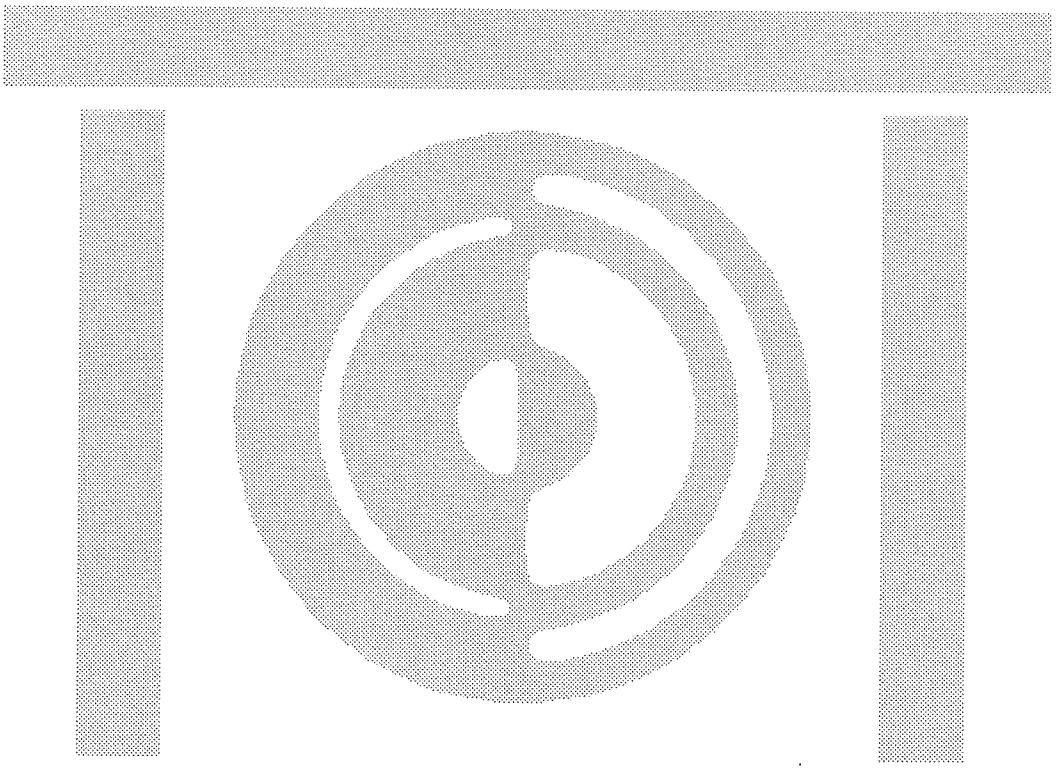
Angklung Sampler Book

Barbara Benary



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BARBARA BENARY
1993

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Contents

Introduction

This booklet is designed to make available a cross sampling of repertoire for the Balinese Angklung ensemble, for use in America.

An angklung ensemble consists of metallophones in three octaves tuned to the first four pitches of the slendro scale. Two of the pieces in this collection also use a fifth pitch below the other four, what would on a Javanese gamelan be considered the low 6. Some of the pieces also include parts for the suling and for the tuned angklung rattles. Two of the contemporary pieces here included are for the tuned rattles alone.

In the absence of Balinese angklung instruments, the repertoire can be performed on Javanese slendro instruments, with appropriate hard mallets. The intrepid might also consider rendering them on non-Indonesian instruments such as "Orff" keyboards, marimbas and xylophones, etc. although the translation to equal temperament tuning will certainly change the flavor of the resultant music.

Please consider all the traditional pieces in this booklet as arrangements. In some I have made as true a transcription as my ear allows. In others I have, after making the transcription, created a purposefully simpler arrangement. This is not meant an any disrespect to the full intricacy of Balinese artistry. In Indonesia certain aspects of the rendition of any piece are indeterminate, to be worked out by the ensemble that performs it. These include numbers of repeats, elements of tempo, contrast and orchestration. I feel that to simplify some of these elements does not necessarily do harm to what is essentially Balinese about the music.

My arrangement Margapati, for instance, was worked out for an ensemble of seven American upper elementary school children and is therefore not as intricate as the arrangement recorded on the Folkways record "Music from the Morning of the World" by twenty or more Balinese. It is based on only the first main section of the piece. My arrangement should be considered as a starting point. The ear is the true teacher. Players are encouraged to make their own more elaborate arrangement it if they wish after hearing the source recordings from which it came: the Folkways and also the lp issued by University of Northern Illinois entitled "West Meets East," or any other rendition of the piece by Balinese gamelan they may find.

The first three sections of the booklet are samples of pieces in three different styles. The first group are my transcriptions of three pieces taught by I Wayan Suweca in California in 1974, which I then checked against the transcriptions of Professor Joseph Pacholczyk at U.M.C.B.

Because I have always been intrigued by the rattles from which the ensemble derives its name, I have included three pieces in a remote, old style known as "bamboo angklung" to distinguish it from the all-metallophone ensemble. These three pieces are somewhat simplified transcriptions from a Balinese cassette entitled "Tabuh Angklung Bambu." These require four angklung rattles and at least two suling (end-blown flutes) to complete the ensemble.

Kebyar is the best known Balinese gamelan style, and a number of pieces for angklung instruments are kebyar pieces, characterized by a simple pokok (root melody) and extremely complex elaborating or ornamentation parts, and a multitude of extreme tempo and dynamic contrasts.

The notation I have used for the Balinese pieces is a number notation based on the Javanese model. For the four notes of the slendro angklung scale the numbers are, from lowest to highest:

1 = deng (Balinese mnemonic name)
2 = dung
3 = dang
5 = ding

Two of the pieces make occasional use a fifth pitch lower than 1, having their origin in the 5-tone angklung repertoire of northern Bali. The extra low pitch is transcribed as 6 (dong). If one is playing them on a 4-tone set, try substituting a 3 for the 6.

My choice of 1 2 3 and 5 to represent the four notes may be arbitrary, but is based on two facts: first, the actual interval between the pitches on an angklung scale varies but the interval between the third and fourth notes is usually larger, reminding the western ear of the scale intervals 1,2,3,5. Secondly, a decade ago at the time I began this transcription project, the majority of Americans involved with gamelan were familiar with the Javanese system and those involved in Balinese gamelan did not use transcriptions at all. Whether or not this is currently true I do not know. However I have borrowed the Javanese cipher-system for use in this book. The numbers 1,2,3,5 equate with the notation used in Javanese gamelan music for the first four pitches of the slendro scale. The convention of end-beats rather than downbeats has been followed as well. For each group of four notes, the stress is on the fourth rather than the first, as in Javanese traditional notation.

I have also used the Javanese term "buka" to indicate the introductory solos which identify each piece. According to McPhee, the equivalent Balinese term would be pengawit or gihing.

Other notational devices:

- the dot following a note indicates a continuation of the note for an additional beat.
- I use an x in place of the dot to indicate a beat of actual rest. An x appearing over a note indicates the note is struck while damping the key with the other hand.
- The line over a pair or group of notes indicates double tempo.
- And arc over two notes and/or dots indicates a tripple rhythm. i.e.

The contemporary pieces here included are a sampling from the repertoire of Gamelan Son of Lion ensemble in New York. Each composer uses his own style of notation. In some of these notations the number 4 is used in place of 5 to indicated the highest of the four pitches.

Players should be familiar with the names of the angklung ensemble instruments: jegogan (bass), gangsa (middle octave) kantil (high octave) are the instruments for which the main parts are notated. Kempur (gong) parts are indicated usually with a G for gong. Suling (end-blown flute) and angklung (bamboo rattle) parts are notated separately in some pieces. In pieces where there are no separate parts for these instruments, they may play along with either the jegogan or gangsa parts. The angklung ensemble also includes cheng-cheng (a set of up to 5 cymbals), kendang angklung (small drums played with sticks) and sometimes reong (small knobbed kettles in two pairs, each pair mounted at the ends of a short barbell held across the lap). Reong can play variations on the gangsa parts. Drum and cymbal parts are improvised.

I also use the terms kotekan and angsel. Kotekan means interlocking parts wherein pairs of same-octave gangsa divide the notes of a rapid passage. In the four-note kotekan style found in the pieces in this booklet, one instrument plays pitches 1 and 2, the other pitches 3 and 5. McPhee calls these parts by the Balinese names molos and nyangsih. Occasionally there may also be a third part called kilitan ("binder"). More commonly one encounters the names polos and sangsih. The polos is the part that coincides most often with the main beats of the core melody played by the jegogan. Angsel means a rhythmic flourish which can be thrown in as a variation in an ongoing kotekan. However not all pieces contain these devices.

Needless to add, these notations are intended for learning purposes only. Neither Balinese nor any other Indonesian musical ensembles perform from notation, and until this century all learning was by rote. Let these be but a stepping stone to the music.

This booklet does not include any detailed description of Balinese angklung practice, instruments, history or evolution. For these the reader is referred to the authorative work: Colin McPhee's Music in Bali (Yale University Press, 1966). Chapter 15 focuses on angklung music in particular and chapter 7 covers variations in angklung tuning. McPhee also provides a few transcriptions of angklung pieces in staff notation. Two other good sources on Balinese music are also currently available, though neither focuses on gamelan angklung in particular. These are Michael Tenzer's Balinese Music (Periplus Editions, 1991; distributed by University of Washington Press), and Balungan vol. 4 #2, fall 1990, the magazine's Bali issue. (published by American Gamelan Institute, ~~box A36, Hanover, NH~~ BOX 1052, LEBANON, NH 03766)

Barbara Benary
Stony Point, N.Y.
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PIECES FROM I WAYAN SUWECA

McPhee describes the gamelan angklung repertoire as falling into two types of pieces: those wherein the melody is in the jegogan, and those where the melody lies in the gangsa parts. In the former, the root melody (pokok) is usually an 8 or 16 beat ostinato; the gangsa and other instruments perform elaborations on this part. In the latter type the melody, found in the gangsa part, is more elaborate and irregular, and the jegogan part simply stresses notes of the melody at intervals. The three pieces that follow fall into this latter category, whereas the kebyar-style piece Margapati is of the former type.

Instruments required are one pair of jegogan and several pairs each of gangsa and kantilan, a pair of drums (it is quite possible though not authentic to get by with a single drum) and a single gong. Kantilan play the same part as the gangsa. Reyong are optional and if used would double the gangsa. Cheng-cheng may accompany the main parts of the pieces.

Each piece has a main section which can be repeated indeterminately, usually with tempo contrasts. Sometimes the contrasts are accomplished by gradual acceleration/deceleration, but more often they are abrupt jumps from one tempo to the next. The dynamic level is most often loud and the tempo most often rapid. This is an energetic music. Bamboo angklung and suling are not required. in the orchestration of these pieces, but they can provide a nice variety if used in some of the slower repeats of the main sections.

One further element of elaboration is not reflected in the notation, but is taken for granted. During the main section of the piece, the gangsas and kantilan divide into pairs. The lower player of each pair plays the notes as written. The upper player substitutes a 5 for every 1 in the melody. Thus every time the 1 is sounded, it comes out a two-note chord: 1 and 5.

In describing the details of performance before each piece I make reference to the specifics of dynamic shape given in the source performance recording, which was made at California Institute for the Arts, Berkeley California on Aug. 6, 1975. I do not think these guidelines need be interpreted inflexibly.

GINEMAN

The piece begins with a tightly structured but improvisatory sounding introductory section (called gineman). The tempo of the melodic phrases is generally rapid, though not metered. The end note of each phrase is punctuated by the jegogan and the instruments are let ring for a brief moment. This is followed by a "rattle" - a series of unison repeats of a note that accelerate and decrescendo rather like a ball bouncing to a halt. No actual angklung rattles are necessary to the piece, but I like the effect of doubling these "rattle" notes with the bamboo rattles. In the score the rattle note is indicated by a wiggly line over the note.

At the end of the introductory section, a single gangsa solo line (pengawit - or, in Javanese, buka) leads into the main section of the piece. The ensemble joins in on the last note of the line: pitch 5.

The main section proceeds at a moderately rapid tempo. There is an angsel just before the gong. This is the juncture for tempo change. In the brief space before the gong the drummer(s) set a new tempo or reaffirm the old one. A slower tempo is performed at a quieter volume, a faster one louder. After the initial time through the piece the repeats are alternately faster and slower. These are moderate tempo variations, not extreme.

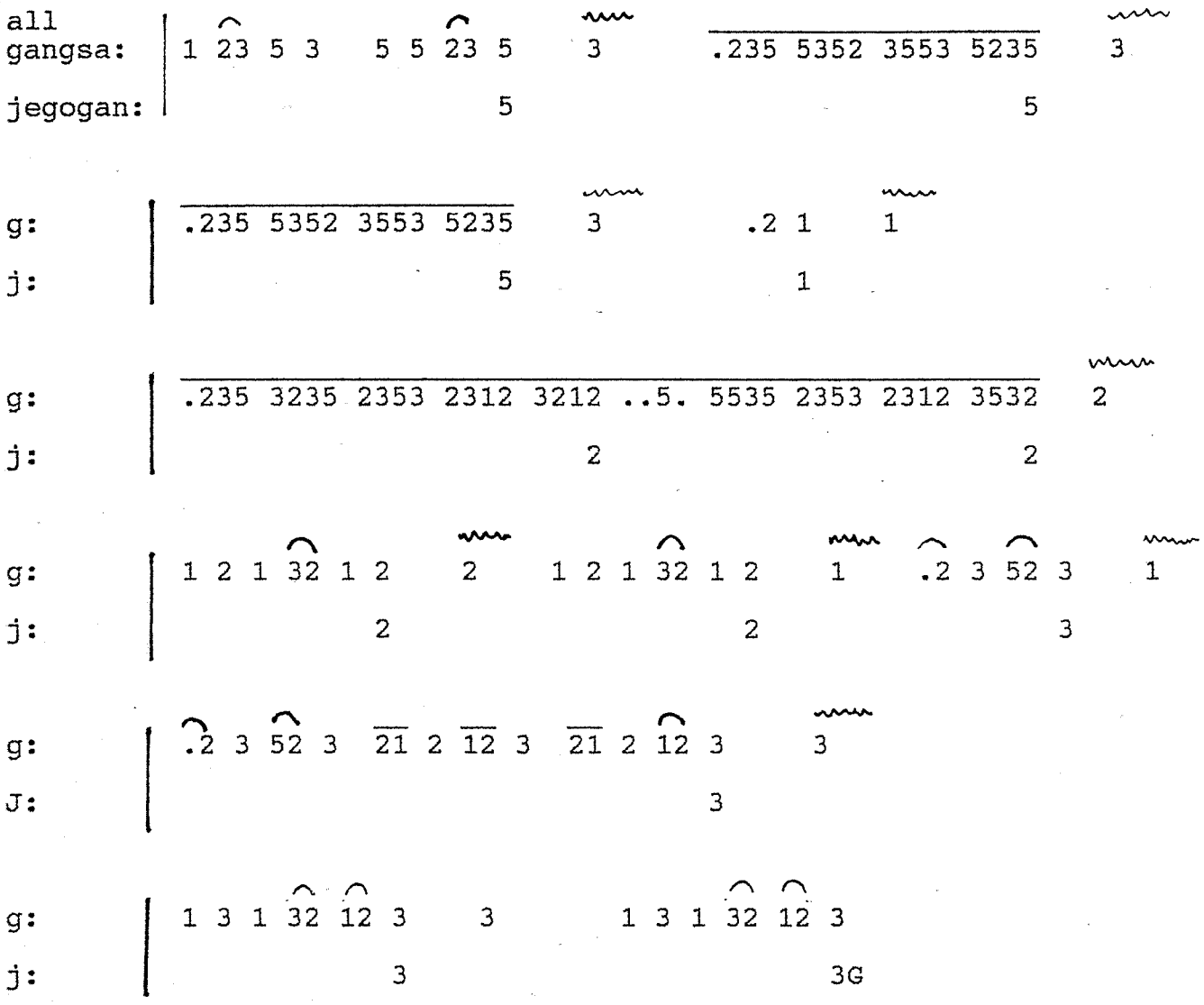
In the main section, each pair of gangsa divide into an upper and a lower part. The lower part reads the score as written. The upper part substitutes pitch 5 for all the 1's. In the coda there is a brief flourish of kotekan (interlocking parts) by the gangsa. Here the upper and lower parts are written separately.

The coda is approached from a slower repeat. Approaching the transition point (marked * in the score by a star), the ensemble increases volume, perhaps slowing slightly more. At the transition point the tempo doubles. That is, the 1 with the * over it becomes the first double speed note.

A final "rattle" on pitch 3 by angklung and gangsas is an optional ending event, although in my recorded source performance the "rattle" is performed by the drum alone.

The kempur (gong) is notated as a G next to the jegogan note on which it is struck.

Intro



(continued)

Gineman, continued

buka gangsa: .2 1 2 3 5 5 5 3 2 1 . 5

(group & gong) 5G

(first time only)
gangsa: | 3535 3535 3212 3532

jegogan: \ . . 1 2

g: | 3232 3232 3553 5235 3535 3535 3212 3532

j: \ . . 3 5 . . 1 2

*

g: | 2332 3123 5321 2321 1112 1235 .322. 2..2

j: \ . 3 . 1 . 5 . 2G

g: | 3232 3232 3553 5235 3535 3535 3212 3532

j: \ . . 3 5 . . 1 2

REPEAT THE THREE FULL LINES MANY TIMES

coda (double tempo)

g: sangsa | 55x5 x5x2 2x5x 5x35 x5x3 5x3x 53x5 35x3

g: polos | 11x1 x1x2 2x1x 1235 x12x 12x2 1x21 x123

j: \ . 2 . 5 . 2 . 3G

g: (after a pause) 3

BARANGANANG

The title means a piece for accompanying the barong dance.

The introduction (buka) is performed by a single gangsa and single jegogan. All other instruments join at the first gong.

The main part of the piece is performed with full kotekan. Both the gangsa pairs and kantilan pairs divide their notes into sangsa (upper) and polos (lower).

Again the main section is repeated with contrasts. These are contrasts of volume more than tempo. The first few times through the tempo and volume are more or less constant. Then the plain repeats are alternated with repeats in which the piece grows loud in the middle and on through the gong. Then the angsel is inserted in the first line (see below). After the angsel, the group volume drops abruptly for the repeat of the line in which there is no angsel. The moderate volume continues until the drummer signals to increase volume again.

To end, the drummer decreases the tempo sharply after the angsel and holds this moderate volume to the next and final gong.

The drummer ends with the "rattle" effect.

First line kotekan with angsel(*)

									*
sangsi:	53.3	53.3	5.35	.53.		5.35	.53.	53.5	...3
polos:	212.	212.	12.1	21.2		12.1	21.2	1.21	....
jegogan:	.	.	5	2		.	.	1	3
dynamic:	(f)								(mp)

Baranganang

buka

.123 .$\overline{3}$333 3532 .$\overline{2}$222 3123 .$\overline{3}$333 3532
3 2

.$\overline{2}$222 3123 .1.3 .2$\overset{\frown}{321}$ .123$\overline{33}$ $\overline{23}$532 .321 2353
3 2 1 2 ③

decel..... and double at gong

kotekan

$$\left.\begin{array}{cccccccc} 53.3 & 53.3 & 5.35 & .53. & 5.35 & .53. & 53.5 & \overset{*}{35.3} \\ 212. & 212. & 12.1 & 21.2 & 12.1 & 21.2 & 1.21 & .12. \\ - & - & 5 & 2 & - & - & 1 & 3 \end{array}\right\} \times 2$$

53.5 35.3 .53. 53.5 55.5 .5.3
1.21 .12. 21.2 1.21 11.1 .12.
1 3 2 1 – 3

(f)

5.35 .53. 35.3 5.3. 53.5 35.3
12.2 12.2 .12. 12.2 1.21 .123
– 2 – 5 – ③

repeat entire kotekan

* angsel variation on first line:
omit the three notes in bracket
accent note before bracket
Re-enter at mp.

Only use angsel first time, not on repeat of line.

NGEDESLEMAH

The name of the piece means "Sunrise." This is a four section suite. Each is a little piece in itself, rather like the ones preceding.

The first section:

... is performed initially by a small ensemble: one pair of gangsa and the jegogan. The pair of gangsa divide into an upper and lower. The the lower part is notated. The upper plays the same but substitutes 5 for all the 1's. On the first time through the gangsa play more simply in the first two lines (see below). The jegogan part is likewise simpler the first time through and is notated separately. Jegogan plays the upper line the first time through and the lower on the two subsequent repeats.

The full ensemble with drums joins right on the final note, which is the first note of the repeat. The drum sets up a moderate tempo and subtle tempo variations. In the source recording tempo increases slightly after the first three lines, slows slightly toward the pausing point (marked with *). After this point the music breathes and continues from a slower restarting tempo to a slight accelerando into the second group repeat. The same dynamic shape is given again, only when resuming after the pausing part the tempo stays moderate to the end. There is not much volume variation.

There is no gong until the end of the final repeat (third time through). After the final repeat continue on to the next section before the last note dies away.

.....

gangsa part simplifications, first time through:

1st and 2nd lines: 5 .5555 2532 3523 1235

4th line: 1.33 2312 2325 2321

Second section:

A solo gangsa performs the buka at a fairly constant tempo. Three drum upbeats lead into the main part of the piece.

The main part is divided by the gangsa again into two parts, the lower as notated, the upper substituting 5's for 1's. The division is slightly more complicated in the last line which is notated as two separate gangsa part.

Dynamic shape of the main part is moderate through the section marked by repeats, then increasing tempo and volume for a while, dropping down in volume (thought not tempo) at the point indicated by the (mp), and increasing abruptly at the point indicated by (f).

The entire section is repeated from the stopping point (*) where the piece breathes, all the way back to the introduction. In the source recording the section section is performed three times (each including the introduction). There is no gong until the stopping point is reached for the final time.

Third section:

This is a transposed variation of the second section and would be performed similarly. I do not have a source recording for details.

Fourth section:

The introduction is performed by a pair or a single solo gangsa (see below). Jegogan may punctuate the introduction. Its tempo begins moderately, slows slightly toward the end as double speed notes enter. This double speed is the speed of the subsequent main section. Three drum upbeats to the group entrance (last introduction note) set the tempo for the main section. The introduction does not get repeated.

Dynamic shape is varied after the first few repeats of the main section. Volume and speed increase (volume more than speed) at the last line. It continues loud through the first line and its repeat, then drops down at the second line. The final time tempo drops more abruptly at the second line and continues to the end with a bit more decelerando and crescendo at the last notes.

The gong again sounds only on the final note of the piece, and the drum does the "rattle" effect.

.....

introduction to part 4 as a gangsa solo:

1 2121 2121 212.3 5321 2121 2121 312.3 5321

2121 235. 3.23 1535 2.3. 1535 2.3. 1235*
(slowing) (double)

(double tempo of previous line. The 5* above is the first fast note)

5535 3535 3235 .3.5 .1.. .5.3 5321 .2.1

(jegogan) 1

Ngedeslemah ~ Sunrise

part 1 Pengaiian

5	.5555	2̄35̄32	3523	1235
5		2	3	⑤
	.5̄555	3̄35̄32	3523	1235
		2	3	⑤
	5.23	255.	2325	2321
				①
	1.33	2312	1̄2325	2321
		2		①
	1.33	2312	1321	3123
		②		③
	1321	1.13	211.	1321
		②		①
	.1111	235.	3.21	3212
		③		②
	3123	1235	....	3235
		⑤	(slower)	
	3235	1235		
		⑤		

(accel... à tempo at end)

Once solo, twice tutti
On solo, jegogan plays only circled notes.
Gong on final note in tutti

Ngedeslemah

part 2 Pengawak

buka: 5 3̄ 2 . . . 2 2́212 2123 3231 2332 321. ②

decel....

double tempo at gong

gangsas 𝄆 2222 .2.. 2.2̂2 2̂222

jegogan 𝄆 . . . 2

.123 1231 2312 321.

. 1 . 3

23.3 .3̂.3 .212 123.

. . . 5

35.5 .321 23.5 321. 𝄇 repeat

. 1 . 2

2222 .2.. 2.2̂2 2̂222 .353 5353 3212 3532

. . . 2 . 3 . 2

(f)

2353 5353 3212 3532 2.11 .1.. 1.23 212.

. 3 . 2 . 1 . 3

(mp)

23.3 .3̂.3 .212 123. 35.5 .321 23.5 321.

. . . 5 . 1 . 2

(f)

2222 .2.5 5.5. 35.3 53.5 5.53 .55. 53.5

2222 .2.1 1.12 .123 1.21 1.1. 211. 1.21

. 1 . 3 . 2 . ①

Ngedeslemah part 3 Pengiwa

buka: 1.$\overline{2}$3 ...3 $\overset{x}{3}$323 3235 5352 3553 532.

decel... ③ and double tempo

gangsa jegogan

3333 .3.. 3.$\overset{x}{3}$3 $\overset{x}{3}\overset{x}{3}3\overset{x}{3}$3
– – – 3

.235 2352 3523 532.
– 2 – 5

35.5 .$\overset{x}{5}$.5 ..5. 55$\overset{x}{5}$5
– – – –

5.32 .2.. 2.53 235. ‖ repeat
– 2 – 3

3333 .3.. 3.$\overset{x}{3}$3 $\overset{x}{3}\overset{x}{3}3\overset{x}{3}$3 .535 3535 5323 2123
– – – 3 (f) – 5 – 3

3535 3535 5323 2123 3.22 .2.. 2.35 323.
– 5 – 3 – 2 – 5
(mp)

35.5 .$\overset{x}{5}$.5 ..5. 55$\overset{x}{5}$5 5.32 .2.. 3.53 235.
– – – – – 2 – 3
(mf)

3333 .5.2 2.5. 5.35 5.3. 53.5 55.3 .5$\overline{3}$2
3333 .1.2 2..1. 1235 5532 1.21 1.2. 25$\overline{3}$2
– 2 – 5 – 1 – ②

Ngedeslemah part 4 Pengacet

buka

1 2525 2525 252.3 5325 2525 2525 352.3 5325
1 2121 2121 212.3 5321 2121 2121 312.3 5321
– – – 1 – – – 1

2525 235. 3.23 5535 2.3. 5535 2.3. 523 55
2121 235. 3.23 1535 2.3. 1535 2.3. 123 55
– – – – 2... – 2... 5

decel .....

53.3.3.3 2.3 532 5.5 35 32 525
5.5.5.5. 2.3 532 1.5 35 32 121
– – – ①

all join kotekan (double speed)

kotekan

{ 35.3 53.5 35.3 53.5 35.3 53.5 35.3 ...5
.12. 1.21 .12. 1.21 .12. 1.21 .123 ...1
– 2 – 1 – 2 – 1 } x2

35.3 53.5 .2.3 .5.. .3.. .2.3 .5.5 .3.5
.12. 1.21 .2.3 .5.. .3.. .2.3 .1.5 .3.5
– 2 – 3 – 1 – 2

.2.. .3.. .5.5 .3.5 .2.. .3.. .5.2 .3.5
.2.. .3.. .1.5 .3.5 .2.. .3.. .1.2 .3.5
3 2 3 5

5535 3.3. 3235 .3.2 .5.. .5.3 5325 .2.5
55.5 .5.5 .235 .3.2 .1.. .5.3 5321 .2.1
12.2 12.2 1235 etc...
– – – – .1.. 2 – ①

Repeat entire kotekan

BAMBOO ANGKLUNG TRANSCRIPTIONS

The following three pieces are transcriptions/arrangements from a cassette recording issued in Indonesia in the late 1970's or very early 1980's. The cassette is entitled "Tabuh Angklung Bambu," recorded in the village of Sayan.

Instrumentation of these pieces includes two (possibly more) suling and four bamboo angklung rattles in addition to the metallophones, drum(s) and cheng-cheng. A dull-sounding gong called tawa-tawa (like a Javanese ketuk) keeps the jegogan beat throughout. On the source recording only the lower octave of gangsa can be heard. There are probably no kantil, though it is possible to add them.

According to McPhee, half a century ago this style of music was very rare, and found only in the eastern Karangasem part of Bali. (Sayan, incidentally, is the town in which McPhee lived for many years and to which he may have transplanted the bamboo angklung ensemble). Bamboo angklung sets may also include additional instruments whose parts are not herein transcribed: chungklik (2-octave xylophone), grantang (4-note bamboo tube instrument) and reong (knobbed kettles).

The tempo of these pieces is much slower than any other style. According to McPhee neither tempo nor volume vary much during performance of a piece, nor between pieces. I hear some tempo changes over the course of a performance on my source tape, but these are much more subtle than in the more modern style pieces. In Tabuh Telu the starting pulse for the gangsa is about 52 and the kotekan speed 208. This increases at most to a gangsa speed of 80. Chandra Metu, slightly more lively, moves along mostly at the top speed of 80 with an increase to 92. Very dense elaboration of the suling and angklung fills in the melodic spaces however. In performance the pieces move gradually from slower to faster and back one or more time in the course of a great many repeats. There are no abrupt contrasts. After the introduction all the instruments are playing all the time.

Chandra Metu and Tabuh Telu

These two pieces were recorded by a gamelan having an extra note, the low 6 below the 1. As this pitch is used but as a very occasional passing tone, I believe it would not be too unmusical to substitute another pitch, perhaps 3, in its stead if only four notes are on your gamelan.

The introductions to both pieces are rendered by a suling in low octave (same range as the gangsa). The low suling may be doubling the gangsa part with a few elaborations throughout. Two other high suling may be heard playing improvisation around the the gangsa and jegogan line. I have provided transcription of two of the many versions of that improvisation in the score. It would be in the spirit of the music if the suling players do not feel too strictly bound to the transcription, or to playing in unison. The style is very ornate, with much vibrato, sliding, grace notes, etc. The angklung rattles are heard throughout these pieces. Where they are playing moving passages, each note is a single shake. There are no spaces in the part. Wherever a note followed by dots, the player of that last note should extend his rattling through the space.

Chandra Metu

buka suling: $\bar{2}1 \ldots \ 21\overset{\frown}{2}\dot{6} \ 1\overset{\frown}{2}35 . \ 3123 \ \overset{5}{5}$

gangsa 3 5 2 3 2 1 3 2

jegogan . . . 3 . 1 . 2

3 2 1 2 3 1 2 3

. . . 2 . 5 . 3

5 3 $\dot{6}$ 1 5 3 $\dot{6}$ 1

. . 2 1 . 3 . 1

G

2 1 $\dot{6}$ 1 5 3 2 5

. . . 1 . 3 . 5

Tempo – 4 angklungs to each gangsa note.

Instruments – gangsa, jegogan, angklungs, suling, kendang, cheng-cheng

Original recording tempos: medium, fast, slow (just a little), fast. Slight retard at end.

Chandra Metu — Sulings

buka suling $\bar{2}1\ \ldots\ 21\ \widehat{21}\dot{6}\ \ 1\bar{2}3\ 5\ .\ 3\ 1\ 2\ 3\ 5$

variations:

$\ldots\ .3.2\ 35.3\quad\ldots 12\ .321\ \ldots 23\ \bar{2}132$

$\ldots\ \ldots\ \bar{6}156\ 35.3\quad\ldots 3\ 5321\ \ldots 5\ .3\bar{1}2$

3 5 2 3 — 2 1 3 2

//

$\ldots\ \ldots\ .6.5\ .312\quad\ldots 53\ 56.5\ \ldots 32\ 35.3$

$\ldots\ \ldots\ .65.\ 6\overline{56532}\quad\ldots 53\ 5\dot{\bar{1}}\dot{\bar{2}}\dot{\bar{1}}65\ .212\ \bar{3}5.3$

3 2 1 2 — 3 $\frac{1}{5}$ 2 3

//

$\ldots\ \ldots\ .1.2\ 1321\quad\ldots 55\ \ldots\acute{1}6\ 53.2\ \bar{5}321$

$\ldots\ \ldots\ .1.2\ 53\bar{2}1\quad\ldots 5\ \ldots\acute{1}6\ \acute{1}3.\acute{2}\ .3\acute{2}\acute{1}$

5 3 $\dot{6}$ 1 — 5 3 $\dot{6}$ ①

//

$\ldots\ \ldots\ .5.6\ 5321\quad\ldots 65\ .1\bar{2}3\ \ldots 2\ 1235$

$\ldots\ \ldots\ .\acute{2}.\acute{3}\ \acute{1}5\bar{6}\acute{1}\quad\ldots 65\ \ldots\acute{1}6\ .5.3\ .\widehat{\acute{1}\acute{2}}\acute{1}5$

2 1 $\dot{6}$ 1 — 5 3 2 5

Chandra Metu — Angklungs

buka suling $\overset{\frown}{21}$ ... $21\overset{\frown}{216}$ $1\overset{\frown}{23}5 . 3\ 1\ 2\ 3\ 5$

//

.535 .535 .35. 35.3 ..3. .3.5 .55. 353.
.... 1..1 .... .1.. 1.21 .11. ...2

..35 ..35 .3.. 35.3 .55. .3.5 .5.3 ..3.
12.. 12.. 1.12 .... .11. 1.21 .1.. 21.2

3 5 2 3 2 1 3 2

//

353. 353. 3535 353 3..3 ...5 .55. 35.3
...2 ...2 ....2 .12. 12.1 .11. ....

353. 353. .3.5 .3.. .... 3.35 .... 35.3
...2 ...2 ....2 .2.. .2.. .1.2 ....

3 2 1 2 3 $\frac{1}{5}$ 2 3

//

5..3 5..3 .... 53.5 .5.. ...3 ..3. .3.5
.12. .12. 21.2 ..21 .1.. .12. 21.2 1.21

5..3 5..3 .... 53.5 .5.. 3..3 .... 53.5
212. 212. 21.2 ..21 .1.. .12. 21.2 ..21

5 3 6 1 5 3 6 ①

//

.5.. .... .2.3 ...5 ...5 ...3 .55. ..35
.1.. .... .2.. .2.1 .... .11. 12..

.55. .3.. .55. .3.5 5..5 ...3 35
.11. 1.21 .11. 1.21 1.1. 121. 211. 12..

2 1 6 1 5 3 2 5

Tabuh Telu

2 suling, 2 angklung players
gangsa, jegogan, ketuk
Kendang

buka suling: .$\overline{3}$5 .$\overline{3}$2 .$\overline{3}$5 . . . 3 . 1 . 2 . 3 . 5

3 5 3 5 | 3 2 5 3 | 5 3 2 5 | 2 3 2 1
. . (3) 5 | . 2 3 | . . (2) 5 | . 3 . 1

2 1 $\dot{6}$ 1 | 2 3 1 2 | 3 2 5 3 | 2 1 2 3
. . ($\dot{6}$) 1 | . 3 . 2 | . . (5) 3 | . 1 . 3

5 3 2 5 | 3 2 3 5 | 3 5 2 3 | 2 5 3 2
. . (2) 5 | . 2 . 5 | . . . 3 | . $\frac{5}{1}$. (2) G

3 2 1 2 | 3 5 3 2 | 3 5 3 2 | 5 3 2 5
. . (1) 2 | . 5 . 2 | . 5 . 2 | . 3 . 5

Jegogan – don't play parenthetical notes first few times thru piece.

Tabuh Telu

buka suling .3 5 .3 2 .3 5 ... 3 . 1 . 2 . 3 . .

suling variations

. . . . . 6 5 3 5 . . . 3 .21 . 2 . . 6 5 3 1 .2 3

. . . . . 6 i 2 12665 . . . . 3 56532 . . . 1 . 2 12 3

gangsa 3 5 3 5 3 2 5 3

(3)

. . . . . .21 . 2 5 3 1 5 . . . . i 6165 3 .21 . 2 5 3 .2 1

. . . . . .21 . 2 5 35165 . . . . .235 3 . . . 5 . 3 .2 1

5 3 2 5 2 3 2 1

(1)

. . . . . 2 . 3 . 2 . 1 . . . 2 .3 5 . 3 5 3 . 5 . 3 . 2

. . . . . 5 . 6165 3 2 1 . . 532 .3 563 5 6 . 1216 5 3 2

2 1 6 1 2 3 1 2

(2)

. . . . . 3 . 5 i 6165 3 . . . ȧ i 6i ȧ i . . 3 ȧ i 6165 3

. . . . . 5 . 6 .51 .23 . . . 2 1 2 321 . . 5 6 5 1 .2 3

3 2 5 3 2 1 2 3

(3)

. . . . . 5 . 6i ȧ i .6 5 . . 6 i ȧ 3 i ȧ . . 5 3 5 i .6 5

. . . . . 5 . i ȧ i 6 5 . . . . . 5 .3 2 . . . 3 5 12165

5 3 2 5 3 2 3 5

(5)

. . . . . 5 .6 i 5 6 3 1 .2 3 . . . 2 .1 2 3 5 . . 6 i ȧ 32321 ȧ

. . . . . i . ȧ i 6 5 3 . . .5 6i ȧ 12165 . . 2 3 .5 1216532

3 5 2 3 2 5 3 (2)

(2)

. . . . . 6 . 12165 3 2 . . 5 3 5 i .6 5 . . 3 1 .232 1 2

. . . . . i . 6 5 2 1 2 .3 5 . 6i 232 i 6 5 . . 6 12165 3 2

3 2 1 2 3 5 3 2

(2)

. . .53 5 12165 . . 3 1 .23212 . . .3 5 .3235 3 . . .5 6 . . . 5

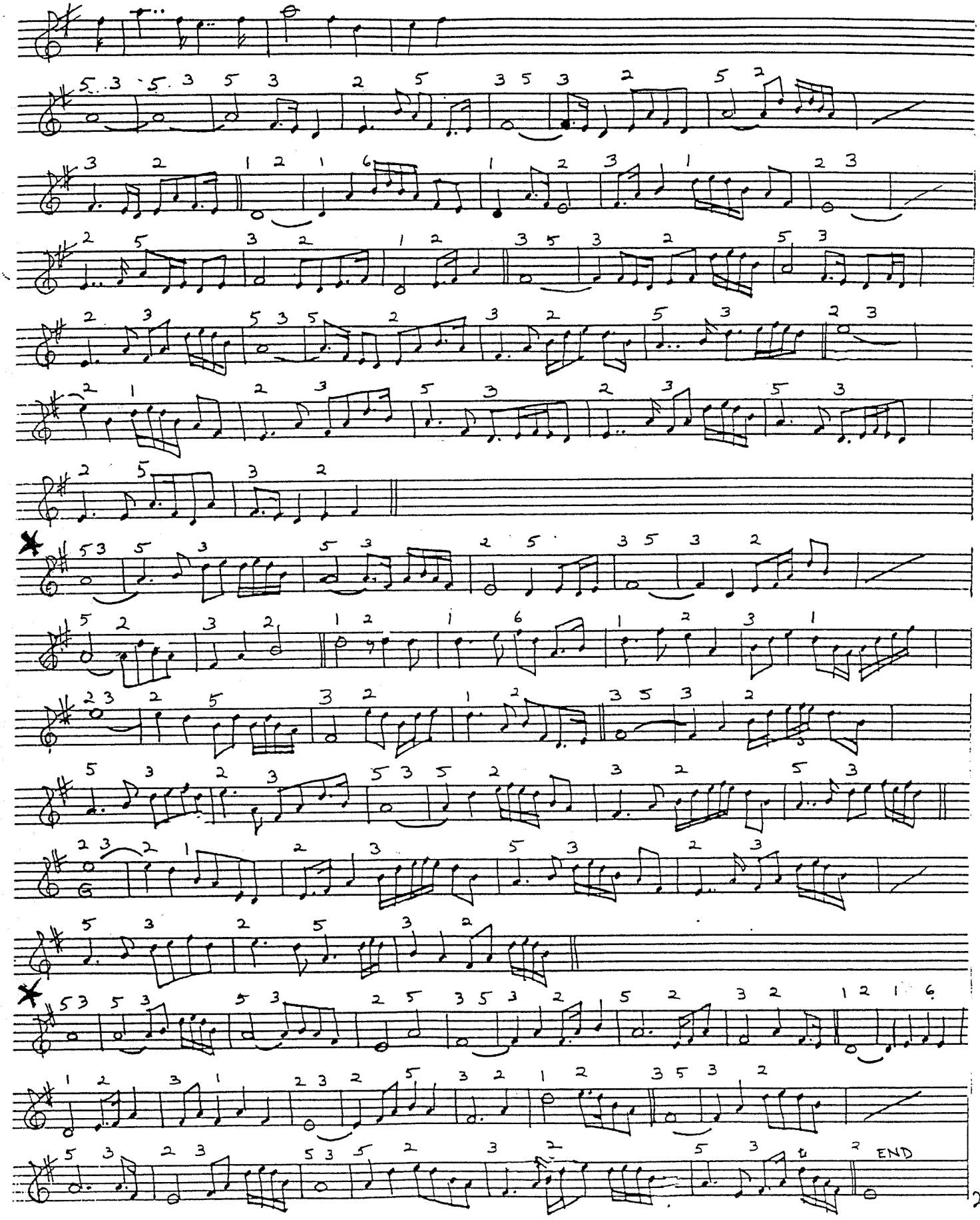
. . 53 5 i .6 5 . . 6 i ȧ 3 i ȧ . . i 5 .3 1 5 3 .21 . 2 3216 5

3 5 3 2 5 3 2 5

Tabuh Telu

suling transcription

buka

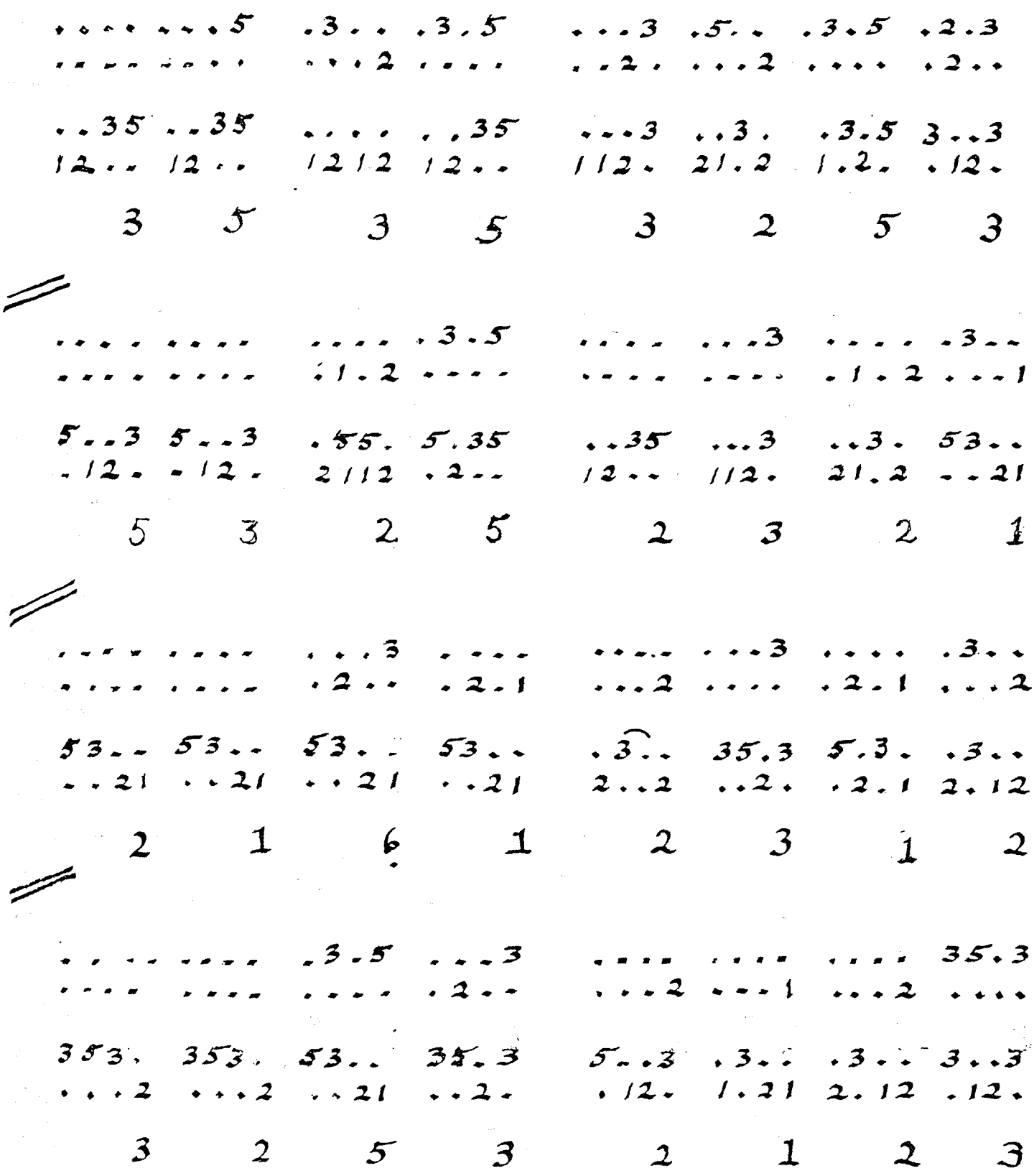


buka suling .3 5 .3 2 .3 5 . . . 3 . 1 . 2 . 3 . 5

5

Tabuh Telu

Angklungs - p1



Tabuh Telu


```
.... .... ...3 .35  .... .... .5.3 ...5
.... .... 21.2 ....  ... .1.2 .... ....

53.3 53.3 .53. 5.35  ..35 35.. 35.3 5.35
212. 212. 21.2 .2..  12.. ..12 ..2. .2..

  5    3    2    5    3    2    3    5
```

//

```
.... .... .3.. 35.3  .... .3.5 ...3 ....
.... .... ...2 ....  .1.2 .... .2.. .1.2

..35 ..35 .... 35.3  .5.. .3.5 ...3 .53.
12.. 12.. 1212 ..2.  2.12 1.2. .12. 2..2

  3    5    2    3    2    5    3    2
```

//

```
.... .... .3.5 ....  ... ...5 ...3 .5..
.... .... .... .1.2  ... .... .2.. ...2

353. 353. 3535 3.3.  3.53 5.35 3..3 ..3.
..2. ..2. .... 1.2.  .2.. .2.. .21. 21.2

  3    2    1    2    3    5    3    2
```

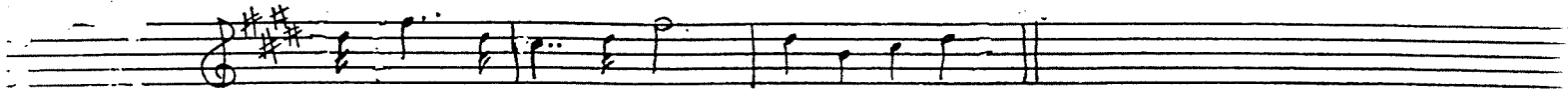
//

```
..53 ...5 ...3 .5..  ..35 ...3 .53. ..35
.... .... .2.. ...2  .... .2.. ...2 12..

3.53 5.35 3..3 ..3.  5.35 .353 .53. ..35
.2.. .2.. .21. 21.2  .2.. 2... ...2 12..

  3    5    3    2    5    3    2    5
```

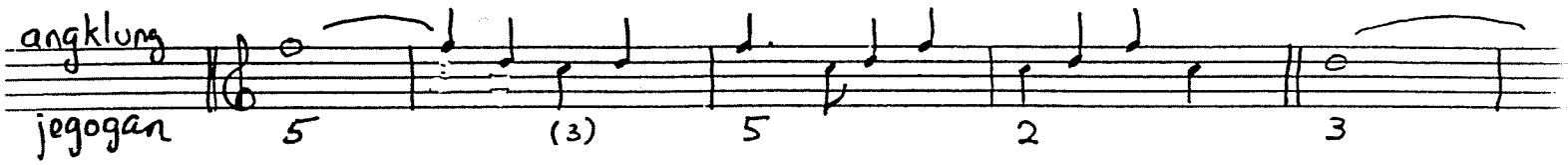
Use upper line only first time
Second line for subsequent repeats

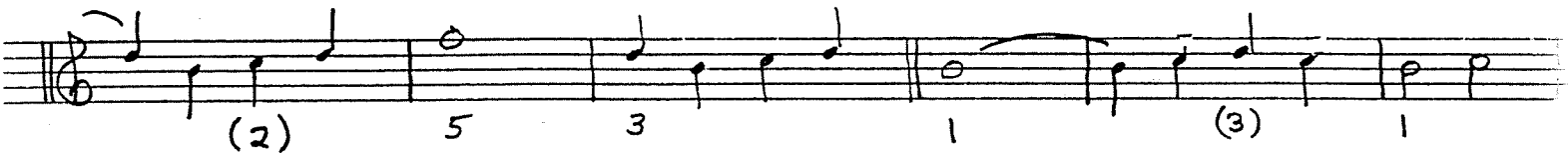
Tabuh Telu – angklung part in staff notation

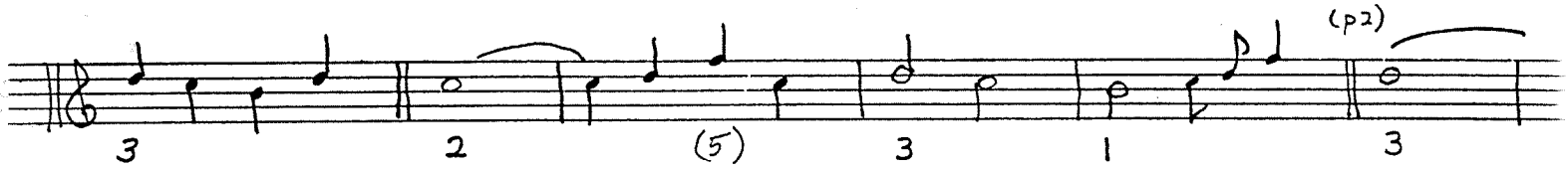
flute buka:

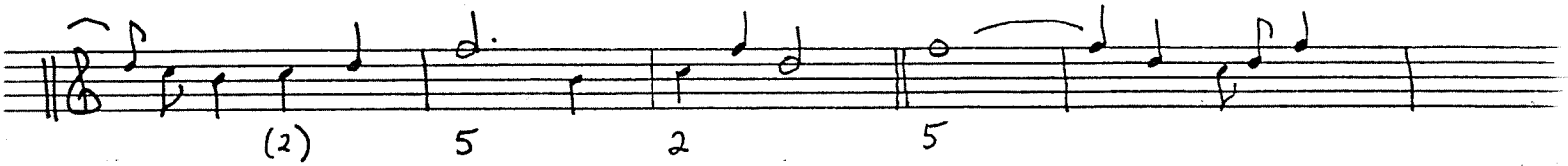


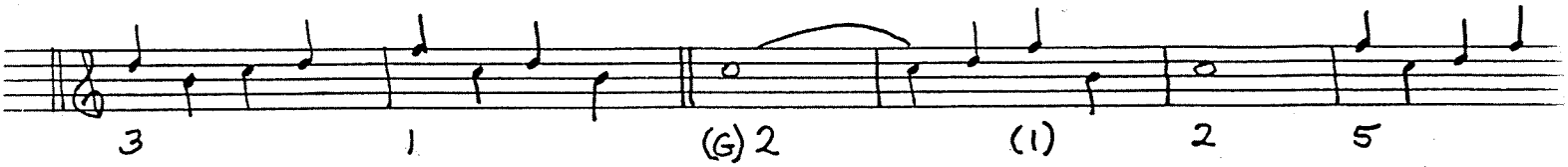
angklung jegogan

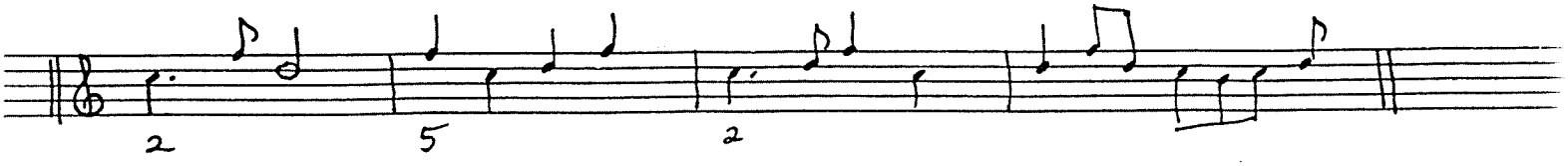


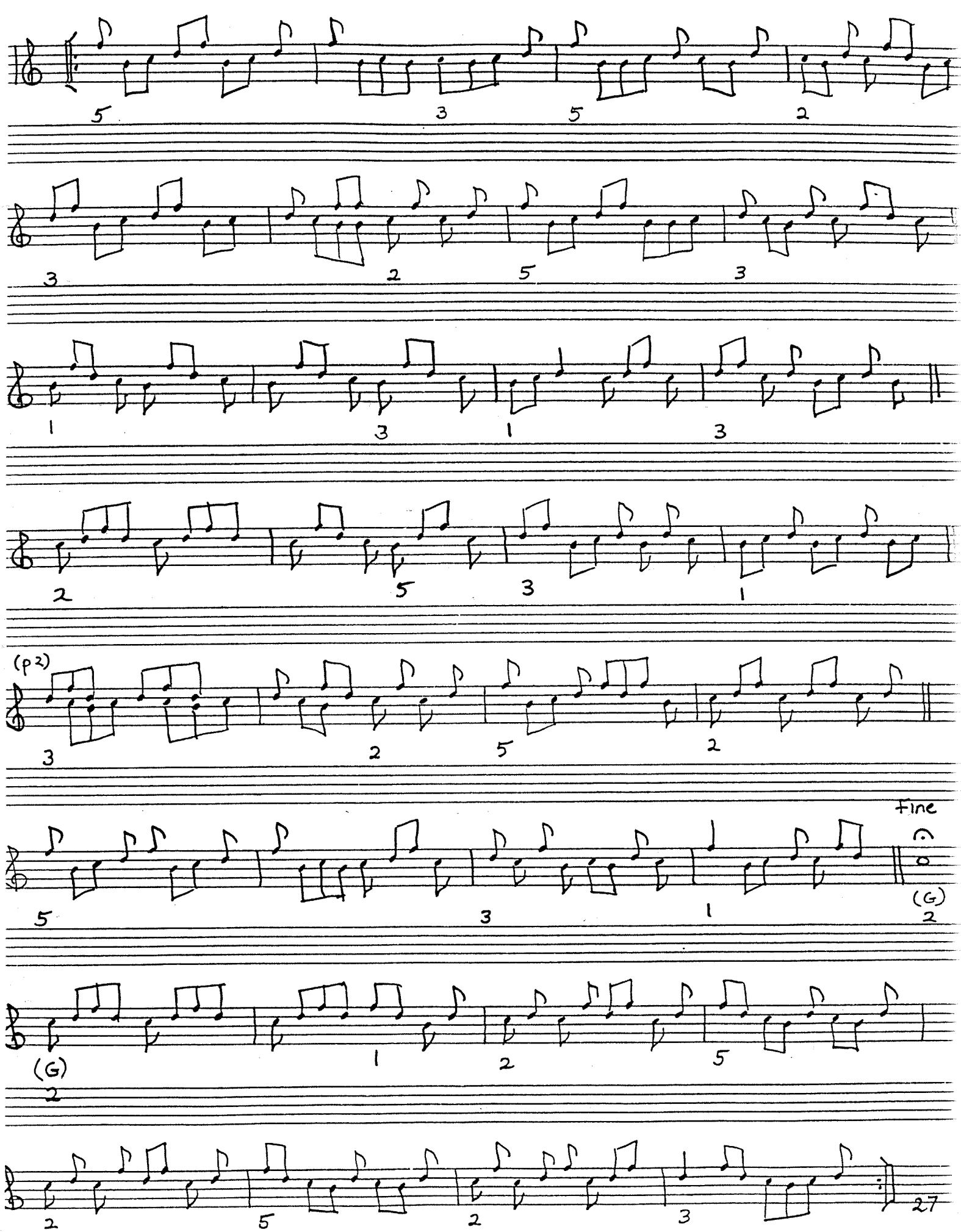











5 3 5 2
3 2 5 3
1 3 1 3
2 5 3 1
(p2)
3 2 5 2
Fine
5 3 1 (G) 2
(G) 2 1 2 5
2 5 2 3
27

Sari Dwita

"Sari" in the title means pollen; Dwita is an island. "Pengacet" means the main, or second, part of the piece which is in a two-part form.

This piece is closer in style to the Suweca pieces. It was recorded by an ensemble with only the usual four pitches. The jegogan part is closer to a series of melodic accents than a melody. Contrasting orchestration in the repetitions gives variety. The real action is in the upper line which is played throughout by sulings and angklung rattles and doubled intermittantly by the gangsa, playing in divided parts.

Gangsas first enter at the end of the introduction and play until the point for changes of voicing (marked with a *.) The next two repeats are played without gangsa. It comes in again after the * and plays once through to the changing point. Two more repeats without gansa follow, then one with. The final repeat will be with gangsa; this time through jump to the coda and end.

There is not much tempo contrast, but volume contrast is marked when the gangsas enter. They are always loud.

The kempur is heard only at the end.

Sari Dwita – Pengacet

Suling plays at all times. Gangsas play first time, every third repeat, and final time through coda. Ketuk but no drums.

buka 1.$\overline{2}$3.2 .1.5 .$\overset{x}{\overline{33}}$.32 3123

suling 2123 2123 1232 3123 2123 1232 1232 312.
gangsa . . 2 3 . 2 . 3
jegogan

𝄆 3322 .2.. 2.23 2123 123. 1..2 3212 3123 𝄇
. 2 . 3 . 2 . 3

2123 1232 1232 3123 2123 123. 2.11 .1.1 ⊕
. 2 . 3 . 2 . 1

★
$\overline{.2}$332 3123 2123 1235 .... .123 2123 1232
. 3 . 5 . 3 . 2

1232 3123 2123 1232 1232 312. 𝄇
. 3 2 3

⊕ coda $\overline{.2}$332 3123 2123 2123 2123 212. 3321 1.1.
. 3 . 2 . 3 . 2

2123 .2.3 $\overline{.2}$1.. ...2 2212 1235 3235 3235
. . 1. 2 . 5 . 3

3123 .2.1 1123 1232 1321 3123
. 1 . 2 . 3
G

★ voice changes begin here

Sari Dwita – Pengcet

angklung rattles
(play at all times)

buka gangsa 1 2̂ 3 . 2 . 1 . 5 . 3̄3̄ . 3 2 3 1 2 3

5 . 5 3 5 . 5 3 . 5 3 5 3 5 . 3 5 . 5 3 . 5 3 5 . 5 3 . 5 3 5 5 .
2 1 2 . 2 1 2 . 1 2 . 2 . 1 2 . 2 1 2 . 1 2 . 2 . 1 2 . 1 2 . 2 . 1 2 .

– – 2 3 – 2 – 3

‖ 3 . 5 5 . 5 . . . 5 . 5 3 5 3 5 3 5 3 . 5 . 3 . 5 . . 5 3 5 3 5 3 5 . 3
. . 2 2 . 2 . . 2 . 2 . 2 1 2 . 1 2 . . 1 . . 2 . 2 1 2 . 1 2 .

– 2 – 3 – 2 – 3

5 3 5 3 5 5 3 5 3 5 5 3 5 3 5 3 5 5 3 . 5 . 5 5 . 5 . 5 ⊕
2 1 2 . 1 2 . 2 1 2 . 1 2 . 1 2 . 2 1 2 . 1 2 . . 2 . 1 1 . 1 . 1

– 2 – 3 – 2 – 1

3̄5̄ 3 3 5 . 3 5 3 5 3 5 5 3 5 . . . ★ . . . 3 5 3 5 3 5 5 3 5
2̄ . . 2 1 2 . 1 2 . 2 1 2 . 1 2 . 5 . . . . 1 2 . 2 1 2 . 1 2 .

– 3 – 5 – 3 – 2

3 5 3 5 3 5 5 3 . 5 3 5 3 5 3 . 5 . 3 5 3 5 . 3 5 . ‖
1 2 . 2 1 2 . 1 2 . 2 1 2 . 1 2 . 2 1 2 . 1 2 .

– 3 – 2 – 3

⊕ CODA 3̄5̄ 3 3 5 . 3 5 3 5 3 5 5 3 5 3 5 3 5 5 3 . 5 . 3 3 . 5 5 . 5 .
2̄ . . 2 1 2 . 1 2 . 2 1 2 . 1 2 . 2 1 2 . 1 2 . . . 2 1 1 . 1 .

– 3 – 2 – 3 – 2

. 5 . 3 . . . 3 . 5 . . . 5 5 5 . 5 . 5 3 5 3 5 3 5 3 5
2 1 2 . 2 . . 2 . 3̄1̄ . . . . 2 2 2 1 2 1 2 . . 2 . . 2 . .

– – 1 . 2 – 5 – 3

3 . . 3 . . . 5 5 5 . 3 5 . 3 . 5 3 . 5 3 5 . 3
1 2 . 2 . 1 1 2 . 1 2 . 2 1 . 2 1 . 1 2 .

– 1 – 2 – 3

G

★ voice changes begin here

KEBYAR STYLE PIECES

The kebyar style was a new and popular thing when Colin McPhee first documented Balinese music in the 1940's. Half a century later it is still going strong and the style has explanded beyond the instruments of the gamelan gong kebjar (pentatonic instruments in pelog mode) to be heard on the four note angklung tuning as well.

As this book is a sampler I am including just one sample: the gending **Margapati** (lion dance). The arrangement is my simplification of two source recordings: the Folkways album Music from the Morning of the World, and the private recording by Northern Illinois University's angklung ensemble entitled West Meets East.

Kebyar pieces do not use bamboo angklungs. The action is primarily in the busy repeated notes and kotekan passages of the gangsa and kantil. There are two gongs: the lower kempur (notated as G beneath the jegogan note) and the higher kempli (notated as P).

Most of the time the gangsa and kantil are playing as loud and fast as possible. In **Margapati** the only break in this intensity is variation 3, which alternately drops back to something more liesurely, then speeds up again. The jegogan speed is about 100.

As an alternate beginning omit the doubling stages. Begin with the jegogan and drums alone. On cue all others join at the letter C (on the gong, of course). This is a bit more flashy.

1: Doublings of speed (jegogan speed stays constant; gangsa doubles)

A) gangsa & jegogan: 3 5 3 2 1 3 2 5 3 (an agreed number of repeats)
G P G

B) gangsa: 35 53 32 21 13 32 25 53

jegogan: 5 3 2 1 3 2 5 3 (repeated)
P G

C)

g:	3335	5553	3332	2221	1113	3332	2225	5553
j:	5	3	2	1 P	3	2	5	3 G
g:	3335	5553	3332	2221	1113	3332	.555	55.3
j:	5	3	2	1 P	3	2	5	3 G

2: variation (gangsa speed constant; jegogan drops to half)

g:	3333	5535	5555	3353	3333	2232	2222	1121
j:	.	5	.	3	.	2	.	1 P
g:	1111	3353	3333	2232	2222	5535	5555	3353
j:	.	3	.	2	.	5	.	3 G

final time:

g:	3333	5535	5555	3353	3333	2232	2222	1121
j:	.	5	.	3	.	2	.	1 P
g:	1111	3353	3333	2232	2222	5535	5535	...3
j:	.	3	.	2	.	5	.	3 G

(Margapati)

3: variation

Gangsa drops to half its former speed. jegogan also drops to half its speed in the previous variation.

Repeat this section. For the first time tempo is constant. During the third line it accelerates until by the end of the fourth line it is about twice what it was. Then drop back to the half speed on the repeat. Volume follows tempo.

		x		x		x		x
g:	5353	5535	3535	3353	5353	2232	3232	1121
j:	.	5	.	3	.	2	.	1P

		x		x		x		x
g:	2121	3353	5353	2232	3232	5535	3535	3353
j:	.	3	.	2	.	5	.	3G

		x		x		x		
g:	5353	5535	3535	3353	5353	2232	3232	1121
j:	.	5	.	3	.	2	.	1P
				(begin accel...)				
g:	2121	2353	5353	2232	3232	5535	5535	...3
j:	.	3	.	2	.	5	.	3G

4: repeat of opening

(same tempo as end of previous section, i.e. fast and loud. Repeat this section several times then end on cue.)

g:	3335	5553	3332	2221	1113	3332	2225	5553
j:	5	3	2	1 P	3	2	5	3 G

g:	3335	5553	3332	2221	1113	3332	.555	55.3
j:	5	3	2	1 P	3	2	5	3 G

AMERICAN CONTEMPORARY PIECES

The following four pieces are among those in the repertoire of Gamelan Son of Lion, a New York City based ensemble performing primarily contemporary music by American composers for Javanese instruments. The pieces can and have been performed on Javanese sleandro instruments (saron, peking, demung), and on other occasions on Balinese instruments.

Bungkuk and Tock by Barbara Benary

Bungkuk was composed as a theatre piece and is in a more or less Balinese style. It is named for the mythological dwarf whose dance it accompanied in a production by Islene Pinder's Balinese-American Dance Theatre. It is a very short piece, but may be repeated or varied as desired by the performing ensemble.

In the notation of Bungkuk, the jegogan part is written separately and below the gangsa-kantil parts. G = kempur; P = a smaller, higher pitched gong (kempli).

Tock is a process-structured piece which can be performed on a wide variety of pitched percussion instruments. The simplest orchestration is to play it on four bamboo angklung rattles as a duet, one player having notes 1 and 2, the other 3 and 4. A more elaborate arrangement would be to have four players for the rattles, each positioned at a different corner of the performing space. Gangsa players could accompany each rattle player, but each taking only a single note, so that in performance the effect is of a separate note coming from each corner.

The number notation is with Javanese end-beats; the staff notation (using a selected combination of pitches - but others could be substituted), is of course with downbeats. The piece is the unfolding of a process and needs no variations in volume and tempo.

gamelan ADAGIO by Philip Corner

This piece is one of a large number composed by Corner for gamelan instruments, in this case for four players using only four pitched angklung rattles. It too is a process piece, the process to be performed very slowly and ritualistically.

Through the Looking Glass by Peter Griggs

This piece is structured upon the convergence of unequal rhythmic cycles of increasing, then decreasing, length: 1 against 2, 2 against 3, 3 against 4, etc. The "looking glass" refers to the mirror structure of the increasing then decreasing cycles.

BUNGKUK- angklung

buka: 4 4444 444. 44.4 ..(1)
P G

× on note means strike damped

× on a dot means damped rest.

. ×1 . 2 . ×2 . 3 . ×3 . 4 . ×4 . 3

× . 2 4 × . 2 3 × . 2 1 3 2 1 4 3 2 1

. ×1 . 2 . ×2 . 3 . ×3 . 4 . ×4 . 3

× . 2 4 × . 2 3 × . 2 1 3 2 1 4 3 2 1

× . 3 4 2 3 4 1 2 3 4 3 . 1 2 . 1

. ×1 . . . . . 4 4 × . 4 . . . (1)
P G

coda . 1 2 × . 1 2 3 × . 1 2 3 4 3 2 1 4

× . 4 3 × . 4 3 2 × . 4 3 2 1 2 3 4 3

× . 3 4 2 3 4 1 2 3 4 3 . 1 2 . 3

. 3 4 2 3 4 1 2 3 4 3 . 1 2 3 4

. 3 4 2 3 4 1 2 3 4 3 . 1 2 . 1

. 1 . . . . . 4 4 . 4 . . . .
P

jegogan: buka . ...4 ...(1)

2 3 4 3 4 2 4 1

2 3 4 3 4 2 4 1

4 3 2 1 3 2 4 (1)

coda 2 3 4 . 3 2 1 3

2 1 2 3 2 1 2 4

2 3 2 1 3 2 4 .

2TOCK

for four angklungs

⊙ times 2
* times 3

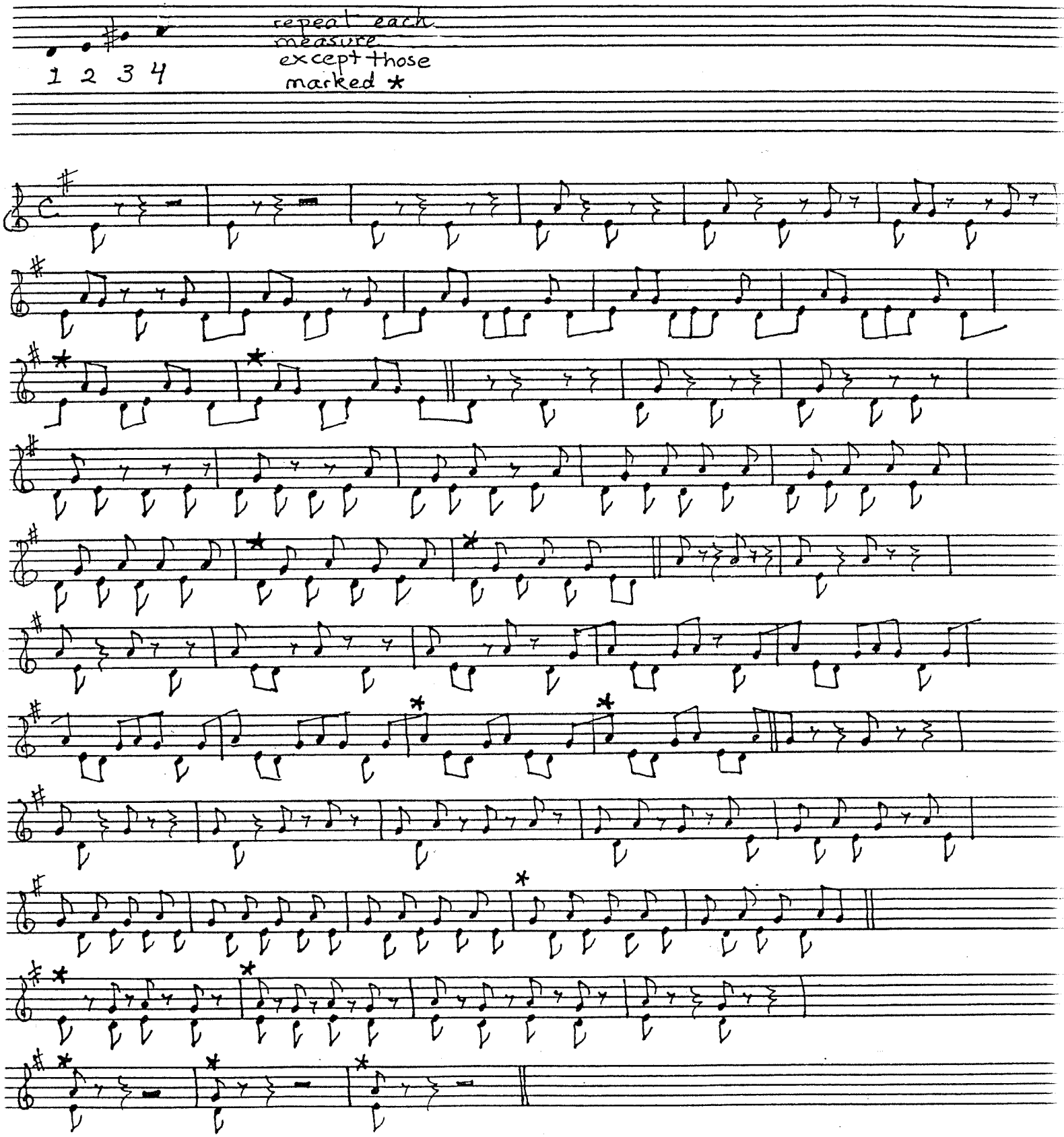
....	...2	....	...2
....	...2	....	...2
...2	...2	...2	...2
4..2	...2	4..2	...2
4..2	.3.2	4..2	.3.2
43.2	.3.2	43.2	.3.2
43.2	.312	43.2	.312
4312	.312	4312	.312
* 4312	1312	4312	1312
4312	4312	4312	4321

...1	...1	...1	...1
3..1	...1	3..1	...1
3..1	.2.1	3..1	.2.1
32.1	.2.1	32.1	.2.1
32.1	.241	32.1	.241
3241	.241	3241	.241
* 3241	241	3241	4241
3241	3241	3241	3214

...4	...4	...4	...4
2..4	...4	2..4	...4
2..4	.1.4	2..4	.1.4
21.4	.1.4	21.4	.1.4
21.4	.134	21.4	.134
2134	.134	2134	.134
* 2134	3134	2134	3134
2134	2134	2134	2143

...3	...3	...3	...3
1..3	...3	1..3	...3
1..3	.4.3	1..3	.4.3
14.3	.4.3	14.3	.4.3
14.3	.423	14.3	.423
1423	.423	1423	.423
* 1423	2423	1423	2423
1423	1423	1423	1432
⊙ .3.4 / 1 2	.3.4 / 1 2	.3.4 / 1 2	.3.4 / 1 2
...3 / 1	...4 / 2	...3 / 1	...4 / 2
....	...3 / 1	....	...4 / 2

TOCK



Philip Corner's gamelan ADAGIO for angklung quartet

as performed by Gamelan Son of Lion

Procession

The four players enter slowly, in order: #1 is the highest pitch rattle, #2 the next lower, #3 the third lower, #4 the lowest. Each walks very, very slowly. #1 gives a long shake on every step. After #1 is in place on stage, #2 enters, shaking on every second step. Then #3 shaking on every third step, and last #4 shaking on every fourth step. When they are in a line, proceed to the changes.

Changes

First change: At a very slow tempo #1 leads a "measure" of thirteen beats. All four rattles sound on the first and last beat. Each "note" is several seconds long and separated from the next.
#1 plays every beat
#2 plays on the first and every two beats after.
#3 plays on the first and every three beats after.
#4 plays on the first and every four beats after.

All join on the thirteenth note, which is a prolonged crescendo-decrescendo.

Then the players switch places, the middle two each change with their nearest end person. Players moving to the right pass in front, to the left pass behind.

Second change: the same as above.
Rattle #2 plays the 1's
Rattle #1 plays the 2's
Rattle #4 plays the 3's
Rattle #3 plays the 4's

Switch places again. This time the middle pair change places and the end players change places with eachother.

Third change:
Rattle #3 plays the 1's
Rattle #4 plays the 2's
Rattle #1 plays the 3's
Rattle #2 plays the 4's

Switch places. Each middle player changes with the nearest end player.

Fourth change:
Rattle #4 plays the 1's
Rattle #3 plays the 2's
Rattle #2 plays the 3's
Rattle #1 plays the 4's

Recessional

All exit at a slow pace, keeping up a steady rattle sound. Each accents their number: #1 on every step, #2 on every second step, #3 on every third step, #4 on every fourth.

ADAGIO (from the "gamelan" series)

a slow version
of the structural idea appearing for the first time
in "gamelan II" -- my second piece for
gamelan. (of course)
a simple arithmetic increment,
a "scale of durations", leads to complexity----------more&more
the more parts are added.
(Son-Of-Lion version :Folkways 31313: goes up to 9. A long desired workshop this summer in Sumatra took gongs & drums to 33 parts, and with counting voices in Java up to 48. But here the simpler beauty of clarity is brought out---only 4 layers.)

quartet for anklungs

A simple calculation shows that, starting together,
1contra2contra3contra4 come together after a measure of
12 beats. This is where time stops.
And these bamboo rattles will fill in that space between ideas.
(Shake that Thing.)
linear descent of pitches
correspondence with expansion of durations
at each repeat.....exchange. Places; each takes an other timing
until all have had all.
No longer only a prepared piano solo for me.
Add now a procession of entering and exit. In time always.
First performance last August. Special anklungs constructed by Melati Abadi---the lowest one 12 feet big---possibly the largest and the smallest anklungs in the world. at AMI/The Indonesian Music Institute at Yogyakarta, Java.
We are now using more normal ones,
in a familiar tuning.

THROUGH THE LOOKING GLASS
by Peter Griggs

A	11	V	A	11	V
B	14	U	B	12	U
C	143	T	C	123	T
D	1432	S	D	1234	S
E	14 323	R	E	123 43	R
F	143 234	Q	F	123 432	Q
G	143 23 43	P	G	123 43 23	P
H	1432 34 14	O	H	1234 32 12	O
I	143 234 143	N	I	123 432 123	N
J	143 234 1432	M	J	123 432 1234	M
K	143 234 143 23	L	K	123 432 123 43	L
L	143 234 123 432	K	L	123 432 143 234	K
M	123 432 123 43	J	M	143 234 143 23	J
N	123 432 1234	I	N	143 234 1432	I
O	123 432 123	H	O	143 234 143	H
P	1234 32 12	G	P	1432 34 14	G
Q	123 43 23	F	Q	143 23 43	F
R	123 432	E	R	143 234	E
S	123 43	D	S	14 323	D
T	1234	C	T	1432	C
U	123	B	U	143	B
V	12	A	V	14	A

The ensemble divides into four parts (four groups of gangsa and kantilan). The first part reads the first column top to bottom; the second part reads the second column top to bottom; the third part reads the first column bottom to top (rehearsal letters on right) and the fourth part reads the second column bottom to top (letters also on the right).

Parts 1 and 2 will be out of phase with parts 3 and 4. In performance, the ensemble divides into two groups, spaced apart in the performance area. Parts 1 and 2 are situated to one side of the the gong, and parts 3 and 4 to the other side. The gong is placed center and is sounded to mark the convergences upon which the players proceed to the next letter.

The dynamic is fairly loud. There are no tempo variations.

In the 1975 performance by Gamelan Son of Lion on casette recording New Wilderness Audiographics #8542A (available through Gamelan Son of Lion), the gong cues are actually more complicated than a single convergence. In this rendition each of the two groups also has a smaller, higher pitched gong (a different pitch for each group) which sounds at the beginning of each group's phrase - that is, the pitch 1 - but on alternate repeats, as reflected in the following chart.

Gongs for THROUGH THE LOOKING GLASS

rehearsal letter	gong for parts 1-2	gong for parts 3-4	big gong
A	every 2 notes x 16 repeats	every 4 notes x 8 repeats	total beats = 32
B	4 x 6	6 x 4	24
C	6 x 8	8 x 6	48
D	8 x 5	10 x 4	40
E	10 x 6	12 x 5	60
F	12 x 3½	14 x 3	42
G	14 x 4	16 x 3½	56
H	16 x 4½	18 x 4	72
I	18 x 5	20 x 4½	90
J	20 x 5½	22 x 5	110
K	22 x 6	24 x 5½	132
L	24 x 5½	22 x 6	132
M	22 x 5	18 x 5½	110
N	20 x 4½	18 x 5	90
O	18 x 4	16 x 4½	72
P	16 x 3½	14 x 4	56
Q	14 x 3	12 x 3½	42
R	12 x 5	10 x 6	60
S	10 x 4	8 x 5	40
T	8 x 6	6 x 8	48
U	6 x 4	4 x 6	24
V	4 x 8	2 x 16	32

The final convergence is marked by a unison 1 on the keyboards and the sounding of all three gongs.

BUILDING BAMBOO ANGKLUNG RATTLES

The following are the results of my experiments in building and tuning angklung rattles, and may be taken as guidelines for experimentation with bamboo or other materials.

I am assuming the reader has a prior familiarity with the rattles: has seen if not actually handled them. Each note of the angklung set, of course, consists of several tubes suspended in a frame with a common resonator. There may be two or three octaves of the note in a frame, not necessarily tuned to perfect octaves. In the following I will use the word "angklung" to refer to a single frame with its two or three tubes.

Tools and materials needed are: seasoned bamboo, a power drill, chisels, coping saw, vise, knife, quarter-inch dowels, string and glue.

Choosing bamboo

In Southeast Asia, angklungs are made from bamboo which has long segments between nodes - a foot or more. Each tube of the rattle has only one node, which forms the base or closed end. American bamboo that I have found in California seems rarely to have more than nine or ten inches of length between nodes no matter if the piece be fat or thin. Using such bamboo it is still possible to make large angklung with extra nodes. The node does not affect the sound, but may affect the longevity of the tube.

Nodes are closest together at the base of the bamboo plant and grow increasingly further apart toward the middle of the plant. Toward the very top they again become closer. The exterior diameter of the tube is largest at the base of the plant and decreases up to the top. However, the wall thickness is much greater at the bottom than at the middle. This affects the pitch of a given piece since pitch depends on the volume of the air space inside. Given two pieces of bamboo with identical diameter, one taken from low on the plant and one from higher, the one from low on the plant will produce a higher pitch because it will have less air space. It is not too desirable to use the bottommost part of the plant for angklung building. Save them for shakuhachis.

The top of the plant is also undesirable. From about the middle of the plant on up, the nodes will show strongly marked indentations from leaf nodes, as well as a chunky bump on the node line from where the leaf grew or a side branch sprouted. These nodal marks are places where splitting is likely to occur. It is better always to use a piece for no such marks.

As with wood, bamboo should be well dried before one attempts to work it. If you hear a rifle shot in your house in the dead of night, it may not be vigilantes, but your piece of partly worked bamboo splitting on you.

When bamboo splits, it will always be in the lengthwise direction, along the grain. This characteristic is both a nuissance

and an advantage. The node which is to serve as the closed end of the tube must be uncracked. However a crack at the other end may be put to use if it is in the right place. But once a piece has started to split where you don't want it to, throw it out.

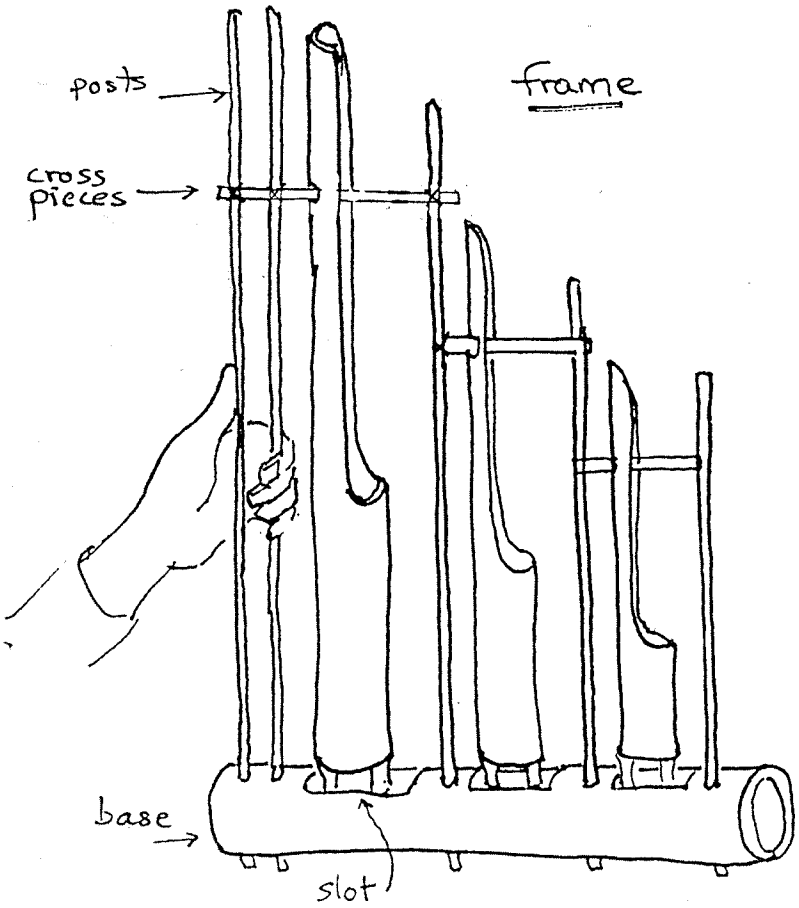
Cutting the rattle

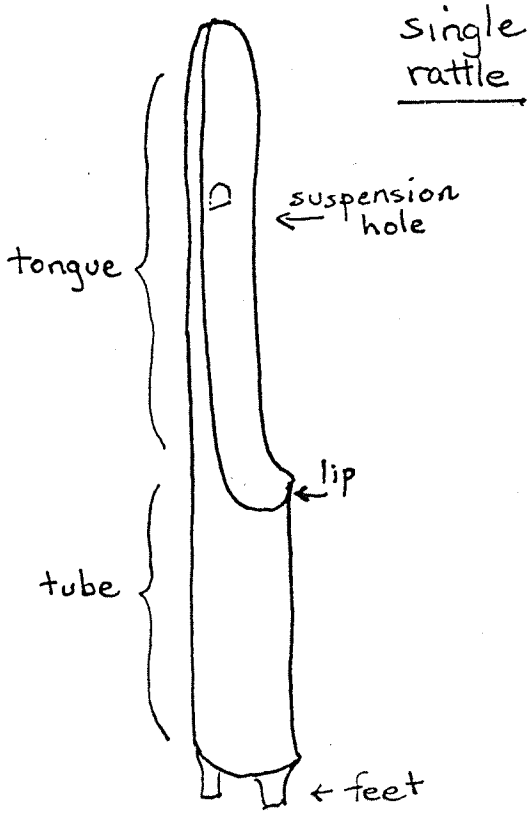
For cutting the bamboo, use a saw for cross-grain cuts (I use a coping saw) and a chisel for lengthwise splits (much faster than cutting downward with a saw). Remember always to make the crosswise cut first, and then the lengthwise split. The crosswise cut will provide the terminal place for the split you make with the chisel; otherwise you have no control over how far down your split goes.

The rattle - as I will call each note in the frame - consists functionally of two parts: the bottom half which I call a tube, and the top half, which I call the tongue. Each are tuned independently, and there is some variability of factors. Therefore the choice of length of the piece you start with is to some extent a visual decision. The rattles generally run from about 9 inches to 2 feet. See the next section for some rough guidelines in choosing length.

Use a length of bamboo which includes one node about three quarters of an inch from what will be the bottom. You need a little material extending down below the actual node to serve as the "feet" that will contact the base. If your piece is longer, cut it so that it ends about three quarters of an inch below the bottom node.

It doesn't seem to matter whether the rattle ends up being right side up or upside down in relation to the way the plant grew.





Sizes and lengths

Estimating the length of bamboo for a rattle of desired pitch is a matter of trial and error. However, here are some clues. If the length of a given pitch rattle is known, the octave above (using smaller diameter bamboo) is a little more than half the length. The octave below (using larger diameter bamboo) is a little less than twice the length.

The following chart gives the approximate pitches and measurements of some rattles I have made from American bamboo (thicker wall), and some from my Thai set (thin wall). The number following the note name indicates its octave (1= middle c octave, 2= the octave above, 3= the one above that.) All measurements are in inches.

pitch	total length	tongue	tube	circumference
American bamboo				
C#2	11.75	6	5.75	4.85
C#3	8	5.75	2.25	4.85
D#2	11.75	5.75	5.25	4.35
D#3	7.75	5.75	2	4
F2	12.25	7.75	4.25	4.5
F3	6.75	4.75	2	3.85
G#2	10	6.25	3.75	5
G#3	6	4	2	3.25
Thai bamboo				
D1	24	12.5	11.5	6.75
D2	15	9.5	5.5	5.25
D3	9	6.25	2.75	3.85
F1	19.25	10.5	9	6.25
F2	11.25	7	4.25	5.25
F3	7.5	5	2.5	3.5
G#1	18	9.5	8.5	6
G#2	11.25	7.5	3.75	4.85
G#3	6.5	4.5	2	3.4

The feet

It is advisable to cut the feet first. This will give you a place to tap when tuning the tube and tongue.

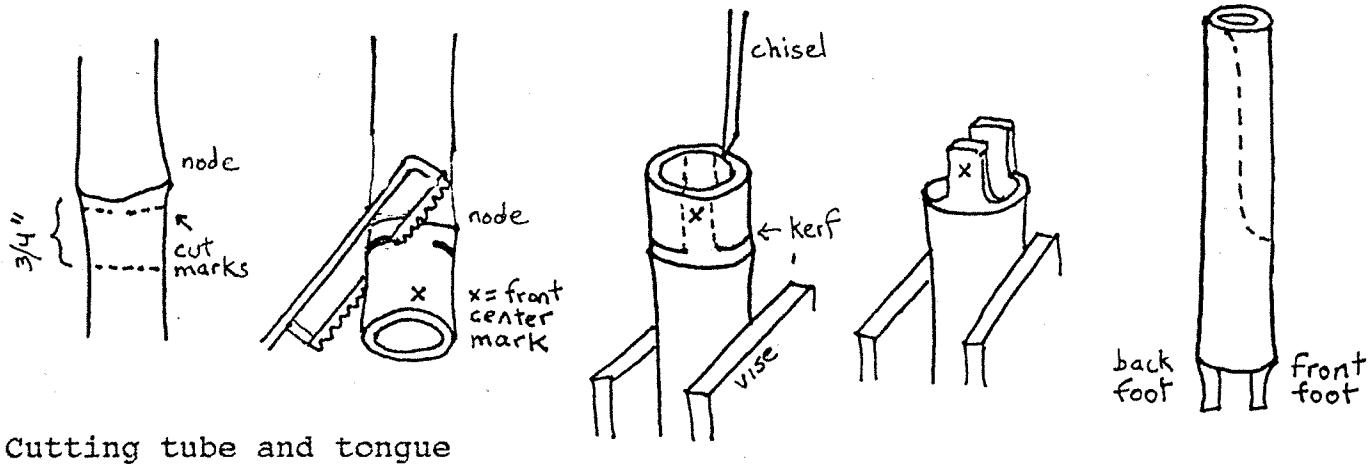
There are two feet on each rattle. One faces front, the other rear. By front I mean the part of the rattle out of which a slice will be cut to form the tongue. The back is the uncut part with the tongue.

If your piece has a leaf node mark, it might be a good idea to have this node be the front-center line, so that some of it will be cut off in making the tongue, leaving that much less material that is likely to split. The foot will function whether or not it is cut on a leaf node mark.

Mark where the center of the front and back foot will be. Then saw in from both sides just below the node. Saw in a third or more of the way toward the marks. Leave enough uncut material for a foot about 1/4 inch wide. It is better to cut it too wide at first; one can always take off more material later.

Then brace the piece upside down in a vise and tap down with your chisel from directly above the place where your saw kerf ends. The bamboo should split easily. If the foot ends up too wide, narrow it by sawing in a bit more and tapping off another slice.

If you accidentally saw the foot off, it may be glued back in place with epoxy. It will not be structurally as sound, but the foot is not accoustically important to the sound of the rattle.



Cutting tube and tongue

The tube and tongue part of each rattle are tuned separately, but in unison with eachother. When they are in unison, the rattle produces a single, amplified note.

The tube, or lower part, is tuned accoustically as a tube: its length is the most crucial factor. Once it is cut, you can raise its pitch by shortening it, but it is difficult to lower it. The tongue works accoustically as a reed, or as half a bar. Length is one factor in determining its pitch, but the relative thickness of top and bottom can be manipulated to adjust the pitch in either direction. Because one has less flexibility in tuning the tube, it is better to cut with the tuning of that part of the rattle as a priority.

Placing the first cut

The first cut divides the piece into tongue and tube. Where it is placed is partly aesthetic and partly accoustic. Remember that the length of the tube part pretty much fixes its pitch, and if you cut it too short, the piece will have to be used for a higher note.

Visually the proportions of tube to tongue look best at anywhere between 1:1 and 2:3. The proportion increases as the pitch gets higher: tongue longer, tube shorter. With rattles pitched below middle C the proportion is 1:1, or in fact the tongue may be shorter than the tube.

If you have a specific pitch in mind, it is better to overestimate the required length of the tube, and to place the first cut too high. It can always be cut down lower later. Mark the position of your first cut at the front center (aligned with the front foot).

Using imperfections

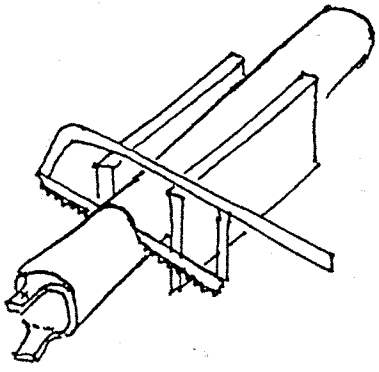
If there is a node in the middle of the length of bamboo you want to use, you can make this the dividing point between tube and tongue, and make it the point of your first cut. Then simply remove the middle material of this extra node with a knife.

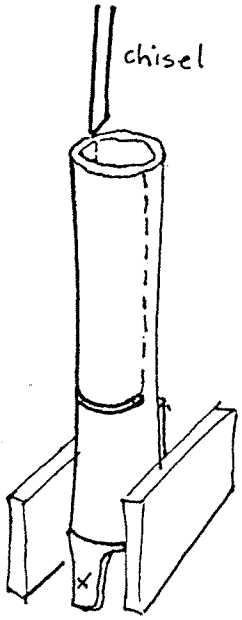
If your piece has a good node at the foot end but is partially split at the other end, plan your first cut so that the partial split will end up forming one side of the tongue.

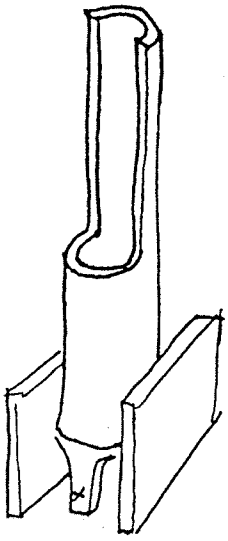
Cutting

Put the piece in the vise horizontally with the front foot facing upward. Begin your cut at the front center. Saw straight down and about halfway through the diameter.

Then trace the edges of the cut up the grain to the top of the piece, and mark the two places on top. Reposition the piece in the vise vertically. Tap down at the marked spots with the chisel until the bamboo cracks and half the upper part falls away.







Tuning the tube

Distinguishing pitch

Most likely if you tap various parts of the newly cut rattle, you will hear two different pitches, one being produced by the tube and the other by the tongue. The first task is to figure out which is which.

Hold the rattle at a point a bit above the middle of the tongue and tap it on or between the feet. This is approximately how the instrument will work when suspended in its frame. Then try one or all of the following:

1. While tapping, lay a finger on top of the tongue. This stifles tongue pitch and you should hear more tube pitch.

2. Tap alternately at the top of the tongue to hear more tongue pitch and at the lip of the tube to hear more tube pitch. Don't block the opening of the tube in order to hear more tongue pitch. Probably you won't hear anything.

3. After knocking all bamboo dust out of the tube, blow across the opening to hear its pitch.

4. If the pitches you hear are within your vocal range, try singing a sliding note next to and across the tube (without blocking the opening). When you pass the tube's pitch, it will resonate.

Raising tube pitch

To raise the pitch of the tube, cut slices off the lip. Make them parallel, and small if you are close to the pitch you want. Chisel off each slice with a gentle tap and test the pitch again before cutting further. If you're not sure whether the tube needs to be just a little higher, wait until after the tongue is tuned to make that last slice.

If you cut the lip at the node and want to keep it there, make your initial cut slightly above the node line. Your tube is now capped at both ends. Chisel a small hole through the top node, making a semi-closed tube whose pitch will be lower than an open tube. To raise the pitch, knock out more of the node material, or if need be, shave down the inside of the thick node walls.

There is really no going back if the tube pitch gets too high. I have tried some cut-and-paste remedies: gluing back the last slice I cut off, inserting material into the inside edge of the top opening, etc. If the epoxy holds, they'll stay and lower the pitch a bit, but I don't recommend these measures; they all look sloppy.

Tuning the tongue

Here one is fortunate in having alot of leeway to either increase or decrease the pitch that emerges after the initial cutting.

Weight and thickness of the tongue determine its flexibility and thus its pitch. The heavier (less flexible) the tongue is, the higher its pitch. A second factor is length. The longer the tongue is, the lower it will be.

Thus one raises the pitch by removing material from the end of the tongue and shortening it. One lowers pitch by removing material from the sides and base of the tongue, thereby lightening it and increasing its flexibility.

Raising pitch

For gross tuning, if you are several notes too low for desired pitch, cut slices off the tip. Don't worry too much about overshooting the mark since it is easy to lower the pitch again. For fine tuning, chisel the very tip thin, particularly at the corners.

Lowering pitch

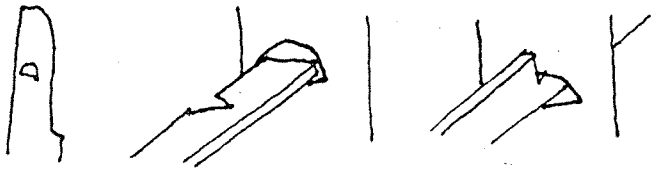
Remove material from the middle and base of tongue. Generally this is done by chiseling strips off the sides down to the lip of tube. (Be sure to saw in before chiseling down.) For fine tuning, take small slivers off the sides of the tongue, or else cut away the edge at the base. For very large rattles, you can also chisel the lower wall of the tongue thinner.

When you cut the suspension hole, the pitch of the tongue will be lowered slightly on lighter pieces of bamboo.

Suspension hole

Find the point on the tongue which allows the greatest resonance when you hold the rattle at that point and strike it. It is usually a little above the middle of the tongue, but may even be below. Now mark this pint on the outside of the tongue and drill through (1/4" drill) from the outside to avoid chipping the outer skin of the bamboo.

Shape the hole as desired. You can file a flat upper edge to the hole to better enable it to hang in its notch. The shape and size of the hole depend on the type of crosspiece in the frame from which it will hang. There are various possible kinds of crosspieces and corresponding hole shapes. Some crosspieces are in the shape of flat sticks, like tongue depressers. These must be turned sideways to fit through the half-moon shaped hole (see diagram). When in place they are turned so the thin, knotched edge is up, enabling the rattle to swing. I have also used square chopstick-shaped sticks made either from wood or from slivers already chiseled off the sides of the tongue in the tuning process. The hole is small so that the crosspiece goes through snugly, but the rattle can swing freely when suspended from the notch in the crosspiece.



Base tube

The tube at the base of the rattle frame functions only partially as a resonator, and does not need to be tuned. Its major purpose is to support the entire frame, and to provide the slots in which the feet of the rattles move hard and the hard-surface against which they knock to generate the sound.

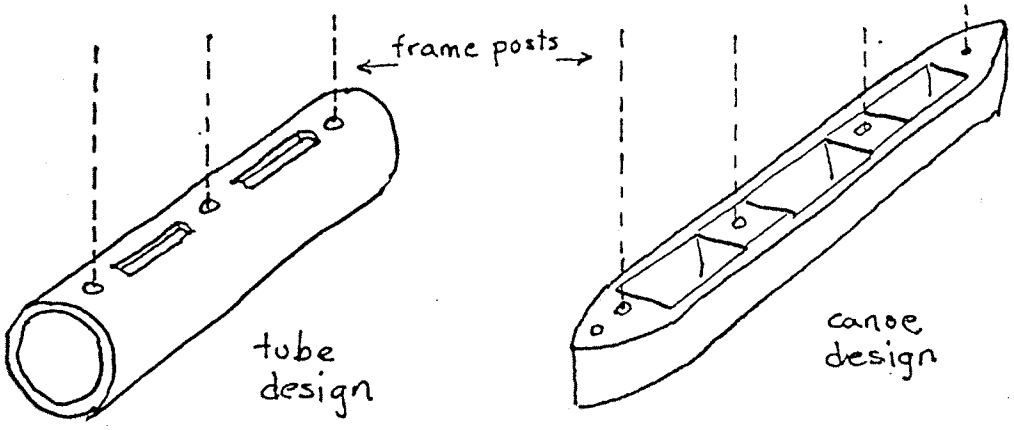
In Balinese and Javanese angklung, the base is usually a tube of bamboo, open at either end, of sufficient length to allow for the spacing and movement of the two, three or four rattles that fit in the single frame. However the base need not even be a tube. I have a sturdy angklung set, said to be from Thailand, in which the base takes the form of a wooden canoe, and the rattle feet knock against wooden blocks set in the trough at front, rear and middle. The canoe design appears to have a distinct advantage over the bamboo tube design. It is virtually indestructable, whereas I have found that bamboo tubes, when trilled and chiseled in many places for the feet and frame sticks, is structurally weaker and very prone to splitting. Split base tubes give the angklung a bad sound and can't be used.

Despite this disadvantage, if you wish to construct a bamboo tube for the base, here is how to do it:

Choose a tube about the same diameter as the largest rattle that will go into the frame. In length, allow a slot for each rattle that will be about ¼" longer than its diameter. Also allow about 1½" inches of length for post holes at each end and between rattle slots. Make these spaces slightly bigger for large, low-pitched angklungs.

First mark where the post holes are to go: one at each end, and one to go between each rattle slot. Thus a two-rattle frame needs three post holes, a three-rattle frame needs four. My sturdy Thai set includes an extra post hole at the end where the largest rattle hangs, placed about an inch away from its partner. The double posts at this end enable the player to get a firmer grip on the frame.

Post holes and slots are all in a line, following the grain of the bamboo. After they are all marked, use a ¼" drill and put holes through for each post, and at each end of where each slot will be. Since the posts must go entirely through the tube, next mark the emerging post holes on the opposite side of the tube and drill them. As a safety precaution to keep the drill from hitting and possibly cracking the already drilled side, place a piece of board inside the tube.



Slots

The chiseling of the slots is the process in which the danger of cracking the base tube is greatest.

Holes have already been drilled at either end of the slot. Next chisel out the strip between these holes, then enlarge the slot as needed with a chisel or knife. (The knife is safer, regarding splitting.)

Frame

For the vertical posts I prefer quarter inch dowels. One can also use bamboo sticks, sold in garden supply as tomato sticks, but these are usually a little crooked. The post or posts to be held in the player's hand should extend through the base and up to the height of the tallest rattle in the frame. The other posts should each extend to slightly above the height of the node of each rattle in the frame, so that the crosspiece which passes through the suspension hole may be attached at the top of the post. Glue the posts into the base holes with epoxy.

Crosspieces must extend a bit more than the length between each post and the next. This allows enough overlap to the posts on each side. Crosspieces must be notched at the point from which the rattle is to hang. This notch can be triangular or square. With the rattle in place, attach the crosspiece to the posts on either side using thin string and glue. Place the crosspiece at a height that enables the rattle to swing above the base with its feet in the slot.

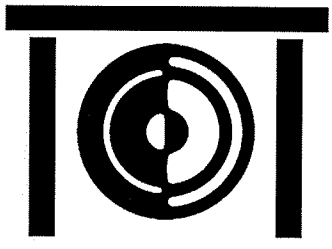
The rattles in the frame go from largest (on the side the player will hold) to smallest. They "face" out, away from the player - that is, the cut side of the rattle faces away.

Maintenance and repair

Bamboo is an organic material. Changes in humidity, particularly too much dryness, are likely to make it crack. Avoid dry, overheated indoor storage. I don't think actual temperature is a problem, but sudden temperature changes are probably bad.

A split rattle may sometimes be revived. For cracks along the tongue (the most frequent place), glue with epoxy and hold in place with masking tape. In an emergency the tape alone will often do. Cracks along the tube extending down from the lip may also be thus repaired if they haven't extended too far down. Once the material opens up, throw it out.

Because of the fragile nature of the organic material, it may be worthwhile for the angklung maker to experiment in various synthetics, either for the base tube or for tube and rattles as well. I have yet to try my hand at PVC or ABS or the various plastic-impregnated organic fiber materials, but they all present interesting possibilities.



AMERICAN
GAMELAN
INSTITUTE
agi@gamelan.org
www.gamelan.org