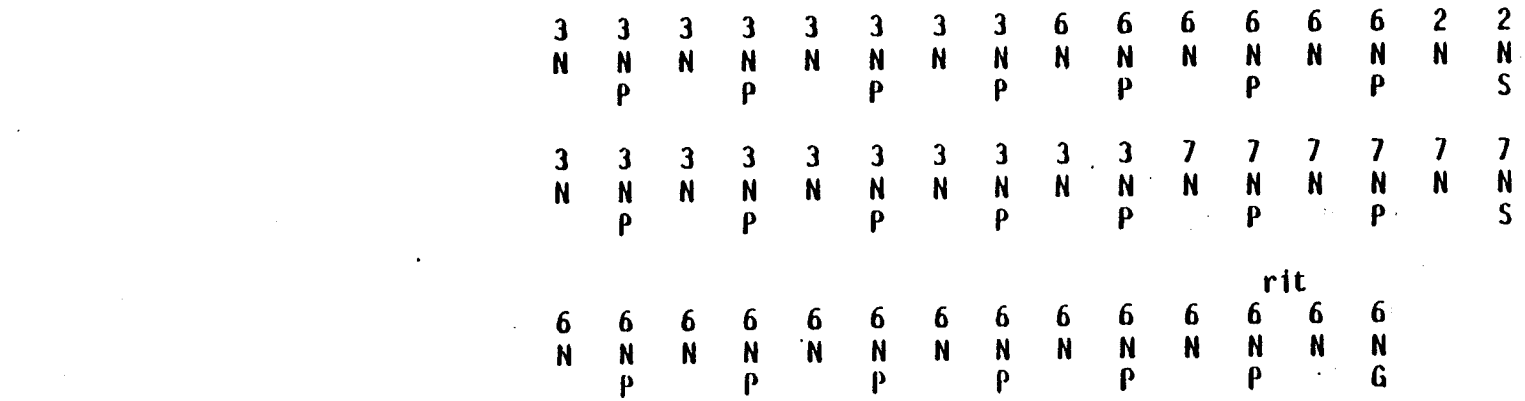
IV (bp=10)

3	5	6	7	6	5	3	2
			t				N
6	7	3	2	6	3	2	7
			t				P
	3		2		7		6
			t				GN

rit kend, sel palaran II (cp=40)

3	2	3	3	3	3	3	3	3	7	7	7	7	7	7	7	7
	t	N	NP	N	NP	N	NP	N	NP	N	NP	N	NP	N	NP	N	NS
		7	7	3	3	3	3	3	3	3	3	3	3	6	6	6	6
		N	NP	N	NP	N	NP	N	NP	N	NP	N	NP	N	NP	N	NS
		2	2	2	2	2	2	2	2	2	2	6	6	6	6	2	2
		N	NP	N	NP	N	NP	N	NP	N	NP	N	NP	N	NP	N	NS
		3	3	3	3	3	3	3	3	3	3	7	7	7	7	7	7
		N	NP	N	NP	N	NP	N	NP	N	NP	N	NP	N	NP	N	NS

TRANSCRIPTION 3 (page 4)



TRANSCRIPTION 3 (page 5)

(bp=16)

3 2 3 7 3 2 7 6
t W t N

7 7 6 6 7 2 3 2 6 3 2 7
t P t N

accel

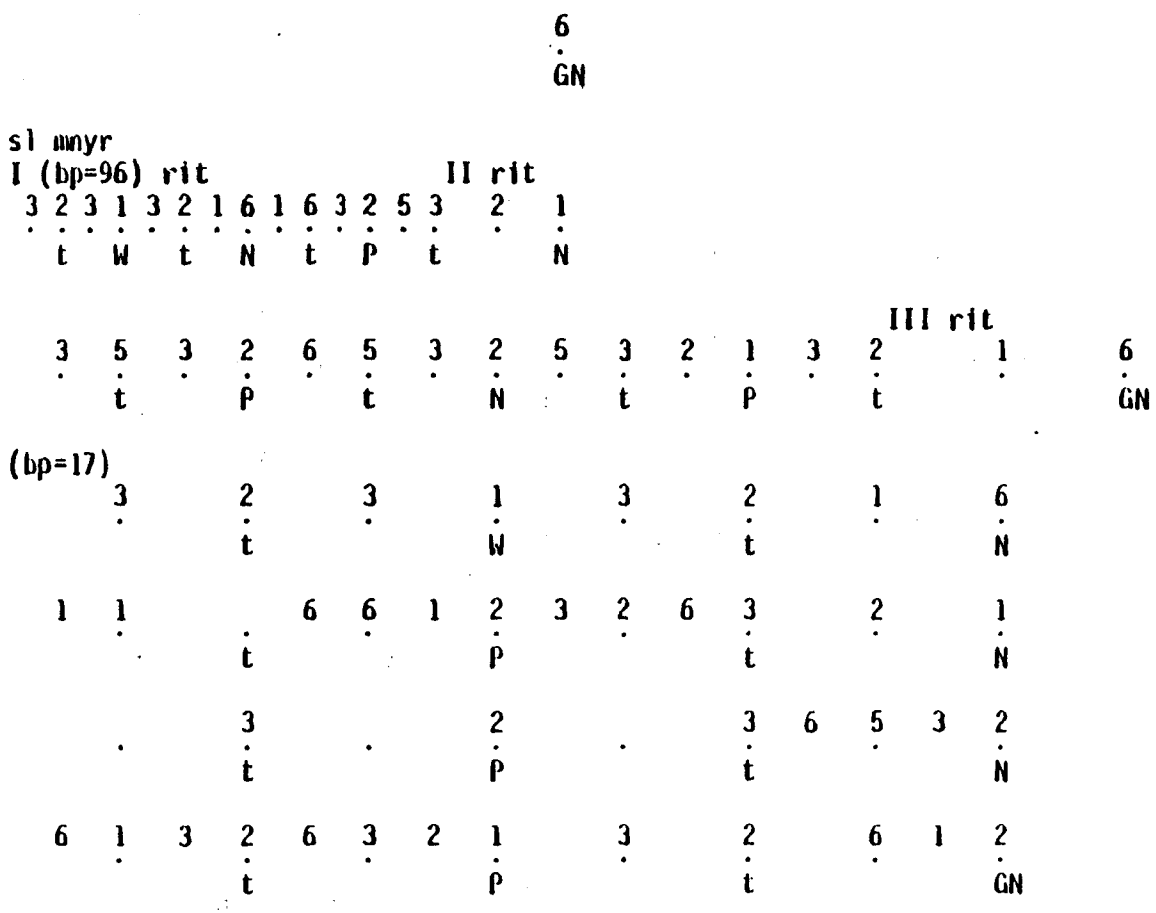
3 2 3 6 5 3 2
t P t N

rit

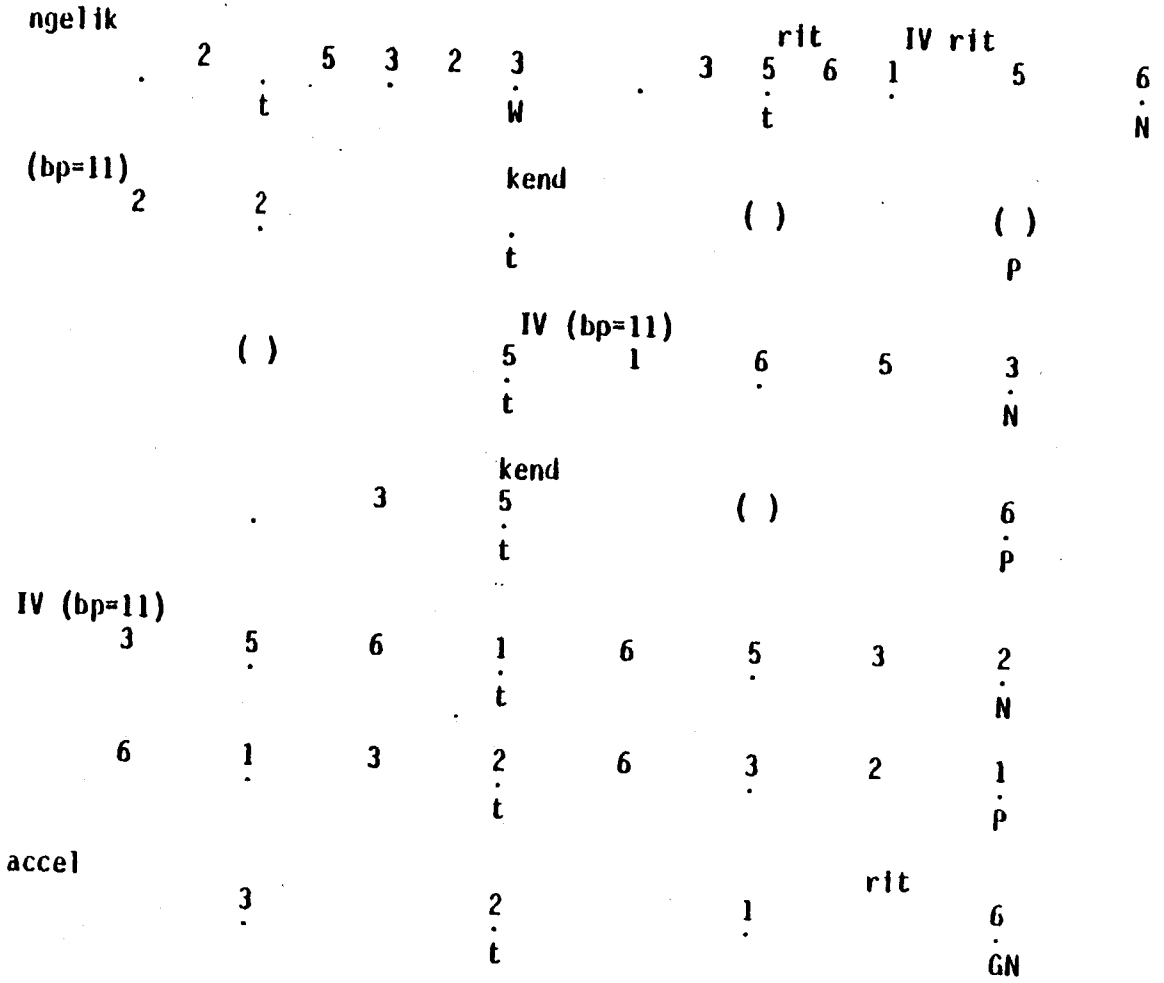
6 7 3 2 6 3 2 7 3 2 7 6
t P t GN

performance time 15'03"

TRANSCRIPTION 4: Ladrang Pangkur



TRANSCRIPTION 4 (page 2)



TRANSCRIPTION 4 (page 3)

pl br
III (bp=17)

3 2 3 7 3 2 7 6
t W t N

7 7 6 6 7 2 3 2 6 3 2 7
t P t N

3 2 3 6 5 3 2
t P t N

6 7 3 2 6 3 2 7 3 2 6 7 2
t P t GN

ngelik

2 4 3 2 3 3 5 6 7 5 6
t W t N

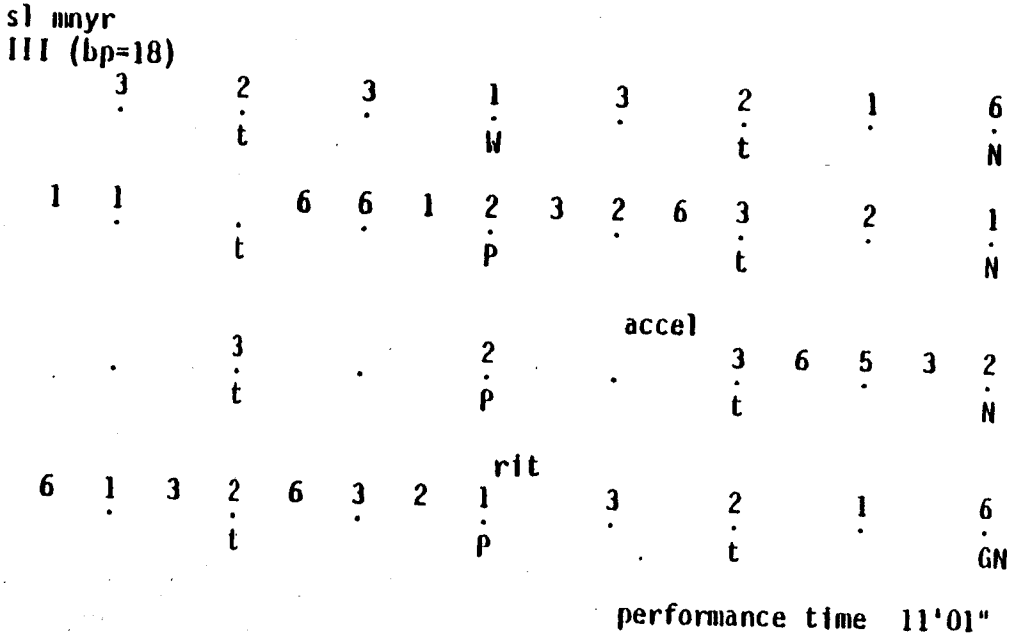
2 2 4 3 2 7 3 2 6 5 7 6 5 3
t P t N

3 5 6 7 5 6 3 5 6 7 6 5 3 2
t P t N

accel

6 7 3 2 6 3 2 7 3 2 7 6
t P t GN

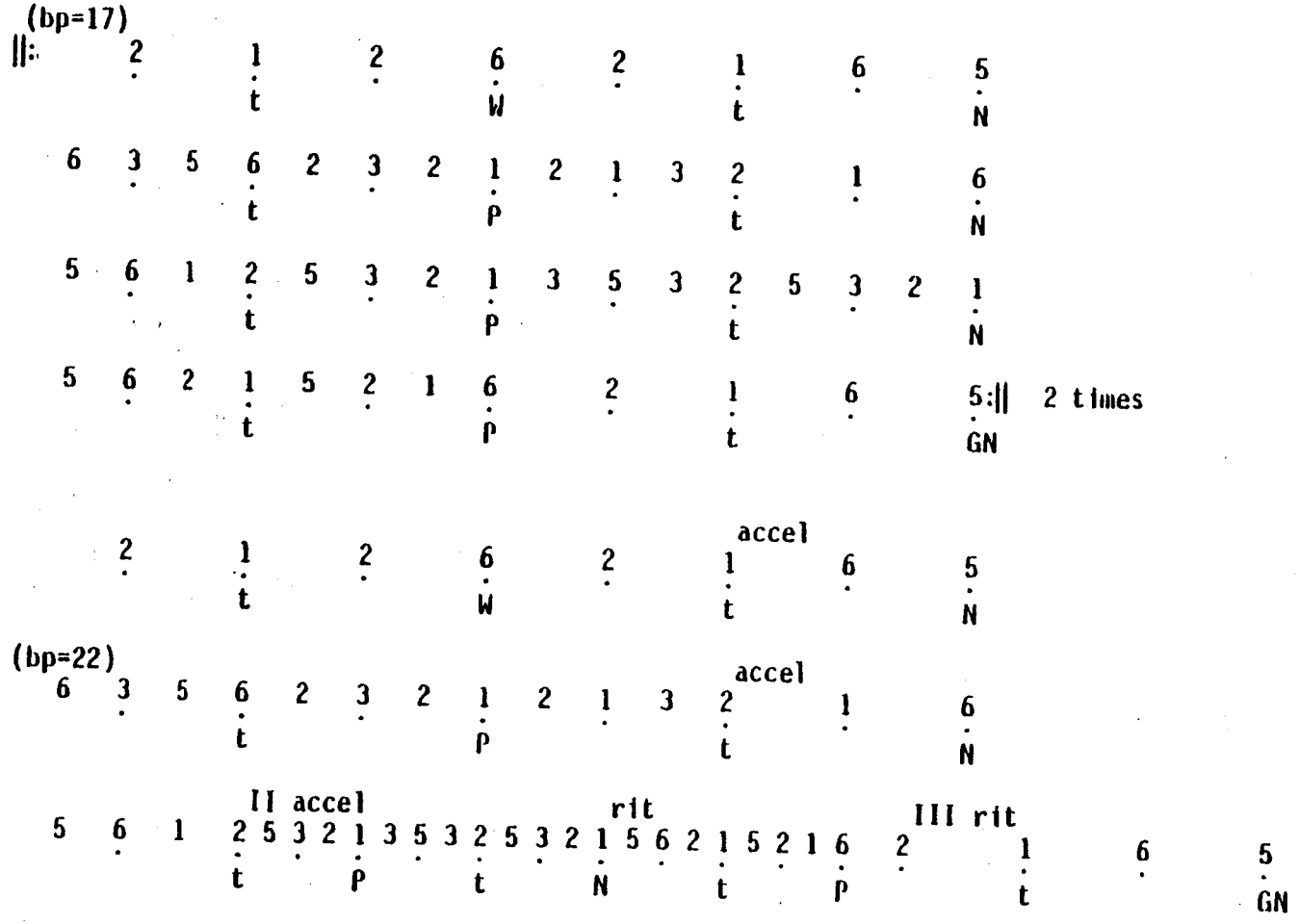
TRANSCRIPTION 4 (page 4)



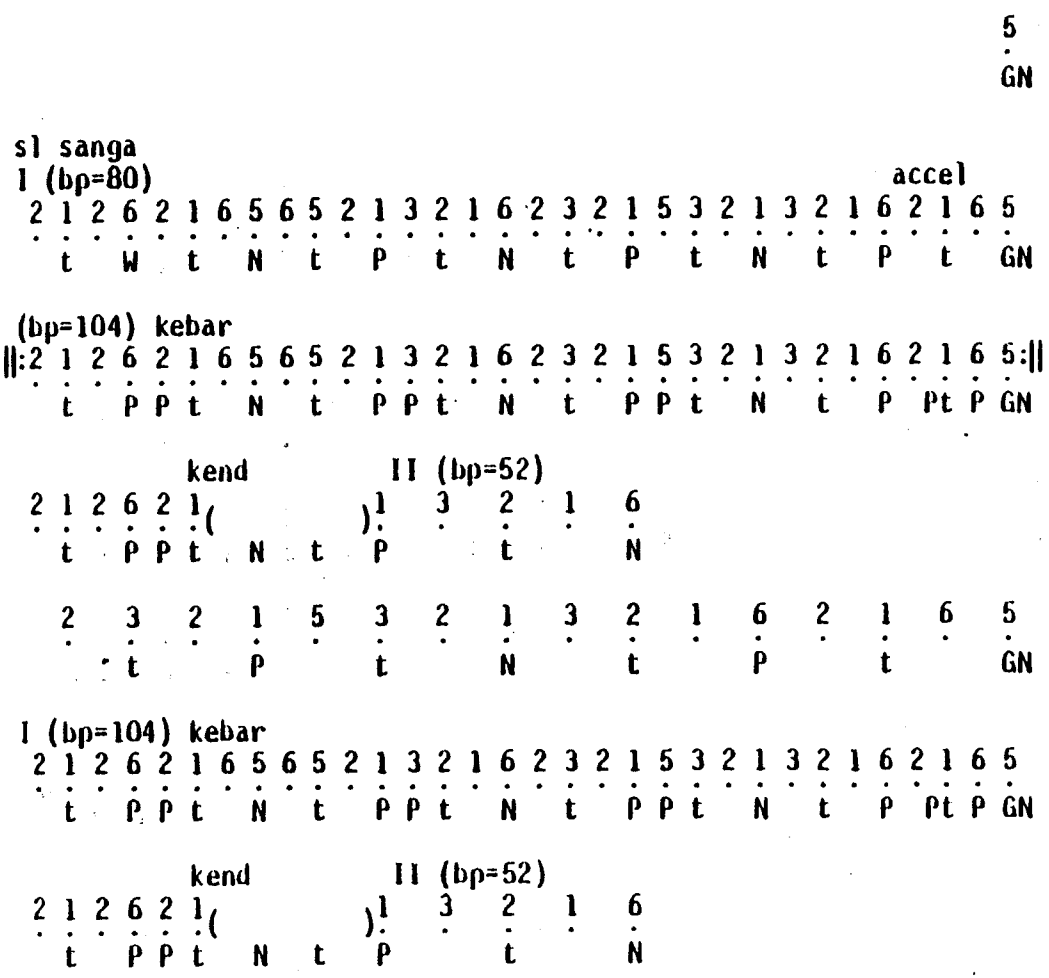
TRANSCRIPTION 5: Ladrang Pangkur

```
                                5
                                .
                                GN

sl sanga
ssg (bp=126)
21262165652132162321652132162165
................................
 t W t N t P t N t P t N t P t GN

     kend   II rit          (bp=48)                                  accel          I
212621(   )1   3   2   1   6   2   3   2   1   6   5   2   1   3   2   1   6   2   1 6 5
......(   ).   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   . . .
 t W t N t P       t       N       t       P       t       N       t       P       t   GN

ssg  kend   II rit          (bp=48)                                  rit
212621(   )1   3   2   1   6   2   3   2   1   6   5   2   1   3   2   1   6   2   1   6   5
......(   ).   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
 t W t N t P       t       N       t       P       t       N       t       P       t       GN

(bp=40)
   2   1   2   6   2   1   6   5   6   5   2   1   3   2   1   6
   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
       t       W       t       N       t       P       t       N

                       rit                                  III rit
   2   3   2   1   6   5   2   1   3   2   1   6   2   1       6       5
   .   .   .   .   .   .   .   .   .   .   .   .   .   .       .       .
       t       P       t       N       t       P       t               GN
```

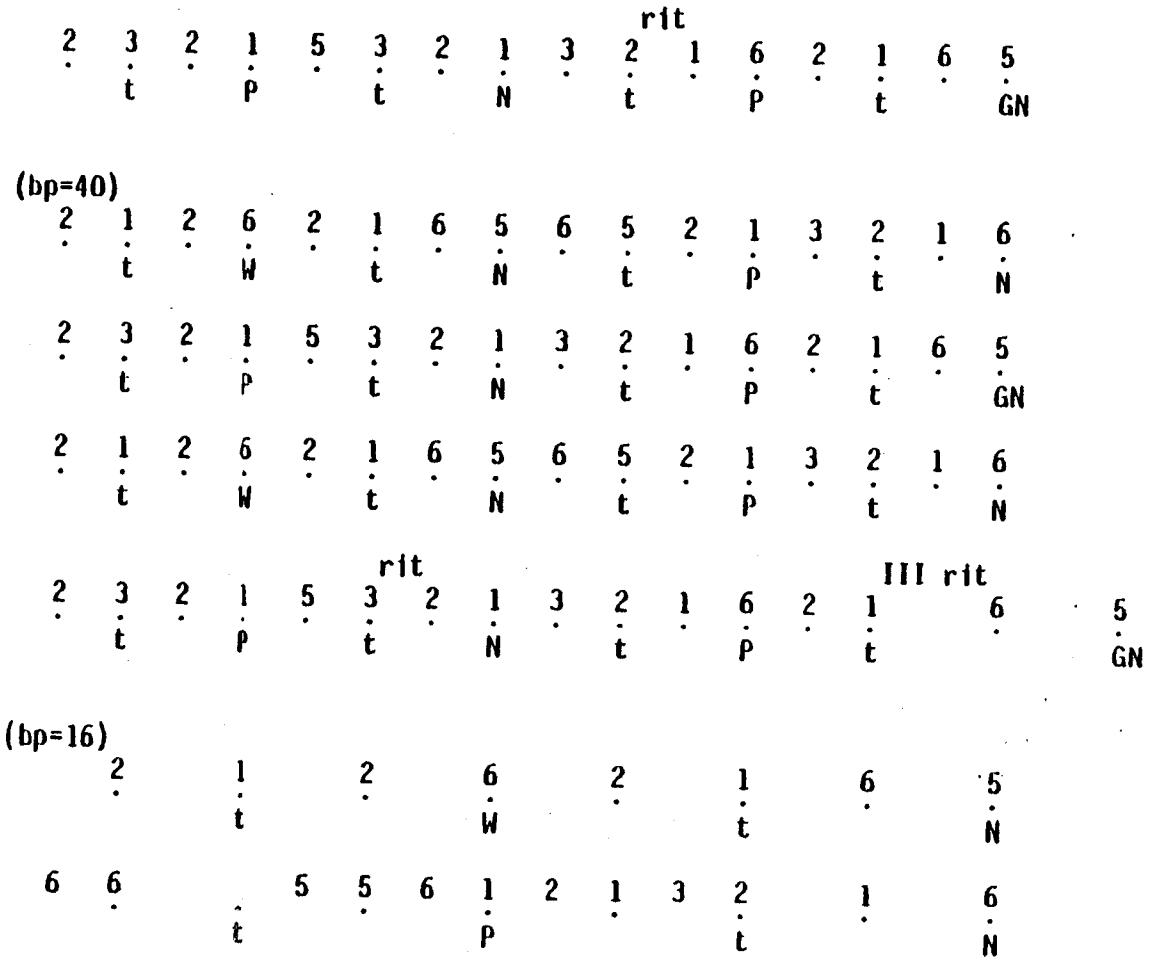
TRANSCRIPTION 5 (page 2)



TRANSCRIPTION 6: Ladrang Pangkur



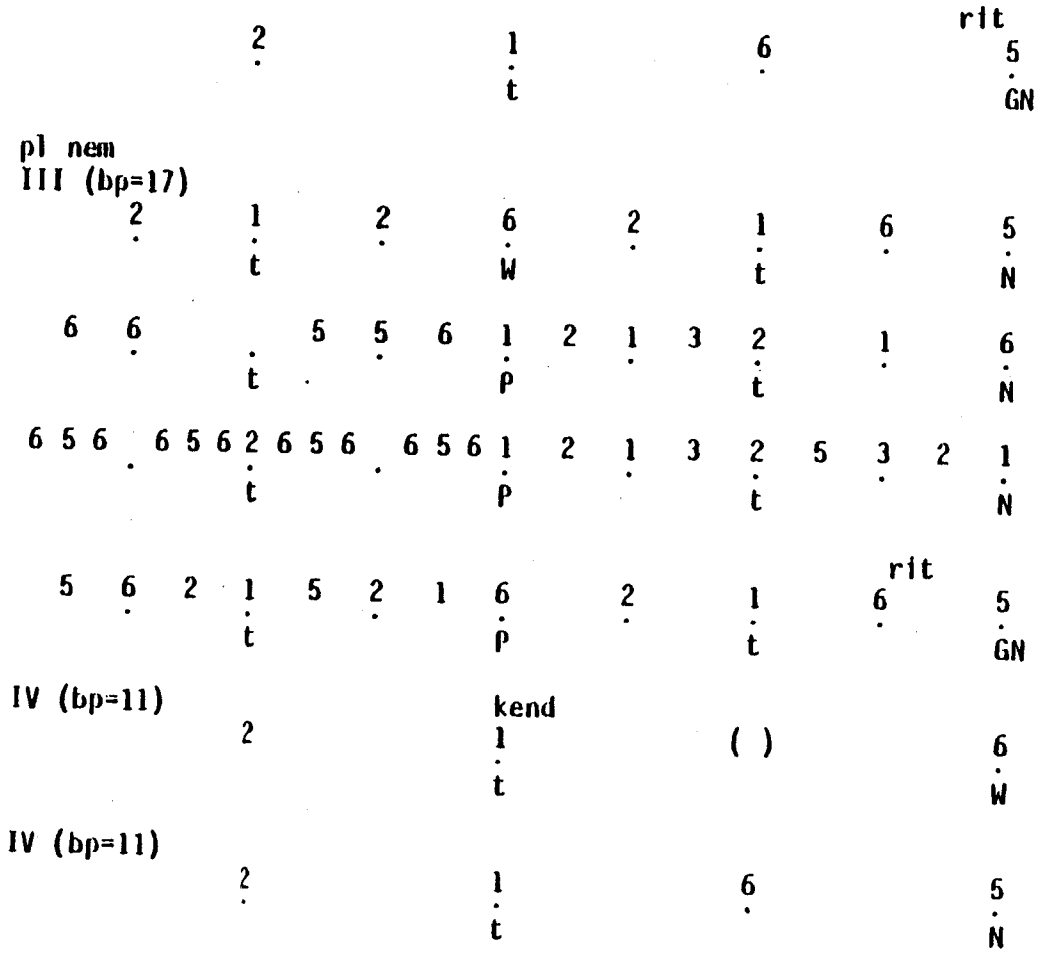
TRANSCRIPTION 6 (page 2)



TRANSCRIPTION 6 (page 3)

			2	5	3	2	1	2	1	3	2	5	3	2	1		
			t				P				t				N		
5	6	2	1	5	2	1	6		2		1		5	6	1		
			t				P				t				GN		
ngelik												rit					
		1		3	3		2			2	3	5	6	3	5		
			t				W				t				N		
IV (bp=11)																	
	1		1						3		2		1		6		
							t								P		
	2		1		5		3				2		3		2		
							t								N		
					2		3	5	6	1		6	1		5		
							t								P		
	2		3		5		6		5		3		2		1		
							t								N		
	5		6		2		1		5		2		1		6		
							t								P		

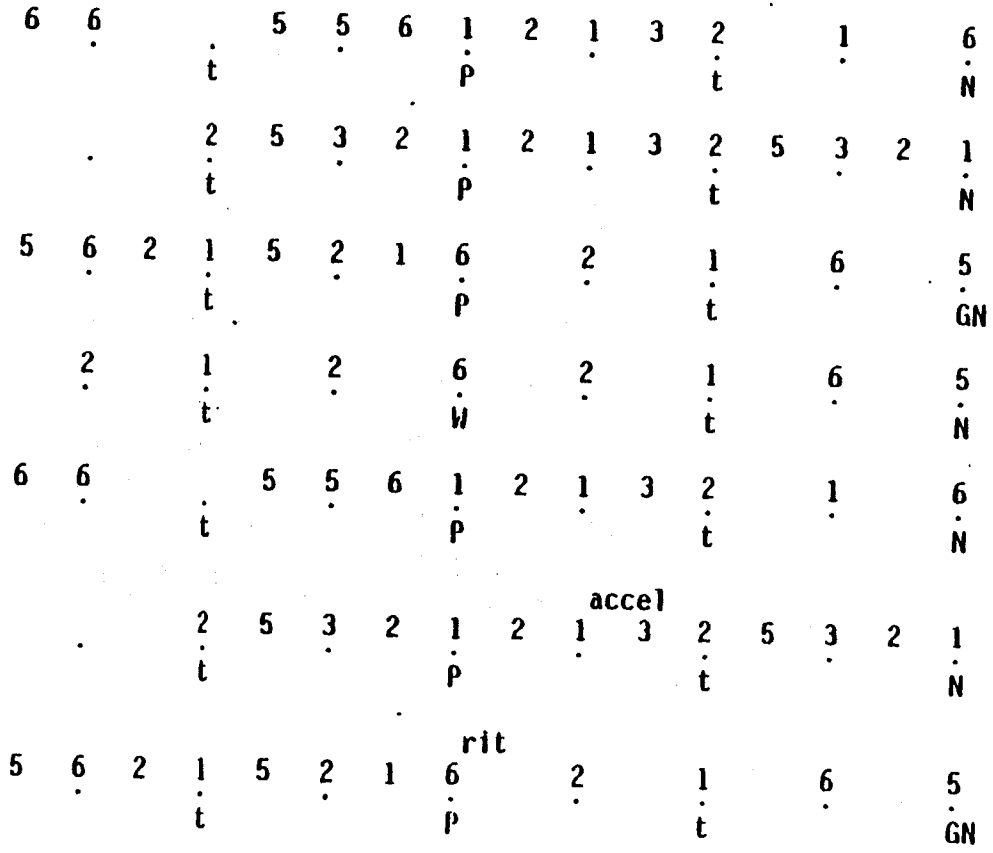
TRANSCRIPTION 6 (page 4)



TRANSCRIPTION 6 (page 5)

				kend			
6	6			2	( )		1
	·		·				·
			t	S			P
IV (bp=11)							
2	1	3	2		1		6
	·		·		·		·
			t				N
				kend			
	·		2	2	( )		1
			·				·
			t	S			P
IV (bp=11)							
2	1	3	2	5	3	2	1
	·		·		·		·
			t				N
5	6	2	1	5	2	1	6
	·		·		·		·
			t				P
						rit	
	2		1		6		5
	·		·		·		·
			t				GN
sl sanga							
III (bp=17)							
2	1	2	6	2	1	6	5
·	·	·	·	·	·	·	·
	t		W		t		N

TRANSCRIPTION 6 (page 6)



performance time 17'10"

APPENDIX D

LIST OF PIECES USED FOR DATA IN CHAPTER III

assigned number	structure	title	source	page number
1	lnc	Kuwi Apa Kuwi	Kodiron. Serat Tuntun-	14
2		Rena-Rena	an.	12
3	lnc	Gugur Nunung	Legowo. Karawitan	25
4		Serayu	Praktis, v.1.	26
5	lnc	Kandang Bubrah	Legowo. Karawitan Praktis, v.2.	47
6	ldr	Sedyalaras	Probhardjono. Gendhing	21
7		Sri Dirgayuswa	Ojawi, v.1.	15
8		Srikarongron		36
9		Sri Sinuba		30
10		Sriwibawa		45
11		Sriwidada		13
12	gd	Kuwung-Kuwung		24
13	ktw	Larasmaya		19
14		Sri Kacaryan		51
15	ldr	Ayun-Ayun	Probohardjono. Gendhing	21
16	ktw gd	Boyong	Ojawi, v.2.	27
17	lnc	Bendrong	Probohardjono. Gendhing-	199
18		Bindri	Gendhing.	87
19		Bubaran Nyutra		80
20		Dolo-Dolo		83
21		Kebogiro		78
22		Kebogiro Gambirsawit		80
23		Kebogiro Kedu		79
24		Manyar Sewu		11
25		Orek-Orek		83
26		Ricik-Ricik		200
27		Singa-Nebak		200
28		Surabayan		81
29		Tropongan		157
30		Tropong-bang		155
31		Wrahatbala		10
32	ldr	Asmarandana		211
33		Bedat		15
34		Candra-upa		98
35		Cluntang		91
36		Dwirada-meta		13
37		Eling-Eling Kasmaran		113

assigned number	structure	title	source	page number
38	ldr	Embat-Embat Penjalin	Probohardjono. Gendhing-Gendhing.	88
39		Erang-Erang		20
40		Geger Sakuta		209
41		Ginonjing		212
42		Giyak-Giyak		98
43		Gonjang		170
44		Gonjang-Ganjing		103
45		Gonjang-Serat		171
46		Jong-keri		215
47		Kagok-Madura		104
48		Kaki Tunggu Jagung		14
49		Kanda Manyura		205
50		Kembang-pepe		213
51		Kembang Tanjung		102
52		Lere-Lere		207
53		Lipur Sari		167
54		Liwung		216
55		Lompong-keli		91
56		Mangu		19
57		Manis		212
58		Mliwis		201
59		Mugi Rahayu		216
60		Pangkur		206
61		Peksi Kuwung		18
62		Pucung-Rubuh		195
63		Remeng		12
64		Sekar Gadung		214
65		Sembung-ilang		85
66		Slamet		210
67		Sobah		16
68		Sobrang		17
69		Srikaton		161
70		Sumirat		217
71		Uga-Uga		97
72		Uluk-Uluk		101
73		Wani-Wani		95
74	gd	Bang-Bang Wetan		191
75		Bondet		105
76		Bontit		130
77		Budyangganom		182
78		Candra		114
79		Capang		187
80		Damar-keli		184
81		Danaraja		150
82		Dandun		63
83		Galagotang		134
84		Gambir Sawit		109
85		Gandrung-Mangu		174

assigned number	structure	title	source	page number
86	gd	Gandrung-Manis	Probohardjono. Gendhing-Gendhing.	177
87		Gantal Wedar		33
88		Geger-Sore		126
89		Gendu		62
90		Genjong		121
91		Gliyung		181
92		Guntur		59
93		Kadaton Bentar		46
94		Kalunta		146
95		Kanyut		44
96		Kembang Tiba		51
97		Kenceng-Barong		132
98		Lambang-sari		165
99		Lana		67
100		Laras-ati		40
101		Lobong		192
102		Lokananta		71
103		Lontang-Kasmaran		144
104		Luntang		42
105		Madu-Kocak		128
106		Mas-Kumambang		35
107		Menyan-Kobar		138
108		Menyan-Seta		69
109		Montro		178
110		Onang-Onang		119
111		Prihatin		53
112		Pucung		194
113		Puspa Wedar		31
114		Ramyang		180
115		Renyep		111
116		Rondhon		153
117		Semiring		140
118		Semu Kirang		49
119		Sunggeng		136
120		Tali Murda		189
121		Titipati		28
122		Turi Rawa		55
123		Udan Sore		65
124		Widasari		168
125	ktw	Denda Gede		84
126		Langengita		92
127		Martapuran		172
128		Pawukir		198
129		Pucung		196
130		Puspagiwang		197
131		Puspawarna		196
132		Rajaswala		93
133		Subakastawa		90

assigned number	structure	title	source	page number
134	ktw	Suksma-ilang	Probohardjono. Gendhing-Gendhing	162
135	ktw gd	Ela-Ela		148
136		Gandakusuma		107
137		Jongkang		125
138		Kabor		24
139		Kawit		173
140		Krawitan		21
141		Lagu Kadempel		142
142		Sumedang		122
143		Tlutur		117
144	brn	Udan Mas	Siswanta. Gendhing-Gendhing Beksan I.	49
145		Wasana		48
147	ktw	Brondong Mentul	Siswanta. Gendhing-Gendhing Beksan II, ketawang	23
148		Ganda Mastuti		29
149		Ganda Sari		19
150		Hanjalgita		34
151		Kinanthi Sandung		27
152		Kinanthi Wentis Kengis		14
153		Kontap		32
154		Larasdriya		12
155		Madumurti		26
156		Madyahartati		38
157		Megatruh		44
158		Mijil Sulastri		47
159		Mijil Wedaringtyas		21
160		Pandayarasa		11
161		Pisangbali		30
162		Pocung		18
163		Purwaningsih		13
164		Puspanjala		37
165		Raharja		43
166		Rudatin		40
167		Sasangka		45
168		Sasmitabrangta		33
169		Sitawardawa		39
170		Srihartati		41
171		Sri Nawa		31
172		Sriwicaksana		25
173		Susilarini		42
174		Tarupala		28
175		Tawang Kusuma		15
176		Tawangsih		22
177		Tunggal Jiwa		10
178		Walagita		36
179		Wiragarini		35

assigned number	structure	title	source	page number
180	lnc	Gagak Setro	Siswanta. Teori dan	23
181		Kebogiro Manyarmilar	Praktik Karawitan.	23
182		Ketek		22
183		Runtung		21
184		Udan Rino		23
185	lnc	Uyun-Uyun		22
186	ktw gd	Loelo		56
187	lnc	Maesa Liwung	1004	
188		Tahu Tempe	1019	

APPENDIX E

FORMAL DESIGNS

Key to Abbreviations and Symbols Used in Formal Designs

capital letters	gongan-s
'	an alteration to the first half of the gongan represented by the letter preceding this superscript
"	another alteration, different from that of the one represented by the apostrophe superscript, to the first half of the gongan represented by the letter preceding this superscript
*	an alteration to the second half of the gongan represented by the letter preceding this superscript
m	mulur gongan
n	ngelik gongan
-	when there is more than one gongan in the ngelik section of a piece, the gongan-s are connected with hyphens
( )	the material enclosed by the parentheses can, but does not have to, be performed
: :	the material enclosed by the colons may be played either once or a number of times
; ;	the material enclosed by the semicolons may be played once or a number of times and is used only inside a larger section enclosed by colons
/	a slash divides the merong section, to its left, from the inggah section, to its right
ldr	a piece in the ladrang structure

formal scheme	formal design	# of occurrences	sources
:;__;_^{n}:	:;A;B-C^{n}:	3	130,166,178
	:;A;B-C-D^{n}:	16	129,149,153,156, 157,160,162,164, 165,168,171,172, 175,176,177,179
	:;A;B-C-C*^{n}:	1	152
	:;A;B-C-B*^{n}:	1	154
	:;A;B-C-A^{n}:	6	13,147,150,155, 158,159
	:;A;B-C-A'^{n}:	2	132,173
	:;A;B-B-C^{n}:	2	128,148
	:;A;B-B'-C^{n}:	1	126
	:;A;B-B-B'^{n}:	1	133
	:;A;B-B*-C^{n}:	1	163
	:;A;B-B*-B'^{n}:	1	161
	:;A;B-A'-A^{n}:	2	131,167
	:;A;A'-B-C^{n}:	1	170
	:;A;A*-B-C^{n}:	1	169
	:;AB;C-C'-B^{n}:(:AB:)	1	125
	:;A;B-C-C'-C'*-C'**-C'***^{n}:	1	127
:__:	:ABCDA:	1	151
	:ABCDE:	1	174
	:ABCC'A':	1	134
	A:ABCDC*:	1	14

Table 12. Formal Designs of Pieces in the Ketawang Structure.

formal scheme	formal design	# of occurrences	sources
:__:/:__:	:AB:/:ldr:	1	139
	ABC:DA':D'*/:ldr:	1	140
	:ABC:/:ldr:	1	137
	:ABCD:ABCD*/:ldr:	1	143
	:ABCD:A*E/:ldr:	1	16
	ABCDC*EF(:C'DC*EF:)C'*/:ldr:	1	135
	:ABCDEF:A*/:ldr:	1	186
	:AA*BB*:AA*/:ldr:	1	141
	A:;BA';B*-A"^{n}:BA'*/:ldr:	1	138
	:;AA';B-A'-C^{n}:/:ldr:	1	136
	:;A;B-C-D-A'^{n}:/:ldr:	1	142

Table 13. Formal Designs for Pieces in the Ketawang Gendhing Structure.

formal scheme	formal design	# of occurrences	sources
:__:	:AB:	3	1,28,184
	:ABC:	3	19,27,181
	:ABCD:	7	3,22,24,25,29, 183,188
	:AA*BC:	1	185
	:ABB'A':	1	23
	:AABC:	1	4
	:AABB:	7	18,20,26,30,144, 180,182
	:AAA'A':	1	5
	:AABCD:	1	145
	:AA*BBC:	2	2,31
	:AABBC:	1	21
	:AABCCD:	1	187
	(:A:):AA*BBC:	1	17

Table 14. Formal Designs of Pieces in the Lancaran, Lancaran Mlaku, and Bubaran Structures.

formal scheme	formal design	# of occurrences	sources
:__:	:A:	2	46,59
	:AB:	4	42,54,67,73
	:AB:(A)	1	70
	:AB:A	3	35,52,55
	A:A*A':	2	9,61
	A:A'A":	1	10
	:ABC:	3	34,43,49
	:ABC:(A)	1	40
	:ABC:(AB)DE	1	33
	:ABB:(AB)(A)	1	50
	A:A'BA":	1	45
	:AA'A":	1	56
	:ABCD:	2	39,68
	:ABCD:ABC	1	63
	A:BCDA':A*A*	1	36
	:AABC:	1	65
	:AABB:	1	71
	:AABB:(AAB)(AA)(A)	2	58,62
:;__;_^{n}:	:;A;B^n:	2	57,69
	:;A;B^n:(:A:)	1	66
	:;A;A*A^n:A	3	44,51,53
	:;A;A*B-A^n:A	1	72
	:;A;B-C-D^n:(A)	1	47
:__::__:	:A::A*B:	2	6,7
	:A::A*B:AA	1	48
	:AB::CD::AB:	1	38
	:A::A^m:	5	11,15,32,41,64
:__::(;__;_^{n})__:	:A::(;A^m*B^n;)A^m:	3	8,37,60

Table 15. Formal Designs of Pieces in the Ladrang Structure.

formal scheme	formal design	# of occurrences	sources
:__:/:__:	:A:/:B:	1	112
	A:A':/:B:	1	90
	:A:A*/:B:	12	76,83,89,91,95, 98,104,105,106, 107,109,120
	A(:A':)A'*/:B:	5	75,81,87,88,116
	A(:BA:)B*/:C:	4	86,94,101,103
	A(:BA':)B*/:C:	1	85
	A(:BA:)B*/:CD:	9	77,82,99,102, 111,113,118,119, 122
	AB(:CAB:)C*/:D:	2	12,100
	AB(:CB:)C*/:D:	1	97
	(:ABA*B':)ABA*B'*/:CD:	1	93
	A(:BCD:)BCD*/:EFG:	1	92
	:AB:A/:CD:	1	74
	:AB:A/:CD:C	1	114
	:AB:A*/:C:	1	80
	:AB:A*/:CD:C	2	79,110
	AB(:A'B:)A'*/:CD:	3	78,108,123
	:ABB':A*/:CDD':	1	117
	AB(CD)C*/:EF:E	1	121
:(;__;_^{n})__:/:__:	(;A;A^n):A:/:B:	2	115,124
	:A:(A^n)(:A:)A*/:B:	1	96
	A(;A';A^n)(:A':)A'*/:B:	1	84

Table 16. Formal Designs of Pieces in the Gendhing Structures.

APPENDIX F

DATA ON SEQUENCES OF PIECES

structural sequence	pieces	pieces	pieces
gd merong	Cucur-bawuk	Pareanom	Lambang-sari
inggah	Pareanom	Glebag	Lambang-sari
ladrang	Srikaton	Lipur-sari	Lipur-sari
ketawang	Suksma-ilang	Suksma-ilang	Suksma-ilang
ayak-ayak	Slendro Manyura	Slendro Manyura	Slendro Manyura
slepegan	Slendro Manyura	Slendro Manyura	Slendro Manyura
sampak	Slendro Manyura	Slendro Manyura	Slendro Manyura
(source)	1009	1014	1017
gd merong	Randanunut		
inggah	Randanunut		
ladrang	Moncer		
ketawang	Kinanthi Pawukir		
lancaran	Walang Kekek		
(source)	1013		
gd merong	Rondhon		
inggah	Rondhon		
ladrang	Gonjang-Ganjing		
ayak-ayak	Slendro Sanga		
slepegan	Slendro Sanga		
(source)	1021		
gd merong	Bondet Mataram		
inggah	Bondet Mataram		
ladrang	Kagok Madura		
slepegan	Slendro Sanga		
(source)	1015		
gd merong	Jangkung Kuning		
inggah	Jangkung Kuning		
ketawang	Pucung		
ladrang	Randa Ngangsu		
slepegan	Pelog Barang		
(source)	1018		

structural sequence	pieces	pieces	pieces
gd merong	Titipati	Onang-Onang	Widasari
inggah	Titipati	Onang-Onang	Widasari
ladrang	Siyem	Tirtakencana	Rangayu; Rujak Jeruk
(source)	1007	1007	1013
gd merong	Tejanata	Buyonggo	Tejanata
inggah	Tejanata	Buyonggo	Tejanata
ladrang	Sembawa; Playon	Sobrang	Playon
(source)	1029	1032	1032
gd merong	Lambang		
inggah	Lambang		
ladrang	Puspadento		
(source)	1032		
gd merong	Irim-Irim		
inggah	Irim-Irim		
ketawang	Dempo		
(source)	1032		
gd merong	Majemuk		
inggah	Majemuk		
slepegan	Slobog		
(source)	1012		
gd merong	Glewang Gonjing		
ladrang	Ginonjing		
ketawang	Sinom Rog-Rog Asem		
slepegan	Slendro Manyura		
(source)	1018		
gd merong	Logodang	Rujak Sentul	
ladrang	Eling-Eling	Srundeng Gosong	
ketawang	Gondang Kasih	Gambuh	
lancaran	Gula Klapa	Tahu Tempe	
(source)	1012	1019	
gd merong	Sumedang		
ladrang	Gonjang-Ganjing Leto		
ketawang	Cakrawala		
(source)	1010		

structural sequence	pieces	pieces	pieces
gd merong	Kembang Widara	Muncar	Dindang Sumbawa
ladrang	Canglek	Sumyar	Ngeksiganda
(source)	1008	1008	1010
gd merong	Randu Kentir	Tanggul Kuwung	Renyep
ladrang	Ayun-Ayun	Pacul Gowang	Eling-Eling Kasmaran
(source)	1015	1020	1019
gd merong	Kenyawudu	Pancatnyana	Bandhilori
ladrang	Bribil	Srikawuryan	Eling-Eling Kasmaran
(source)	1026	1022	1020
gd merong	Mesem	Gandakusuma	Larawudhu
ladrang	Larasdriya	Hanorraga	Clunthang Mataraman
(source)	1022	1022	1020
gd merong	Hasrikaton	Sumedang	Loro-Loro Gendhong
ladrang	Manis Betawan	Sanggalewang	Loro-Loro Topeng
(source)	1023	1028	1020
gd merong	Mandalpati	Amongrara	Loro-Loro Gendhong
ladrang	Agun-Agun	Sumyar	Loro-Loro Topeng
(source)	1029	1032	1023
ladrang	Tirtakencana	Perkutut Manggung	Modatama
ladrang	Gegot	Gondang Gandung	Bribil Gonjol
(source)	1001	1002	1002
ladrang	Pangkur		
ladrang	Onde-Onde		
(source)	1016		
lancaran	Singah Nebah		
ladrang	Bima Kurda		
lancaran	Singah Nebah		
(source)	1004		
lancaran	Bendrong		
ladrang	Pucung Rubuh		
lancaran	Bendrong		
ladrang	Gandrung Manis		
(source)	1016		

APPENDIX G

GLOSSARY

arang	lit. "infrequent"
ayak-ayak	a free structure with 8 bp per CM (Yogyanese) or 4 bp per CM (Solonese)
balungan	a single octave melodic outline, almost always realized on one or more of the balungan instruments (see "saron" and "slenthem")
balungan-pulse	the balungan-'s underlying even pulse, void of any rhythmic variety
barang	a peloq pathet
bentuk kemuda	a free structure with 4 bp per CM (Solonese)
bp	see "balungan-pulse"
bubaran or bibaran	a strict structure of 16 bp with four kenongan-s per gongan, using kempul (Yogyanese)
buka	introduction to a piece
CM	see "colotomic module"
colotomic	a term used in many Western scholarly studies on gamelan music to mean regular recurring melodic accentuation
colotomic module	the basic colotomic pattern: $\overset{N}{P/G}\ \overset{N}{}$ which is used by all of the free structures
colotomic patterns	patterns created by the composite activities of the colotomic instruments, void of any relationships to other musical phenomena
colotomic structure	a musical structure created by the relationship of a colotomic pattern to a balungan-pulse
density referent	the fastest subdiving pulse in a given musical texture
DR	see "density referent"
Ekoprawiro	a Javanese dance

engkuk-kemong	a colotomic instrument consisting of two small gongs (either vertically or horizontally suspended) which is played only in pieces in the slendro tuning system
free structure	a colotomic structure which can have gong-phrases of variable length
Gambir anom	a Javanese dance
gamelan	generic name for the predominantly gong-percussion orchestras found throughout Malaysia and Indonesia -- in this thesis "gamelan" will refer specifically to Central Javanese gamelan orchestras and their tradition
gatra	a melodic unit consisting of four bp in irama-s seseg, I, and II, and two bp in irama-s III and IV
gender	an elaborating instrument
gendhing	1. a gamelan piece 2. a four kenongan-per-gongan structure, not using kempul (this meaning is used throughout this thesis)
gendhing ageng	a strict structure with two or four 64 bp kenongan-s per gongan, not using kempul (Yogya)
gendhing alit	a strict structure with two or four 16 bp kenongan-s per gongan, not using kempul (Yogya)
gendhing dolanan	lit. "children's pieces" pieces usually in lancaran, ladrang, or free structures which, due to the non-serious nature of their texts, are enjoyed by children and adults alike
gendhing tengahan	a strict structure with two or four 32 bp kenongan-s per gongan, not using kempul (Yogya)
gong	short for "gong ageng" and, when it is used as a substitute, "gong suwukan"
gong ageng	an accentuating instrument that punctuates the end of musical structures
gongan	the musical structure and balungan beginning immediately after a stroke of gong and ending on the next stroke of gong

gong suwukan	an accentuating instrument, also called siyem, that punctuates the end of musical structures
inggah	the second section of pieces with two kenongan- and four kenongan-per-gongan structures, not using kempul
irama	the rhythmic relationship between the density reference (DR) and the balungan-pulse (bp): there are generally five irama-s acknowledged: seseg, I, II, III, and IV
kempul	an accentuating instrument: vertically suspended set of gongs
kempyang	an accentuating instrument: two small horizontally suspended gongs played only in the pelog tuning system
kendelan	lit. "to stop"; "to halt": an internal structural stop, also called "mawi mandeg" (both the act of interrupting and the point at which the interruption occurs are called "kendelan")
kenong	an accentuating instrument: horizontally suspended set of gongs
kenongan	the musical structure and balungan beginning immediately after a stroke of kenong and ending on the next stroke of kenong
kerep	lit. "frequent"
ketawang	a strict structure of 16 bp with two kenongan-s per gongan, using kempul
ketawang gendhing	strict structures with two kenongan-s per gongan, not using kempul
kethuk	an accentuating instrument: a horizontally suspended gong
Klana	a Javanese dance
ladrang	a strict structure of 32 bp with four kenongan-s per gongan, using kempul
lancaran	a strict structure of 8 bp with four kenongan-s per gongan, using kempul

lancaran mlaku	a strict structure of 16 bp with four kenongan-s per gongan, using kempul, also called lancaran mlampah (Solonese)
Lebdosari	name of a piece (in this study, Chapter II)
lima	a pelog pathet
macapat	sung poetry
manyura	a slendro pathet
mawi mandeg	lit. "with stopping": see "kendelan"
merong	the first section of pieces with two kenongan- and four kenongan-per-gongan structures, not using kempul
minggah	lit. "to rise"; "ascent": the process of going to the inggah section (Solonese)
molak-malik	lit. "to keep changing": switching from one tuning system to the other in the middle of a piece
mulur	lit. "to stretch"; "expand"
ndawah	(Yogyanese) see "inggah"
nem	1. a slendro pathet 2. a pelog pathet
ngelik	section of a piece played upon a specific melodic signal
nyamat	a pelog pathet
palaran	a single melodic line, sung by a soloist, floating over a series of drones played on the colotomic instruments
pangkat ndawah	(Yogyanese) see "umpak minggah"
Pangkur	name of a piece (in this study, Chapters II and IV)
pathet	mode
pelog	seven-tone (to the octave) Javanese tuning system
playon	a free structure with 2 bp per CM (Yogyanese)

rasa	emotional feeling
sampak	a free structure with 1 bp per CM (Solonese)
sampak gara-gara	a free structure, considered a stage of playon, which has 1 bp per CM (Yogyanese)
sanga	a slendro pathet
saron	general name for the family of single-octave balungan instruments which come in three sizes: 1. demung (lowest octave) 2. barung (middle octave) 3. panerus (highest octave, more commonly called "peking")
Sekar Gadung	name of a piece (in this study, Chapter II)
selingan	lit. "intersperse": inserting a piece into another piece
siyem	see "gong suwukan"
slendro	five-tone (to the octave) Javanese tuning system
slenthem	a balungan instrument
slepegan	a free structure with 4 bp per CM (Yogyanese) or 2 bp per CM (Solonese), also spelled "srepegan"
Solo	see "Surukarta"
Solonese	performance practice characteristics and details associated with the gamelan style found in the city of Surakarta
strict structure	a colotomic structure which has gong phrases of consistent length
Surakarta	a Central Javanese city, also called Solo, which is one of the two main centers of the Central Javanese gamelan tradition (see also "Yogyakarta")
suwuk	lit. "to stop": the end of a piece
talu	overture to a theater production
umpak minggah	transitional section to get from the merong section to the inggah section

uran-uran	see "*palaran*"
wayang kulit	1. shadow puppet theater 2. shadow puppet
wayang orang	human actor-dancer theater, also called "*wayang wong*"
wela	absence of a colotomic event at a structurally important position
Yogya	see "Yogyakarta"
Yogyakarta	a Central Javanese city, also called Yogya, which is one of the two main centers of the Central Javanese *gamelan* tradition (see also "Surakarta")
Yogyanese	performance practice characteristics and details associated with the *gamelan* style found in the city of Yogyakarta

APPENDIX H

TAPE RECORDING

Two seven-inch reels containing copies of the six transcribed performances found in Appendix C are deposited with the original copy of this thesis.

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DISCOGRAPHY

Performers

RRI-Yogyakarta = Gamelan Kesenian Djawa Studio Yogyakarta (the radio station gamelan musicians in Yogyakarta)

RRI-Surakarta = Gamelan Karawitan Studio Radio Republik Indonesia, Surakarta (the radio station gamelan musicians in Surakarta)

Paku Alaman = the gamelan musicians from the Paku Alaman palace in Yogyakarta

Mangkunegaran = the gamelan musicians from the Mangkunegaran palace in Surakarta

Surakarta = the gamelan musicians from the main palace in Surakarta

Nartosabdho = a famous puppeteer and musician with his own gamelan group

Soeroto = a puppeteer with his own gamelan group

assigned source number	
1001	Lokananta ACD-001 "Klenengan Gobjob" cassette. RRI-Surakarta.
1002	Lokananta ACD-002 "Klenengan Gobjob" cassette. RRI-Surakarta.
1003	Lokananta ACD-003 "Pangkur Djenggleng" cassette. RRI-Yogyakarta.
1004	Lokananta ACD-010 "Gending Soran" cassette. RRI-Surakarta.
1005	Lokananta ACD-011 "Gatutkatja Gandrung" cassette. RRI-Surakarta.
1006	Lokananta ACD-012 "Sambul Gending" cassette. RRI-Surakarta.
1007	Lokananta ACD-014 "Titipati" cassette. RRI-Surakarta.
1008	Lokananta ACD-015 "Kinanti Djura Demung" cassette. RRI-Surakarta.

assigned source number

1009 Lokananta ACD-022(A-H) "Gatutkaca Sungging" cassette. Nartosabdho.

1010 Lokananta ACD-024 "Uyon-Uyon Gobyog" cassette. RRI-Yogyakarta.

1011 Lokananta ACD-025 "Condong Raos" cassette. Nartosabdho.

1012 Lokananta ACD-033 "Logondang" cassette. RRI-Surakarta.

1013 Lokananta ACD-034 "Randanunut" cassette. RRI-Surakarta.

1014 Lokananta ACD-036(A-H) "Kakrasana Rabi" cassette. Soeroto.

1015 Lokananta ACD-038 "Randu Kentir" cassette. RRI-Surakarta.

1016 Lokananta ACD-039 "Pangkur" cassette. RRI-Surakarta.

1017 Lokananta ACD-051(A-H) "Kresna Kembang" cassette. Nartosabdho.

1018 Lokananta ACD-057 "Jangkung Kuning" cassette. RRI-Surakarta.

1019 Lokananta ACD-058 "Rujak Sentul" cassette. RRI-Surakarta.

1020 Lokananta ACD-070 "Larawudho" cassette. RRI-Surakarta.

1021 Lokananta ACD-071 "Rondhon" cassette. RRI-Surakarta.

1022 Lokananta ACD-074 "Pancatnyana" cassette. RRI-Surakarta.

1023 Lokananta BRD-002 "Gending Djawa (II)" 33rpm. RRI-Surakarta.

1024 Lokananta BRD-003 "Gending Djawa (III)" 33rpm. RRI-Surakarta.

1025 Lokananta BRD-004 "Gending Djawa (IV)" 33rpm. RRI-Surakarta.

1026 Lokananta BRD-007 "Gending Djawa (VII)" 33rpm. RRI-Yogyakarta.

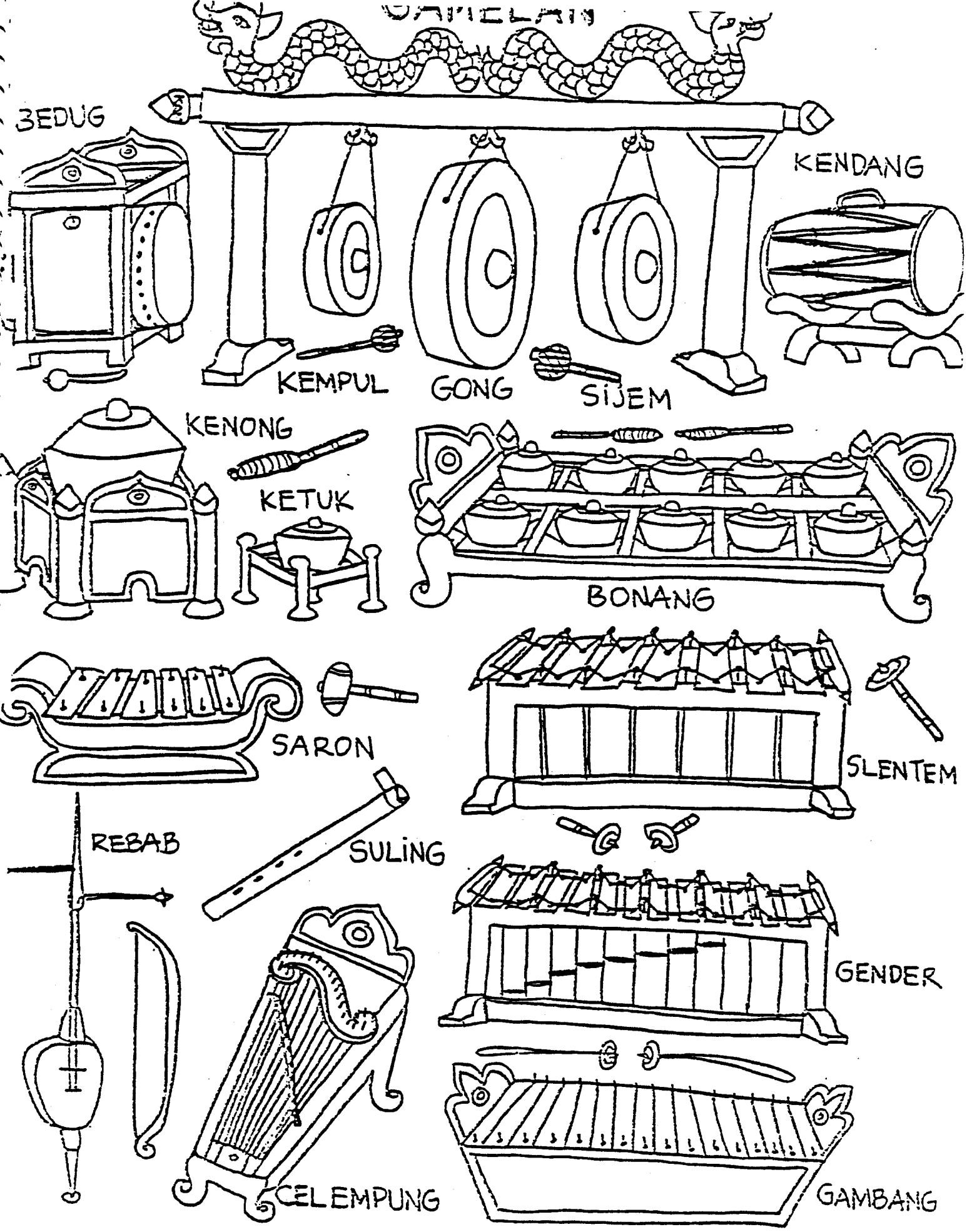
1027 Lokananta BRD-009 "Gending Djawa (IX)" 33rpm. RRI-Yogyakarta.

1028 Lokananta BRD-010 "Gending Djawa (X)" 33rpm. RRI-Yogyakarta.

1029 Nonesuch H-72044 "Javanese Court Gamelan" 33rpm. Paku Alaman.

1030 Nonesuch H-72074 "Javanese Court Gamelan, Vol. II" 33rpm. Mangkunegaran.

assigned source number	
1031	Philips 631 209 PL "Gamelan Music from Central Java" 33 rpm. Surakarta.
1032	Field tape recorded on August 12, 1973, by Roger Vetter, cassette. Paku Alaman.


BEDUG
KEMPUL
GONG
SIJEM
KENDANG
KENONG
KETUK
BONANG
SARON
SLENTEM
REBAB
SULING
GENDER
CELEMPUNG
GAMBANG