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In this issue

PERCUSSION INSTRUMENTS OF THE MIDDLE AGES

By Walter C. Schneider

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PERCUSSION INSTRUMENTS IN THE MIDDLE AGES

Until recently, information about percussion instruments used during the Middle Ages[1] has been somewhat sketchy and often incomplete. Perhaps because of the recent upsurge in utilization of percussion in Twentieth century music, research of pre-Baroque percussion, especially by percussionists, has been inadequate. Gordon Peters, from the United States, and James Blades, from England, have incorporated information about early percussion into their large comprehensive histories of percussion. James Blades and Jeremy Montagu in their recent paperback, *Early Percussion Instruments from the Middle Ages to*

the Baroque[2], as well as Montagu in his book, *Making Early Percussion Instruments*,[3]have delved further into this area.

Therefore, the purpose of this article is to review existing information, to present additional information on percussion instruments of the Middle Ages, and to suggest possible playing techniques.

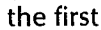
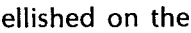
Percussion instruments are categorized into two classifications: instruments with stretched skins known as membranophones, and the others, which are referred to as idiophones. Drums were not new to the people of the Middle Ages since they have existed since pre-historic times.[4] The most popular instrument was the tabor. It varied in size and shape, with a diameter ranging from 20 to 30 mm., while its wood shell varied in depth from 7 to 50 mm. The drum could have one or two heads. The side that was played upon, called the batter head, usually had one gut string stretched across it, which we not call a snare.

There are many paintings and sculptures in which various size tabors are seen, proving their common existence. Scholars and historians use this iconographical evidence as a means by which to discover the way music was performed and with which particular instruments the music was made. In the various iconographical references used, this writer has noticed that usually the tabor is hung from a strap which goes around the performer's neck and is played with one stick held in the right hand while the left hand fingers a three-holed fipple flute, a recorder type instrument that had a range of up to one and a half octaves. By overblowing, half-holing, opening, or closing the thumb hole, and by using various combinations of the three fingers, the performer was indeed a one-man band! -- playing a melody in the left hand, while executing quite technical rhythms in the right hand. The little tabor continued to be used as a folk-dance instrument and became an important member of the renaissance dance orchestra in Italy and France.

For military functions larger drums were used.[5] Like the tabor, these larger snare drums, similar to our modern parade drums, also varied in size. Thoinot Arbeau, in his book *Orchesography*,[6] describes a Persian drum about 70 cm. in diameter making a noise like thunder. The drum was hollow, about 75 cm. deep, closed at both ends with skins secured by bands and bound with straps to keep them taut. The drummer used two sticks, one in each hand, thus creating a "great noise."[7] Arbeau explains that the securing straps and buckles were used to adjust the drum heads' tension.

In a military setting, these large drums were used as signals. They signaled the soldiers to break up camp, to advance or retreat, and also "gave them heart, daring, and courage, both to attack the enemy and defend themselves in manful vigour."[8] Without the drums, the men would have become confused and would have been placed in a position of being beaten by the opposing army.

Arbeau also presents drum beats used by the French. Some were in

duple and others in triple meter, and these could be performed at various speeds. The French used a drum rhythm which contained eight notes, five of which were played and the other three were tacet.  During each beat pattern the soldier put his left foot down on the first beat and his right foot down on beat five. In modern notation this would be  Drummers who wanted to be fancier embellished on the first four notes by adding two faster taps in place of the slower ones. Arbeau presents these as follows:[9]  .

This writer supposes that these rhythms and techniques were then used in popular dances of the time, since many men were familiar with them. Although there is no record, beats and variations similar to these could have been used in dances of the times. The tabor or a small parade drum must have been used in Burgundy and Italy when the *Basse dance* was popular in the courts. Although music such as *La Spagna*, a very popular tune, did not indicate a drum part, almost surely a drummer must have provided a beat for the dancers while the other melodic instruments improvised.

Our present day timpani can be traced back to tiny clay drums about the size of our bongos called *naggara*. The *naggara* were played in pairs, usually with the large drum on the player's right. Returning Crusaders introduced these drums into Europe. By the end of the thirteenth century small kettledrums appeared. In England they were known as nakers and in France, *nacaires*. The bowl-shaped nakers varied in diameter between 20 and 30 cm. Naturally, they had one head and the bowls were made of leather, wood, and copper, as well as clay. They were played suspended from a waist or shoulder strap, although occasionally they were placed on the ground. Men performed on the nakers with two sticks. The lower drum on the right was used as the bass or pulse-beat drum, and the higher left drum was used to execute somewhat fancy improvised rhythms. (This is the opposite of our keyboard oriented setups of today.) Women iconographically appear to perform on the nakers with only their hands, perhaps accompanying *bas* or soft tone instruments. No doubt, much to the dismay of some musicologists, these drums must have been used in church music since many stone and wood carvings in the church show angels and men playing nakers.[10] Nakers gradually disappeared from use during the fifteenth century and were replaced with the larger Turkish-oriented timpani.

The large, loud sounding timpani fired the imagination of many of the European courts. They quickly became popular as a sign of wealth and, of course, "keeping up with the Jones's!" Kings and rich men imported beautiful copper-bottomed timpani from Germany and Hungary where the art of kettledrumming was a closely guarded craft, particulary associated with the guilds.[11] Timpani were used with trumpets in ceremonies and military functions. In war, it was a great honor to cap-

ture the enemy's timpani. In spite of their popularity, opposition was voiced as early as 1511 when Sebastian Virdung, a German writer on music, complained: "These are enormous rumbling barrels. They troubled honest old people, the ill and the sick, the devotees in monasteries who study, read and pray; and I think and believe that the devil has invented and made them...for the suppression of all sweet melodies and the whole art of music."[12]

Luckily, not everyone felt this way, and gradually, serious composers began to regard the timpani as a legitimate musical instrument. By 1628, Orazio Benevoli used timpani and trumpets in a Festival Mass.[13] This marked the beginning of the use of timpani in serious music.

Large wooden sticks were used when timpani were played out of doors. However, it gradually was found that padding the sticks with wool or felt softened the strident ping into a beautiful bass tone. Thus, this tradition comes to us today.

Also in existence were other drums played without sticks, such as the timbrel, tambourine, and friction drum. The Bible mentions in various passages the use of small hand drums called *tof* in Hebrew, and also called the *tabret, toboet,* or *timbrel.* Small shallow hand drums can be traced into the Greek and Roman era also. The Romans sometimes added little bells or metal discs (jingles). As a result, the timbrel, and its jingling relative, the tambourine, are common instruments used by wandering musicians, showmen, and jugglers during the Middle Ages. The timbrel, or hand drum, was often played with the fingers or hand as shown in the art of the times.

The tambourine appears four different ways: 1. with small brass bells (pellet bells) attached, 2. with metal discs called jingles, 3. with a snare[14] across the head with either pellet bells or jingles, and 4. as a tambourine without the drum head. This instrument was found in Germany and was called a *schellenreif,* or "jingle-ring." The techniques of playing the tambourine were similar to those of today, i.e., delicate rhythms could be tapped out by the fingers, rolls were produced by shaking it or rolled with the thumb; it was struck with the knuckles, wrist, or elbow, and occasionally, for show, thrown up in the air and caught again. The tambourine waned in popularity during the Renaissance era, and during the Baroque and Classical periods the little "jingle drum" was only associated with gypsy music.[15]

Our last membranophone is the friction drum, known in Flanders as *rommelpot,* in Germany as *Brunntopf* or *Reibtrommel,* in Italy as *puttiputi,* and in Spain as *zambomba.* Our modern "rubdrum" (From the German *Reibtrommel)* is the lion's roar, or *tambour a corde,* and the Cuica. The Middle Age friction drum consisted of a wood or clay cylinder with a skin tightened over one head and a small stick protruding through the head. Then the stick is rubbed with rosin or wet fingers and pulled back and forth, producing a grunting, or roaring buzz.

Jeremy Montagu, a percussionist and conductor of early music describes and cautions the usage of the friction drum in performance as follows:

> The player spits on the thumbs and fingers and rubs them up and down on the stick, producing a grunting sound. The sound produced by pushing down is quite different than that produced by pulling up and care should therefore be taken always to play an even number of notes in the bar, either ⊓ or ⊔ , though with skill, it may be possible to break either stroke into pair of quavers. . .the stresses are such that the friction drum can easily come apart in performance, and the resulting roar of laughter is an embarrassment to all concerned.[16]

Thus care and musical taste should be used when performing with this Medieval folk instrument.

And now we move to the idiophonic percussion instruments which include all other percussion instruments that do not have a head or membrane. Two of the most common idiophones are the cymbals and triangle.

Left. **Rommelpot, Dutch engraving after Frans Hals (1580-1666); reproduced by permission of the Mansell Collection.** ***Right.*** **Rommelpot, seventeenth-century Italian stone sculpture; reproduced by permission of the Welsh Folk Museum, Cardiff.**

Cymbals are very ancient instruments coming from western Asia to Greece. Even though the Romans called them *discus*, the Greek word *kymbala*, and various similar spellings, is used to describe the brass or bronze plates that were struck together during the Middle Ages. Most of the cymbals used during these times were smaller and thicker than those of today. "From pictorial representation the majority appear to be quite thick, and about 15 to 25 cm. in diameter."[17] Most times they were played in pairs in a horizontal rather than our modern vertical manner. Since many examples picture women and angels playing the cymbals in this manner, this writer experimented with some small (hi-hat) cymbals and found the tone to be delicate and quite soft. Since cymbals were used in this manner then, it would be proper to have small cymbals in performances of sacred and other soft Medieval music. Similar to the replacement of the nakers with timpani, the small thick cymbals were replaced with the large loud-sounding Turkish cymbals during the Fifteenth century. These larger cymbals were somewhat like our Turkish "Zildjian" cymbals of today.

On many recordings of Medieval music, small brass finger cymbals are used. "Many people associate finger cymbals with early music. There is no evidence for their use."[28] Montagu suggests that early musicians used Modern Chinese cymbals, which are similar in size to those of the Middle Ages, rather than finger cymbals.

Triangles existed during the Middle Ages, but were different in sound and construction than our open-ended triangle of today. The triangle is derived from the ancient *sistrum*. Perhaps this explains the three to five metal rings that hung from the Medieval triangle. There are examples of is normal three-sided shape being changed to four sides. This trapezoidial shape was similar to the Medieval stirrup.

When scoring for the Medieval triangle in early music, be sure to avoid articulated rhythms such as  , since the jingle-rings will totally blur the rhythm. May it be suggested that the part use long and separated notes to avoid a sustained roll effect.

The most important metalic idiophones of the Middle Ages are the bells. Bells came in all sizes from the small pellet type to the large bronze-founded bells used in the tower carillons of Europe's most famous cathedrals. Bells commence historically in the primitive foundings of the Bronze age.

The smallest of the bells are the pellet bells. The reason for their name is that a small piece of buckshot or pellet was placed in each cast. Brass sleigh bells of today resemble the pellet bells. These small bells were associated with good luck, and musicians as well as dancers wore them on their costumes. Thus modern re-creations of Medieval dance music should contain pellet bells, usually played for the purpose of keeping time. Since there is a delay between the strike, or shake, and the resultant sound, all performers of the pellet bells should anticipate the beat, or they will "drag down" the beat.

Larger hand, or chime bells seemed to have been thoroughly used as evidenced in various manuscripts, such as the eleventh century Gradual from Toulouse, (British Library Harley MS. 4951, f. 299v), the twelfth-century Hunterian Psalter, (Glasgow University Library, MS Hunter 299, f. 21v), and Luttrell Psalter (n.s.).[19] In each case, the fist-sized bells were suspended from a frame, and played with brass hammers by one and sometimes two players. Lambertus decribes a performance practice of bells being used with voices *in alternatum*.[20] Since it is difficult to obtain these bells today, Montagu suggests that "modern handbells are close enough to medieval bells to make a reasonable substitute."[21]

Bells became larger and larger. The carillon type bells were usually hung in large towers of churches and cathedrals. Marin Mersenne in his *Harmonie Universelle*, 1635,[22] spends about two-thirds of his seventh book on percussion, describing the forging, metalogy, linking, etc., of the large carillon bells. But it is the Flemish builders that are responsible for the mechanization of the bells. The bells

> ...were made mechanical in the thirteenth century by being connected with clocks; a cogwell (wheel?) in the works caused the hammers to strike the tuned bells in a prescribed melodic sequence. Whenever the clock struck, the chimes played a little sacred tune, with the object of turning the hearer's thoughts from earthly to heavenly things in a gentle and agreeable manner. Flanders and nothern France, later also Holland, made this contrivance more and more elaborate. Little iron nails, inserted in a rotating cylinder in an appropriate arrangement, released the hammers so that finally a complete tune, indeed a series of tunes, was played without a man's interference (as in our music boxes). After about 1500, if not earlier, these carillons could be disconnected from the clock and the rotating cylinder, and played by hand from a keyboard, and, after 1600, even by foot.[23]

As we have seen, bells of many different sizes were used during the Middle Ages. Bells were used during most functions of the church and thus are associated with sacred music. This ends our discussion of metalic percussion, but what wooden percussion instrument replaced the bells for three days every year?

In many parts of the world, wood is quite scarce. However, wood is very abundant in Europe. As a result, a majority of European instruments are made with wood, e.g., all the string and woodwind instruments. Wooden percussion instruments of the Middle Ages are quite unique.

Wooden percussion instruments consist of castanets, clappers, blocks, and rattles. The most primitive of these are the clappers. "The clapper is the first instrument that Egyptian sources record. Prehistoric vases made before 3000B.C. figure female dancers playing, or accompanied by clappers, both held in one hand."[24] Clappers were designed simply with two sticks or bones, each held or tied at one end and then vigorously shaken. These were popular throughout the Middle Ages.

Marin Mersenne, in his *Harmonie Universelle*, 1635, mentions "all the little bones and wooden sticks which one can manipulate in such a fast and agile way..."[25] Clappers were also used in these times to scare away birds, and by lepers to warn other people of their approach. The painting in the *Rijksmuseum*, in Amsterdam, shows the Biblical leper, Lazarus, shaking a small pair of clappers.

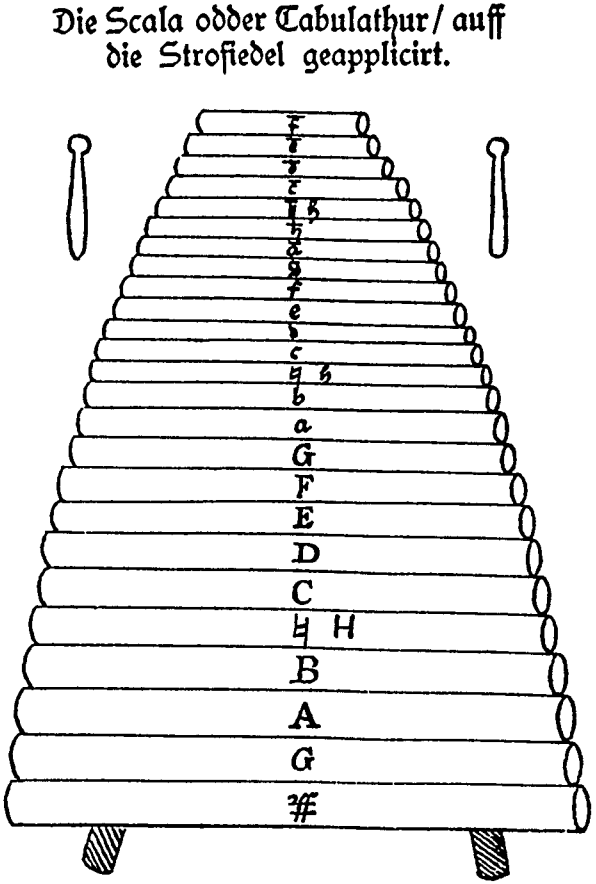
Castanets were used, but only in Spain. Their origin is Egyptian and Greek. The castanets were brought to Spain from Africa by the Moors. The Spanish word castanets, originally *castanuelas* from *castana* or *castano*, means "of chestnut wood," which many are made of even today. Castanets were used to accompany folk and church music in Spain. Such evidence is found in the *Cantigas de Santa Maria* by Alphonso X 'the Wise' (1252-84). Mersenne illustrates the castanets in pairs tied with a string, thus indicating that they were played in the traditional manner,that is, tied around the thumb and strummed with the finers rather than being mounted on a board as symphony percussionists do today.

Another wooden instrument, shaken like the clappers, was the rattle. Within the bibliographical resources used, there is no evidence found that rattles were used during the Middle Ages. However, after considering the long ethnomusicological history of rattles in all societies, certainly rattles, besides the metal pellet bells, must have existed during the Middle Ages. Folk orchestras of those times most likely used wooden rattles such as dried gourds, nut shells, and tree pods, and metal rattles such as copper and pewter mugs with a few dried seeds or pebbles. These would be similar in sound to the wood or gourd *maraca* and the metal *ganza* used in Latin American music of today.

A derivative of the rattle is the notched stick, or shell, scraped with a stick like the *guiro*. During the Middle Ages, it was the European wood carvers who mechanized this stick into the cog rattle, or ratchet. Two tongues of wood pass over a notched wooden wheel; when the wheel is turned, or cranked, the resultant sound is similar to someone running a stick along a wooden fence. The ratchet was an important instrument during the Middle Ages. It was used as an alarm by nightwatchmen, as a bird scarer, and as a "good time" noise-maker still used on New Year's Eve. The ratchet was used in the religious ceremonies of the church, especially during Holy Week when it was played in place of the bells, which were said to have gone to Rome to be blessed by the Pope. After hearing the agitating sound of the ratchet during these few days, imagine the pleasure of the people upon hearing the bells again on Easter morning!

Different pitched solid blocks of wood struck with other smaller pieces of wood indicate the ancient roots of the xylophone. The xylophone may be one of the earliest melodic instruments man ever knew. Early historical references suggest that a number of pieces of wood of varying size and density, suggesting different pitches, were laid

across a seated player's legs and struck with other pieces of wood or stone. Highly developed instruments of wood and metal, including gourd or clay resonators, existed in Asian and African societies and perhaps the xylophone came to Europe via the Crusaders. "Clair Omar Musser (American marimba virtuoso and authority) claims that the xylophone "cousins" are indigenous to Northern Europe. If this is true, the "Nordics" did not accept the instrument as did the middle and eastern Europeans, for no further evidence is available."[26] The first mention of the European xylophone is by the organist Arnold Schlick in 1511 when he calls it *hultze glechter.* An excellent illustration of the *stroh-fiedel,* a more common term for the same instrument, exists in Martin Agricola's treatise, *Musica, Instrumentalis Deutsch*[27] (see illustration) in which 25 wooden bars and two mallets are seen.



Michael Praetorius, in *Syntagma Musicum,* Vol. II, *(De Organographia)* and Marin Mersenne in *Harmonie Universelle: The Book on Instruments, Seventh Book of Percussion* both show and describe the strawfiddles, or xylophones similar to the illustration. The

reason that the instrument was called a "straw fiddle," is because the graduated wooden slabs were loosely placed or slung together on a bed of straw. Wandering musicians used it because of its portability. The first real usage of the xylophone in music literature is not until 1874 when Camille Saint-Saens scored the xylophone into his *Danse Macabre* to suggest the clatter of bones. Kathi Meyer-Baer, in her book *Music of the Spheres and the Dance of Death*[28] finds that the *danse macabre* has appeared in music starting in the fifteenth century and is still apparent today in dances such as the Italian *Tarantella*. The German artist, Holbein, in his woodcuts *Heidelberger Totentanz*, 1485, and the French artist Guyot Marchand in *Danse Macabre*, 1846, both show skeletons playing snare drums (tabors). Holbein's most famous cut is of a skeleton playing a xylophone (see illustration) for this is the only picture clearly showing the xylophone. Notice in both examples that the instrument was played from the bottom end of the keyboard, and that all the bars were lined up in a single file. This writer, in a trip to Russia in 1966, found musicians still performing on the xylophone from the bottom end, rather than from the side, in the piano-oriented manner which the instrument is normally played today.

Fig. 35
Xylophone (From Holbein's *The Dance of Death*)

As we are all aware, Western European Music is perhaps, to the rest of the world, somewhat backward and very restrained in the development of rhythm and meter. As we have seen, there is a rich heritage of medieval percussion instruments. Our problem, because of a lack of recorded evidence, is how to discover how that music was performed. When studying the original manuscripts, rhythm, and more especially meter, are often inconstant, and many of our transcriptions rigidly place this music into our modern straight-jackets of two, three, or four-four time. Much of our twentieth century music has broken the centuries of bondage imposed on rhythm and especially meter. All musicians, but

especially percussionists, should realize that medieval music provides more opportunities to perform music in a somewhat freer metric sense than music from 1500 to 1900. The various early instruments, with their similarities and differences from today's percussion, should present many new challenges to the performers and listeners of music of the Middle Ages.

FOOTNOTES

[1]This writer is limiting the Middle Ages from approximately 1000 to 1500 A.D.

[2]*Early Percussion Instruments from the Middle Ages to the Baroque*, James Blades and Jeremy Montagu, Oxford Press, 1976.

[3]*Making Early Percussion Instruments*, Jeremy Montagu, Oxford Press, 1976.

[4]Curt Sachs, *The History of Musical Instruments*, Norton, 1940.

[5]Isabelle Cazeaux, *French Music in the Fifteenth and Sixteenth Centuries*, Blackwell, 1975.

[6]Thoinot Arbeau, *Orchesography*, Dover Press, 1589, (1967), pp. 18-19.

[7]*Ibid.* p. 19.

[8]*Ibid.* p. 19.

[9]*Ibid.* p. 22.

[10]There are many stone and wood carvings in England especially.

[11]James Blades, *Early Percussion Instruments*, Oxford, 1976, p. 4.

[12]Sebastian Virdung, Basil, 1511.

[13]James Blades, *Percussion Instruments and Their History*, Faber, 1970, p. 236.

[14]"There are several pictures in which it appears that the player is plucking the snare rather than striking the head, in which case the snare would rebound on to the head and so make the instrument sound. As it would not be practical to play quick rhythms by plucking the snare, such a method strikes one as being unlikely, though not impossible," *Ibid.*, p. 197.

[15]Gordon Peters, *Treatise on Percussion*, Rochester, 1962, p. 102.

[16]Jeremy Montagu, *Early Percussion Instruments*, Oxford Press, 1976, p. 51.

[17]James Blades, *Early Percussion, Op. Cit.*, p. 17.

[18]Jeremy Montagu, *Op. Cit.*, p. 48.

[19]James Blades, *Op. Cit.*, p. 26-28.

[20]Gilbert Reaney, "The Performance of Medieval Music", W.W. Norton, 1966, p. 714.

[21]Jeremy Montagu, *Op. Cit.*, p. 50

[22]Marin Mersenne, *Harmonie Universelle: The Book on Instruments*, the Seventh Book on Percussion, 1635, reprinted in English, Martinus Nyhoff, 1957, pp 495-568.

[23]Gordon Peters, *Op. Cit.*, p. 253.

[24]Gordon Peters, *Op. Cit.*, p. 128.

[25]Marin Mersenne, *Op. Cit.*

[26]Gordon Peters, *Op. Cit.*, p. 187.

[27]Martin Agricola, *Musica, Instrumentalis Deutsch*, 1528, p. 118.

[28]Kathi Meyer-Baer, *Music of the Spheres and the Dance of Death*, Princeton University Press, 1970, pp. 300-301.

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SOME RHYTHMIC FEATURES IN MESSIAEN'S *TURANGALILA SYMPHONY*

by Joseph Youngblood

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Music Theory from Indiana University. Although basically a pianist, he was for several seasons the fifth member of the percussion section of the Greater Miami Philharmonic Orchestra, specializing in the bass drum.

Editor's Note:
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In the works of Olivier Messiaen, we expect to find certain rhythmic devices, such as non-retrogradable rhythms (that is, palindromic rhythmic patterns, or rhythmic patterns which read the same backward as forward), rhythmic ostinatos, and rhythmic patterns resulting from a systematic manipulation of the time values. During the rehearsals for a recent performance of the *Turangalila Symphony*, several passages looked as though they might contain one or more of these devices; what time there was then, however, had to be spent learning to play the parts. And as soon as the performance was over, when there might have been time to study the structure of the music, the parts were shipped back.

A full score of this work has now become available to me, and, after analyzing two such passages, I am happy to report that my expectations have been fulfilled. The passages occur in the fourth and sixth movements, and this discussion concerns only the instruments of indefinite pitch. In neither case is the last note considered, for these durations can be measured only between articulations.

IV. CHANT D'AMOUR 2

The passage is the first 22 measures. One part is for suspended cymbal; the other is for woodblock. The cymbal part is 21 notes long; it is non-retrogradable and makes use of systematically altered time values. The basic unit is the sixteenth note. The first note is 17 units long. Each of the next nine notes is one unit shorter than the preceding one; the 11th and pivotal note is therefore seven units long. Each of the next nine notes is incremented by one unit, from eight to 16 units. The following pattern of durations results: 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, (16).

The woodblock part is a comparatively long ostinato, 17 articulations spread over 13 beats. The pattern of durations is as follows: 4, 4, 4, 2, 3, 2, 2, 2, 2, 3, 3, 3, 1, 2, 3, 4, 8. The part enters on the 14th beat (that is, after a rest of 13 beats) and occurs four times. The effect is rather like that of the talea of a XIV-century isorhythmic motet. And, like a talea, it interacts with the other part differently on each iteration. Although this fact, and the length of the ostinato itself, make it difficult to perceive aurally, it is no less present.

VI. JARDIN DU SOMMEIL D'AMOUR

The passage is from the pickup to number 4 to the end. One part, to be called the upper part, is played by a high temple block and a triangle.

The lower part is played by a low temple block and a small Turkish cymbal. Both parts are incremental; the unit is again the sixteenth note.

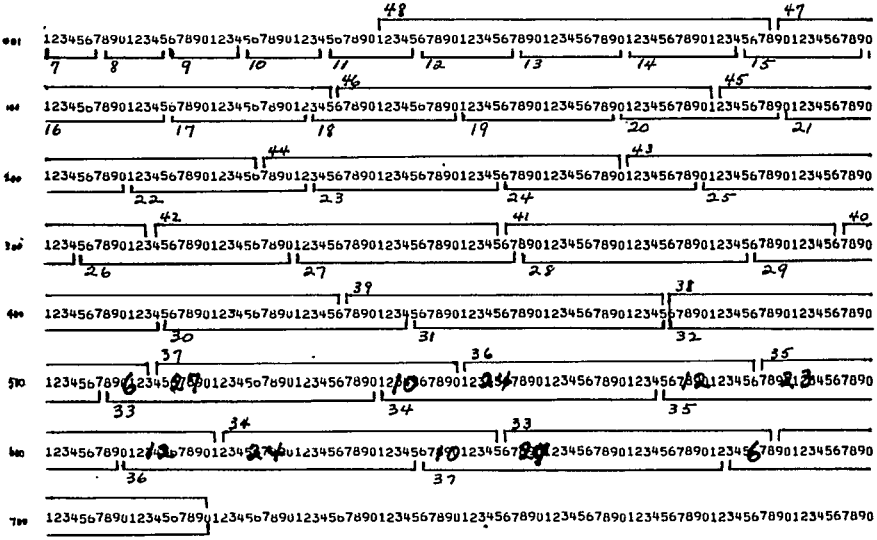
The lower part contains 32 notes. The first note is seven units long. Each successive note is incremented by one unit; thus, the last note is 37 units long. The upper part contains 17 notes. Each note in this part is one unit shorter than the preceding note; the durations decrease from 48 to 33 units.

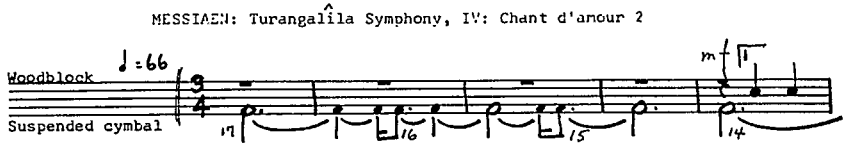
The upper part enters on the 41st unit. The articulations in the two parts coincide at one point, and one point only, on the 476th unit, which is the 25th note (32 units) of the lower part and the 11th note (38 units) of the upper part. The articulation immediately preceding 476 is 31 units earlier, creating the longest gap in the piece to that point. The next articulation after 476 is 32 units later, the longest gap in the piece.

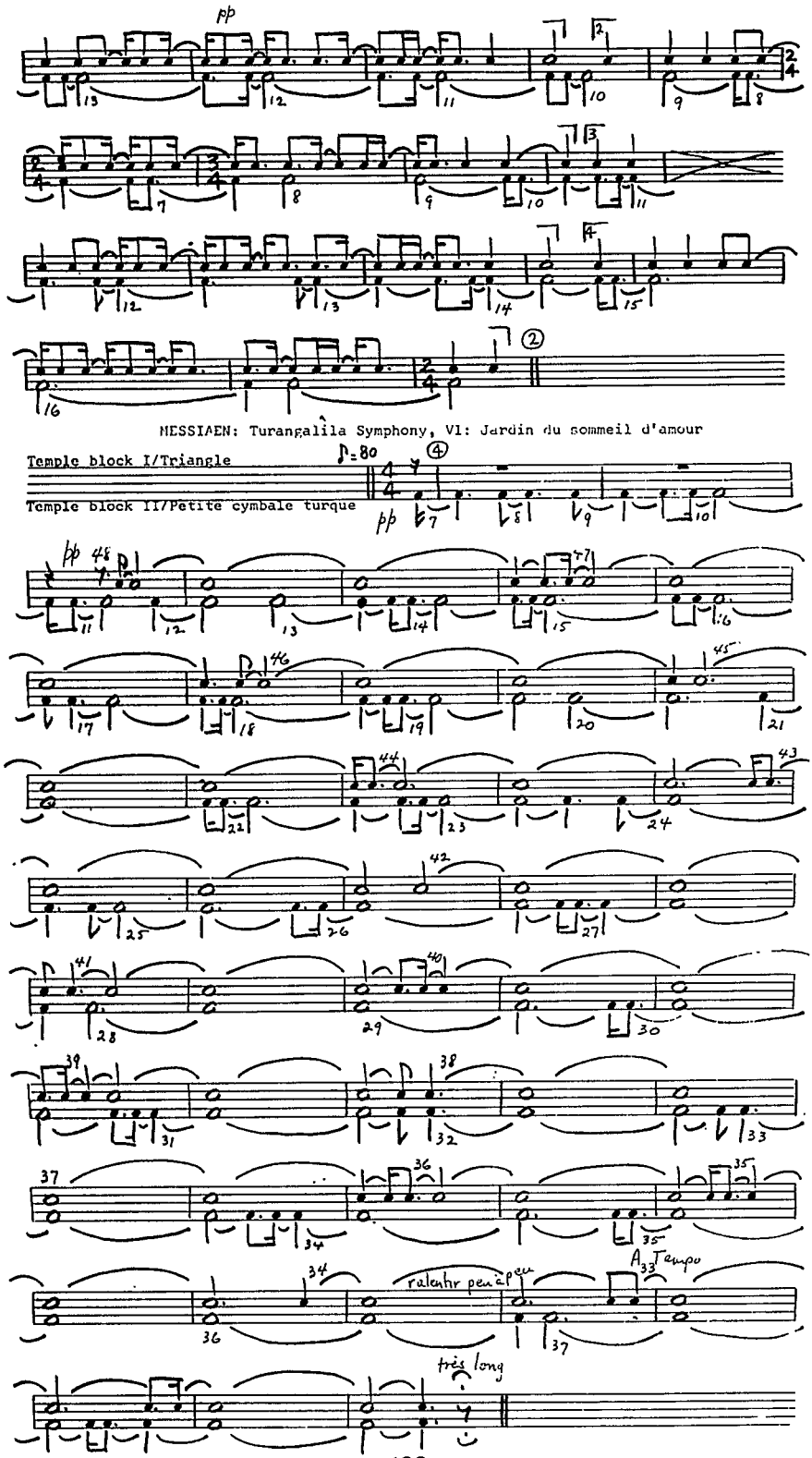
Following 476, the articulations alternate between the two parts. The durations between the articulations create a non-retrogradable rhythm: 6, 27, 10, 24, 12, 23, 12, 24, 10, 27, 6. As can be seen in Figure 1, the pivotal point in this pattern, the sixth (23-unit) point, occurs during the one period in the piece when both lines have notes of the same duration--35 units.

The high degree of integration in and coordination between these percussion parts is symptomatic of the pitch and further rhythmic relationships to be found in this remarkable composition. A study of these relationships is now underway.

Figure 1. Messiaen, Turangalila Symphony, VI, #4 to end. Durations and Points of Articulation.






pp
MESSIAEN: Turangalîla Symphony, VI: Jardin du sommeil d'amour
Temple block I/Triangle
Temple block II/Petite cymbale turque
♪=80
pp
ralentir peu à peu
A 33 Tempo
très long

DEFINITE PITCHED IDIOPHONES OF THE JAVANESE GAMELAN

by Mario A. Gaetano Jr.
99 River Bluff Apts.
Greenville, N.C.

Java is one of approximately 3,000 islands making up the land area known as Indonesia. It is divided into three provinces; West Java, Central Java, and East Java, each with their own capital. Djakarta (formerly Batavia), the capital of West Java, serves as the centralized capital for the entire nation.

The country is approximately 500 miles across by one hundred miles long, equivalent in square miles to New York State. The population has become a serious problem, increasing to 125 million people, four times that of New York State, as of 1975. This is mainly a result of two traditions; marrying young, and having large families.

Java is volcano country. Although there is a large variety of terrain in Java, everything from thick jungles to swampy lowlands, volcanoes are its most prominent feature, 61 in all, 14 are still active.

The climate is basically two fold. Heavy tropical rains dominate from October to May, and then, the tables turn to severe drought, lasting from June to September. The diet consists mainly of rice and fish. Java is a leading world export in tea, sugar, coffee, rubber and tobacco. Although still an agricultural society, many technological advances have taken place. Large skyscrapers, automobiles, and oceanliners are the rule in the large port cities just as thatch huts and ox-drawn plows are the rule in the more remote villages.

The people of Java are basically a conglomeration of four cultures: Malay from the north, Hindu and Moslem from India and the Near East, and also of Dutch influence. Java is now a province of the Netherlands, completely governed and supported by them.

The music of Java has to be the most interesting and exciting ethnic music I have ever heard. Being a percussionist, I have had literally a "field day" with the research that follows and have enjoyed this study like no other. The music is all percussion orientated and the title "Definite Pitched Idophones" may sound like a very specific area of study, but the ensembles are literally dominated by these instrument types, making up approximately 90% of the orchestra and this article will only, unfortunately, touch upon their surface.

The term "gamelan" will be used hereafter as a generic term for "orchestra". The gamelans range in size from three instruments to a thundering, spectacular array of over 75 bronze instruments, drums, singers, and dancers.

I have divided the contents of this study into seven sections, some rather lengthy and others quite condensed. They are as follows:

1) Theory of Gamelan Music
2) Gongs and Gong Making; Bonang Family
3) Saron Family
4) Gender Family
5) Gambang Kayu
6) Historical Accounts and Facts
7) Analysis of Musical Score

When discussing each of the idiophones, I will attempt to take three main areas into account; 1) their construction, 2) playing techniques, and 3) their melodic function in the gamelan music.

The following two pages serve as an introductory outline of, not only the instruments to be discussed in this study, but of all the instruments found in the Javanese Gamelan.

A) IDIOPHONES
  1) Vertically Suspended Gongs
    a) gong ageng
    b) gong suwukan or sijem
    c) gong engkuk
    d) gong kemong
    e) kempul

2) Horizontally Suspended Gongs
   a) kenong djapan
   b) gong kemodong
   c) ketuk
   d) kempyang

3) Bonang Family
   a) bonang panembung
   b) bonang barung
   c) bonang panerus

4) Saron Family
   a) saron demung
   b) saron barung
   c) saron panerus
   d) saron slentem

5) Gender Family
   a) gender panebung or slentem
   b) gender barung
   c) gender demung
   d) gender panerus

6) Xylophone - Gambang Kayu

B) MEMBRANOPHONES
   1) Kendang Gending-large, barrel-shaped, double-headed, hand
   2) Ketipung-two-headed hand drum, smaller than above
   3) Tjiblong or Bantangan-hand drum
   4) Bedug-large barrel drum played with beater

C) CHORDOPHONES
   1) Tjelempung-plucked zither of 26 strings in 13 pairs
   2) Rebab-two-stringed bowed lute

D) AEROPHONES
   1) Suling-endblown, ring-stop, bamboo flute

Theory of Gamelan Music

According to M. Hood and J. Maceda, co-authors of **Music,**[1] there are nine possible levels of musical consideration that must be taken into account when discussing the Javanese gamelan, no matter how large or how small. They are:

1) Two tuning systems-slendro and pelog
2) Patet modes
3) Colotomy-periodic punctuation
4) Nuclear theme-fixed melody
5) "Balungan"-reinforcement of fixed melody
6) Instrumental idiom

7) Local style
8) Group empathy
9) Individuality of each performer

Two tuning systems are used, the equi-pentatonic slendro and the heptatonic pelog. When discussing the two scales, the ethnomusicological term "cents" will be used to describe intervallic relationships. An octave is divided in 1200 cents-

Western scale-	E	F	G	A	B	C	D	E
cents-	0	100	300	500	700	800	1000	1200
Pelog scale-	0	120	270	540	670	785	950	1200

The western scale can also be thought of in terms of whole and half steps, as below:

C D E F G A B C
1 1 1/2 1 1 1 1/2

The seven-tone pelog scales shows no fixed pattern of whole and half steps, but rather a peculiar arrangement of interval distances:

(approximate values) C D E F G A B C
4/5 1 1/4 3/5 3/4 1 1/3 7/10 1/2

The five-tone slendro, on the other hand, is made up of five equidistant tones, each interval being 240 cents from the next, equivalent to 6/5 of a western interval.

Tuning in the gamelan is extremely elastic. Gamelans are not only classified as to the type of scale system used, but also to the size of the intervals between notes. Below is a table of the western approximation of some common Javanese scales[2]

1) A B D# E G# A /A is dajaswara (principal tone)
1 M3 1/2 M3 1/2

2) Bb B Db E F Bb /Bb is dajaswara.
1/2 d3 A2 1/2 P4

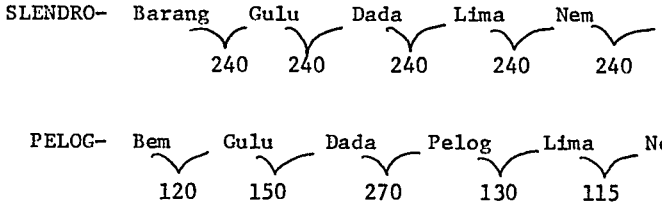
3) Bb Eb F Gb A Bb /Bb is dajaswara.
P4 1 1/2 A2 1/2

4) D# E G3 A B D# /D# is dajaswara.
1/2 M3 1/2 M3 1/2

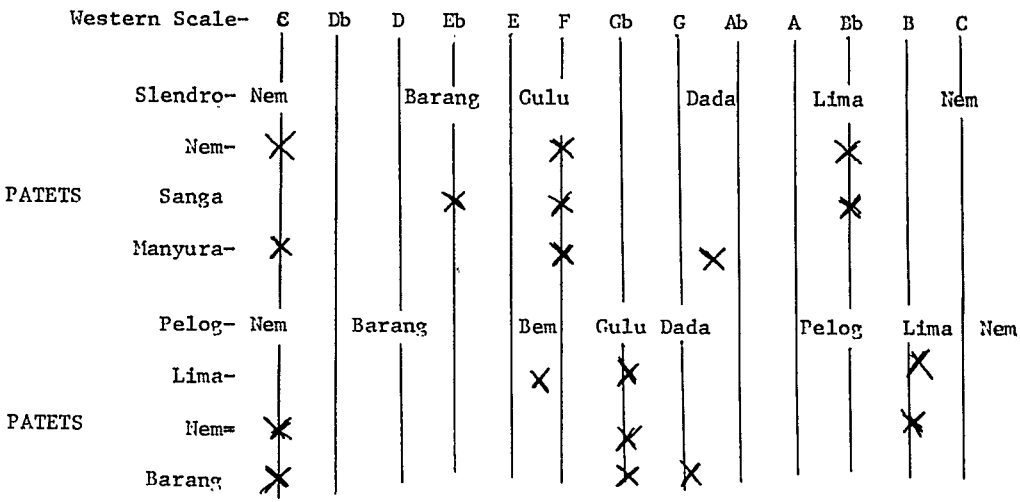
5) D E F# G# A# D /D is dajaswara.
1 1 1 1 d4

6) Eb F A Bb D Eb /Eb is dajaswara.
1 M3 1/2 M3 1/2

Each tone of each scale system has a name. Below are the five and seven note names respectively for the slendro and pelog scales.



Along with the two tuning systems, each of these two systems contain three modes called "patets". In slendro, the three modes are called Nem, Sanga, and Manyura. In pelog, the modes are called Lima, Nem, and Barang. Each of these patet modes are associated with a special time of day and certain divisions in theatre performances. Each patet has a different set of principal tones that receive special melodic and colotomic emphasis. Below is a chart showing the three patets of each system and their western equivalent. The "X" represents a pitch which receives the special emphasis.[3]



Colotomy is a special system in the gamelan music where the music is marked off into distinct sections by the entrance of specific instruments in a specific order at specific times. Below is an example of four Javanese gong types (to be explained in detail later) and their typical entrances in a 16 measure phrase.

4

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
KETUK	X		X		X		X		X		X		X		X	
KEMONG				X				X				X				X
KEMPUL						X				X				X		
AGENG																X

The nuclear theme or fixed melody is equivalent to a western cantus firmus-usually an 8 to 16 measure melody, slow and simple and of equal note values, in which layers or ornamentation and elaborations are built around. "Balungan", or reinforcement of the nuclear theme comes simply from an increase in instrumentation and also from colotomic instruments periodically playing pitches which coincide with the nuclear melody at a point in time.

When discussing the idophones of definite pitch, I will give frequent reference to the two tuning systems (slendro and pelog) and their melodic function in the gamelan (nuclear theme, colotomic, or ornamental).

Gongs and Gong Making; Bonang Family

The gongs of the gamelan can be classified into two major groups; vertically suspended and horizontally suspended, all of definite pitch. Further classification is made by size, pitch, and type of colotomic function in the gamelan. The gongs to be discussed from largest to smallest are as follows:

A) Vertically Suspended Gongs
1) gong ageng
2) gong suwukan
3) kempul
4) engkuk
5) kemong

B) Horizontally Suspended Gongs
1) Kenong
2) ketuk
3) kemodong
4) kempyang
5) bende (not found in gamelan)

Another idiophone of the gong type is the Bonang, deserving separate classification because of its ornamental, rather than colotomic function.

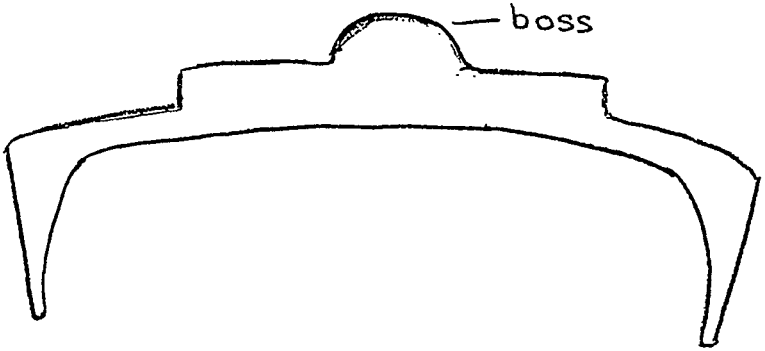
The majority of Javanese gongs are made of krawang, a bronze alloy consisting of ten parts copper and three parts tin. Other materials used as substitutes and economic compromises include besi (iron), and kunigan (brass). The moulten bronze alloy is poured from a melting pot into a basin-type mould and then hammered into shape. The majority of gongs are handmade in Semarang but other metal instruments are manufactured in more than 50 places in Java by no less than 146 smiths.

The tuning of the gongs is done by cold-hammering the gong wall, both inside and out. The larger gongs are distinguished and graded according to the number and nature of their vibrations. For example, the people of the Principalities prefer their gongs to have 12 or 13 audible beats after it is struck. Other areas, including Makassar, prefer as many

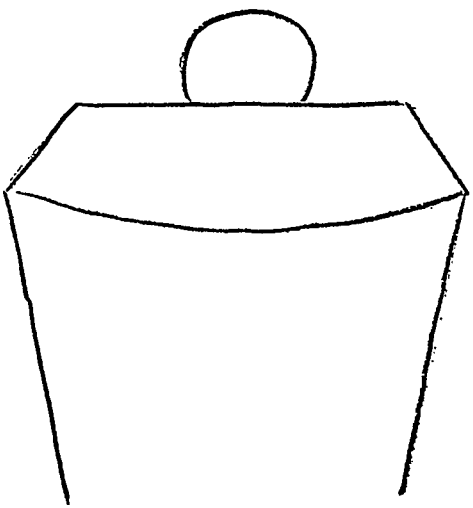
beats as possible. In 1961, a gamelan factory was established in Surakarta, Java. A set of tuned bars were used as a pattern of standardization for tuning all the instruments of the gamelan, but this will take a while to accomplish because of the number of old instruments in circulation. Also, traditional villages do not have access to the cities to purchase them.

The gongs are hand-polished. The entire surface of the smaller gongs are polished but only the boss is polished of the large ageng, suwukan, and kenong.

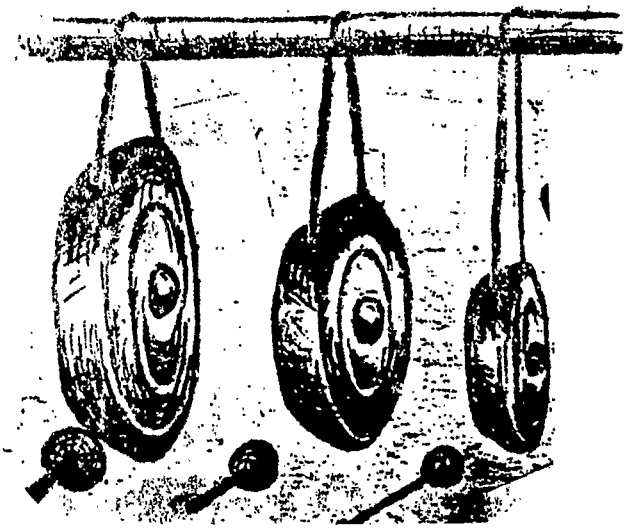
Every part of the gong has a name; every curve, tier, or side. For our purposes, only the "boss", the extended center, need be remembered. The vertically suspended gongs are not flat and convex like the Indian or Chinese type, but instead, the rim is bent down and the surface is tiered. The following pages show an illustration of the surface of a vertically suspended gong lying on its side.



The horizontally suspended gongs are often referred to as "pots" or "kettles" because of their unique shape, large bosses and extended shells.



The gong ageng is the largest vertically suspended gong, approximately a meter in diameter and between 19 and 31 kilograms in weight. It is found only in the larger gamelans of the Principalities. Its pitch range is from 30 to 55 c.p.s. (cycles per second) and usually two gong agengs are used of different pitch. The larger "gong wada" is referred to as female and tuned to gulu, and the smaller "gong lanang" is referred to as male and tuned to lima, although the pitch of the gong is extremely low and hard to distinguish. The two gong agengs are suspended within a frame of poles, hanging side by side, with their surfaces facing each other.



The gongs are struck with a "tabuh" (mallet) with a round woolen ball head, and it is always struck directly on its boss.

The colotomic function of the gong ageng is to mark off the end of each melodic section, usually 16 "western bars" in duration.

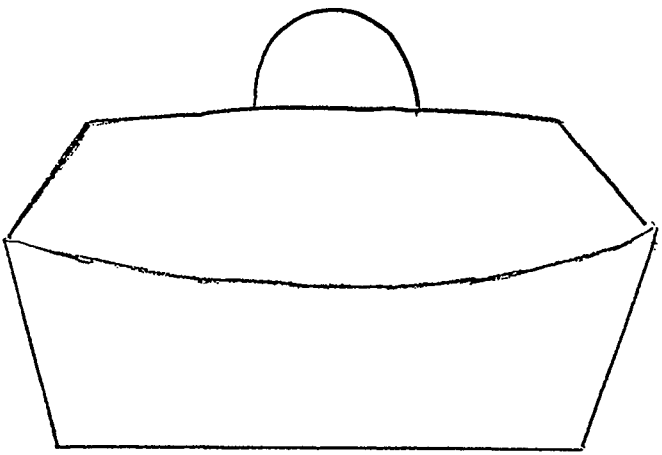
The gong suwukan or sijem is the same shape as the gong ageng but it is smaller, pitched one or two octaves higher, and is found in the larger gamelans. The gong suwukan is also found in the wayang kulit (shadow puppet theatre) and gending lampah, replacing the gong ageng, because, in these gamelans, the gong beats must come in quicker succession and a higher pitched gong is necessary. It serves roughly the same function as that of the ageng, marking ends of melodic sections. There are usually a number of suwukan for each tonal system. A typical gamelan will employ three to six gongs tuned to bem, gulu, and dada in slendro - 70 to 92 c.p.s., and bem, pelog, and dada in pelog - 63 to 85 c.p.s.

The kempul is next in succession, still smaller than suwukan and pitched an octave higher. Eleven gongs are used in the gamelan, one for each pitch of the two tuning systems (slendro and pelog), with the ex-

ception of one tone-pelog. This gong serves a secondary punctuating role in the gamelan in that it divides the melodic phrases into smaller, 1/4, segments and also reinforces tones of nuclear theme. It also marks the opening and closing of melodic periods along with occurring within the period.

The very smallest vertically suspended gongs are the "engkuk" and the "kemong." The two gongs are always found as a pair and used exclusively in a slendro gamelan. The engkuk is tuned to barang, approximately 280 c.p.s. and the kemong is tuned to nem, approximately 244 c.p.s. Both gongs are about a foot in diameter, are played by one player, and serve a colotomic function for metric accentuation. The kemong serves two functions; 1) it acts as a signal instrument anticipating the close of a long melodic period where it has been silent throughout, also 2) in ostinato passages it divides the ostinato motif in half. The photograph one 128 shows these two gongs in the far right hand corner.

There are five types of horizontal gong forms. Two of these types, the kenong and the kempyang, are very similar in appearance, consisting of large bosses and extended shells shaped like below.



There are usually two kenongs in the gamelan tuned to nem and barang. During recent times, more and more kenongs have been added to the gamelan. Some have up to eleven such instruments, one for each pitch of both tuning systems. Their melodic function is not colotomic but instead balungan, or reinforcement of the nuclear theme.

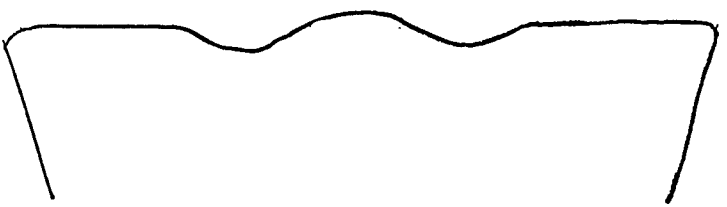
The kenong are large bronze kettles with very high rims and are suspended on cords on top of a bottomless wooden box. The tabuh used for the kenong is short and barrel-shaped and has a thick head covered with wool or cord. Below is a hand drawing.

The kempyang consists of two small kettles played as a pair only in pelog tuning systems. They are suspended on cords lying in a "bed", again with no bottom. They are tuned to nem and barang, approximately 461 and 507 c.p.s. respectively. They divide the below "ketuk" phrase evenly in two.

Another horizontal gong form which consists of a single sound kettle with a flat and low rim, suspended on cords over a bottomless wooden box, is the ketuk. The sound is darker than the kenong. All gamelans have only one ketuk, tuned to gulu or occasionally nem in slendro or barang in pelog, and may be played by the kenong player. The tabuh used are long and cylindrical, covered with wool or cord. Their purpose is to subdivide the kenong phrases into smaller ones.

Another gong form, quite different from the kettle-shaped kenong, kempyang, or ketuk, is the gong kemodong. It consists of two bronze keys suspended over two clay pot resonators. Both keys are tuned to either lima or nem, and both are slightly out of tune to cause shimmering vibrations. They serve as a substitute for the gong ageng in smaller gamelans.

The last horizontal gong form, not found in the large gamelan, but deserving recognition, is the bende. The shape of the bende is characterized by a sunken boss:



Its tone is short and muted. It is the only gong that can be struck in two spots-either on the boss which produces a hollow, short, penetrating tone, or on the surface which produces a brassy, ringing tone. The bende is played with a wooden tabuh and it is hand-held and muted. It's function is not one of punctuation, but the bende plays an in-

dividual role serving as a signaling instrument, for example, at auction sales. It is alos used in ceremonial processions.

On the page that follows are charts showing the range and pitch of all the definite pitched instruments of the gamelan slendro and gamelan pelog, both from Jogya, Java. The instruments marked with an "X" are vertically suspended gongs and the instruments marked with an "O" are horizontally suspended gongs. The cycles per second are given for each pitch along with a letter symbol to represent scale tones. (B-barang, G-gulu, D-dada, L-lima, N-nem, P-pelog, P'-Bem)

RANGE AND PITCH OF THE IDIOPHONES OF A GAMELAN PELOG FROM JOGYA[5]

1) SARON - 586 cps. (P) to 1014 cps. (B)
2) SARON PANERUS- 1172 cps. (P) to 2028 cps. (B)
3) DEMUNG- 293 cps. (P) to 2028 cps. (B)
4) BONANG PANERUS-586 cps. (P) to 2028 cps. (B)
5) BONANG BARUNG- 293 cps. (P) to 1014 cps. (B)
6) BONANG PANEMBUNG- 146 cps. (P)to 507 cps. (B)
7) GENDER PANERUS PELOG- 293 cps. (P) to 1362 cps. (D) with the following tones omitted: 400 cps. (P); 507 cps. (B); 800 cps. (P); and 1014 cps. (B).
8) GENDER PANERUS BARANG- 253 1/2 cps. (B) to 1362 cps. (D) with the same tones omitted as above.
9) GENDER BARUNG PELOG- 146 1/2 cps. (P) to 684 cps. (D) with the following tones omitted: 200 cps. (P); 253 1/2 cps. (B); 400 cps. (P); and 586 cps. (P).
10) GENDER BARUNG BARANG- 127 cps. (B) and 684 cps. (D) with the following tones omitted: 146 1/2 cps. (P); 200 cps. (P); 293 cps. (P); 400 cps. (P); and 586 cps. (P).
11) GENDER PANEMBUNG- 146 1/2 cps. (P) to 253 1/2 cps. (B)

"O" 12) KEMPYANG 1- one tone- 507 cps. (B)
KEMPYANG 2- one tone- 461 cps. (N)

"O" 13) KETUK- one tone- 314 cps. (G)

"O" 14) KENONG- six tones- respectively 342 cps. (D), 432 cps. (L), 461 cps. (N), 507 cps. (B), 586 cps. (P), and 628 cps. (G).

"X" 15) KEMPUL- six tones- respectively 171 cps. (D), 216 cps. (L), 230 1/2 cps. (N), 253 1/2 cps. (B), 293 cps. (P), 314 cps. (G).

"X" 16) GONG SUWUKAN- 3 tones- respectively 63 1/2 cps. (B), 73 1/2 cps. (P), and 85 1/2 cps. (D).

RANGE AND PITCH OF THE IDIOPHONES OF A GAMELAN SLENDRO FROM JOGYA[6]

1) SARON PANERUS- 1180 cps. (B) to 2360 cps. (B)
2) SARON-590 cps. (B) to 1180 cps. (B)
3) DEMUNG- 280 cps. (B) to 590 cps. (B)
4) GAMBANG KAYU- 122 cps. (N) to 1952 cps. (N)
5) GENDER PANERUS- 280 cps. (B) to 1480 cps. (D)
6) GENDER BARUNG- 140 cps. (B) to 740 cps. (D)
7) GENDER PANEMBUNG- 122 cps. (N) to 280 cps. (B)
8) BONANG PANERUS- 590 cps. (B) to 1952 cps. (N)
9) BONANG BARUNG- 280 cps. (B) to 976 cps. (N)
10) BONANG PANEMBUNG- 140 cps. (B) to 280 cps. (B)

"X" 11) ENGKUK- one tone- 280 cps. (B)

"X" 12) KEMONG- one tone- 244 cps. (N)

"O" 13) KETUK- one tone- 322 cps. (G)

"O" 14) KENONG- 5 tones-respectively 370 cps. (D), 425 cps, (L), 488 cps. (N), 590 cps. (B), and 644 cps. (G).

"X" 15) ONG SUWUKAN- three tones-respectively 70 cps. (B), 80 1/2 cps. (G), and 92 1/2 cps. (D).
"O" 16) GONG KEMONDONG- one tone- 40 cps. (G)
"X" 17) GONG AGENG- two tones- respectively- 40 cps. (G) and 53 cps. (L).

The next definite-pitched idiophone, very similiar to the horizontal gong types, but deserving separate classification because of its strictly ornamental role, is the bonang. It consists of a double set of bronze kettles-gong shaped with broad rims. They are placed open-side-down lying over a wooden grated "bed" frame mounted on feet. Two cords are stretched taut across the frame in which the kettles are placed.

There are three types of bonang:

1) Bonang Panembung- consisting of 14 kettles (two octaves) in pelog or 10 to 12 kettles (two octaves) in slendro.

2) Bonang Barung- same as panembung but pitched an octave higher.

3) Bonang Panerus- same as panembung but pitched two octaves higher.

Two of each instrument are found in the gamelans, one for slendro and one for pelog. The bonang panembung is only found in Jogya. The three instruments are constructed so that the lowest octave of one is the highest octave of another, and so on.

The bonang is set up so that the higher octave of the pair (female) is directly behind the lower octave (male). The female octave has higher rims to facilitate performance. Two cylindrical mallets covered with wool or cord are used. Below is a simple sketch of the bonang.

Although the two octaves of the instrument are separated from one another, the kettles are not arranged in melodic succession. The most frequently played kettles are at the ends. Below is a typical "set-up" of the bonang in the Jogya gamelan.

	3′	5′	4′	2′	1′	6′	7′
7	1	2	6	4	5	3	

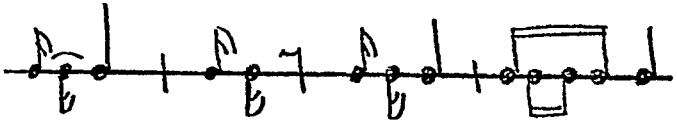
Tuning of the bonang kettles is accomplished by filing off from the boss or the upper kettle rim.

The bonang (trompong in Bali) is an improvisatory instrument. It used to be essential in the gamelan, but its role is slowly being taken over by the metalophones. It serves many functions depending on the composition. For example, the bonang:

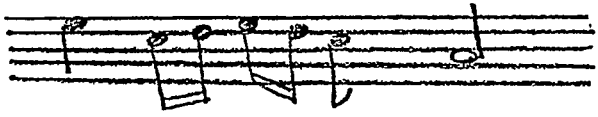
1) paraphases the nuclear theme,
2) anticipates the nuclear theme,
3) analyzes the nuclear theme into smaller values,
4) imitates the nuclear theme
5) syncopates the nuclear theme, and
6) fills in melodic gaps.

The bonang can play its above functions in basically two ways- 1) in octaves, or 2) in unison with both hands striking the gongs in alternation. Passages in the lower register are of necessity to be played in unison. As the melody moves to the upper register the left hand reinforces it in octaves.

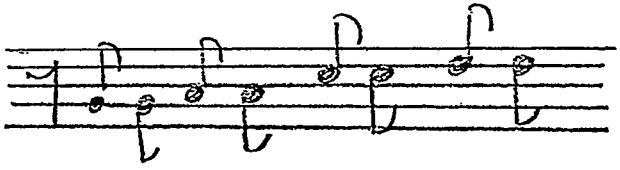
There are five different types of improvisatory techniques employed by the bonang player; the first, called "numpak", consists of short or extended groups of "grace notes" that are played staccato by allowing the mallets to rest on the bosses after striking.



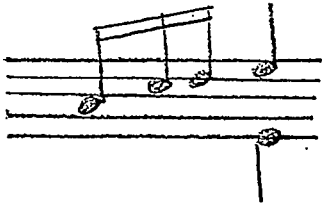
The second, called "kemlong", consists of "turns."



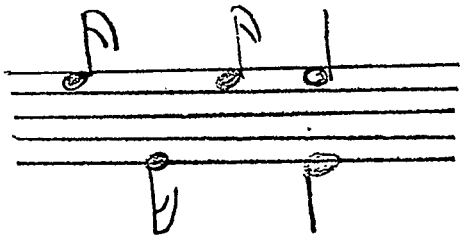
The third, called "tutug", is where the left hand "falls behind" repeating each tone sounded by the right. The left hand tones are muted with a dampening stroke.



The fourth, called "ngoret", is actually a three note glissando leading to the octave.



The last technique, called "ngembat," consists of broken octaves.



Now we turn to the "bar-key" idiophones, synonymous to the western "mallet percussion". There are three distinct groups, classified according to the material the bars are made from, the presence of and type of resonators, and the melodic function in the gamelan.

1) Saron
2) Gender
3) Gambang Kayu

Further classification is made according to pitch and range of the instrument.

Saron Family

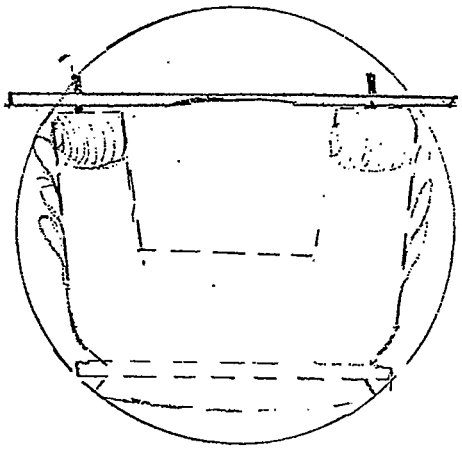
There are four types of sarons, each containing six keys (one closed octave) in slendro and seven keys (one unclosed octave) in pelog. The lowest pitched saron is called the slentem, ranging in pitch from 140 to 280 c.p.s. in slendro and 140 1/2 to 253 1/2 c.p.s. in pelog, Two slentems are used, one for each tuning system.

The next higher pitched saron is called the saron demung, its pitch range being from 280 to 590 c.p.s. in slendro and 293 to 507 c.p.s. in pelog. Four demungs are found in the large gamelans, two for each system.

The saron barung is pitched an octave higher than the saron demong-from 590 to 1180 c.p.s. in slendro and 586 in 1014 c.p.s. in pelog. Usually eight, four for each system, are employed.

Two saron panerus, one for each system, are employed in the gamelan. The saron panerus or "peking" is pitched two octaves higher than the saron demong- from 1180 to 2360 c.p.s. in slendro and 1172 to 2028 c.p.s. in pelog. (Refer to pages 131 and 132).

All four saron types are constructed the same way, the only difference being in size. A trough resonator is carved out of a solid log.

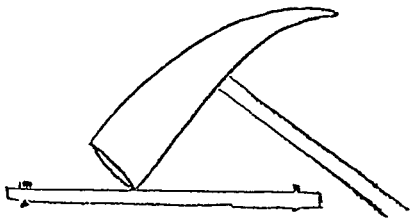


The bronze keys rest on a soft cushion held in place by metal pins through holes at both ends of each key. There are no cords or any type of suspension. Tuning of these keys is accomplished with a file and scraper. To lower the pitch, the ends of the key (underneath) are filed, or the keys are bent along their longitudinal axis. To raise the pitch, the middle (underneath) of the key is filed down.

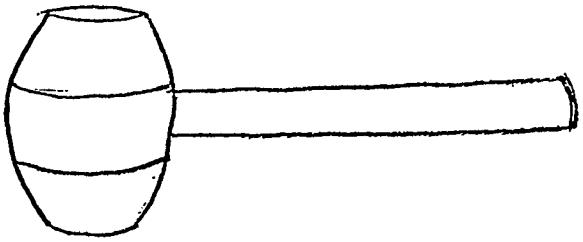
The size of the saron is respective to its pitch. The lower the pitch, the larger the instrument. The tone of the large sarons is short and heavily metallic while the tone of the smaller sarons is ringing, penetrating, and anvil-like.

The sarons, like the genders, are tuned "out of tune" to cause shimmering beats. The larger sarons start at a 1/4 tone apart and the smallest ones end up almost in unison. There is also large variation in pitch when the key is struck in different spots. There is wide variation in pitch between two tones an octave apart. The large variations are a result of lack of standaridizations and the fact that the instruments are all handmade. But these variations are ACCEPTABLE to the perfomers and expected.

The tabuh (mallet) used is called a "panggul". There are two types. The first is made of buffalo horn and is hammer-shaped. The bar is not beaten with the entire width of the head, but instead, it is beaten with the edge, employing a "chopping" technique.

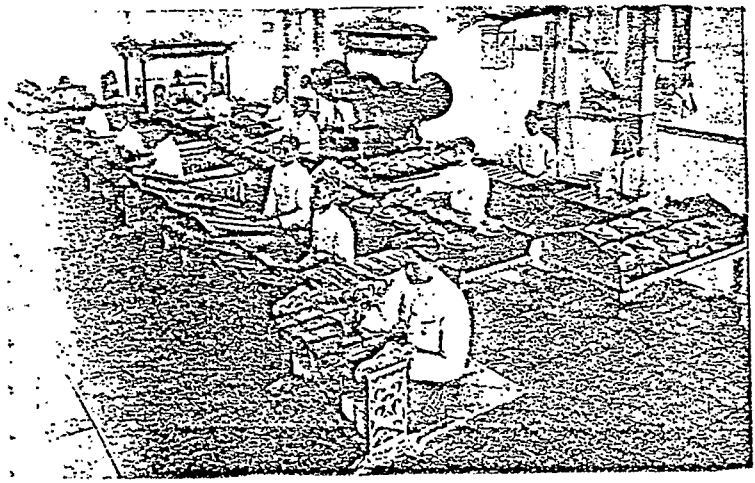


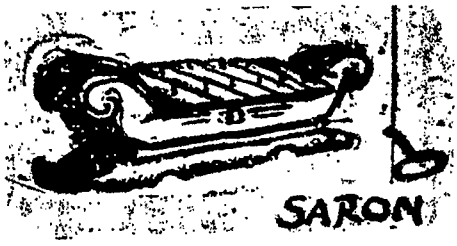
The second type of mallet is made from wood and is shaped like below. The entire surface of the mallet strikes the key.



The sarons are played with one mallet in the right hand while the left hand muffles all the keys immediately after striking. The keys are "grabbed" between the thumb and fingers at the end of the key closest to the player for muffling. The player always sits while playing, and the keys are usually chest high.

The melodic role of the saron in the gamelan is simple-exposition and ostinato of the nuclear theme. Repeated tones or ornamentations are occasionally employed in the higher pitched saron panerus and saron barung.

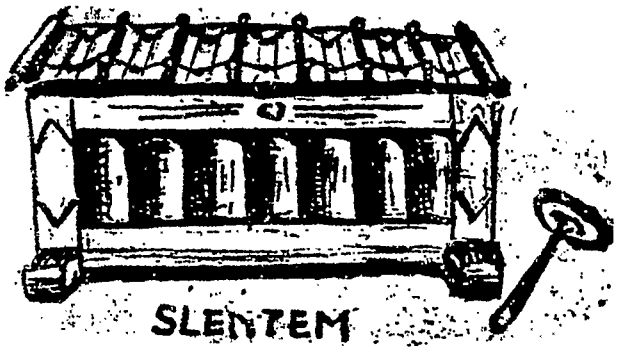




Gender Family

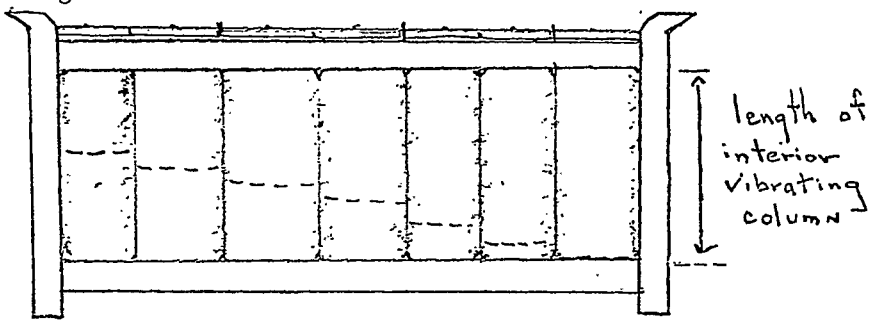
The next family of bronze metalophones, again with four members, is the gender family. The genders are distinguished by bamboo resonators, suspended keys, and an intricate, ornamental melodic role. The four members carry the same names as the saron family, but only two of the forms, the slentem and the demung, comprise single octaves, while the other two, the barung and the panerus, comprise many octaves.

The single octave forms contain seven tones (unclosed octave) in pelog and six (closed octave) in slendro. A large gamelan has two of the single octave forms (one for each system) and three of the multi-octave forms (one for slendro and two for pelog). The multi-octave forms contain anywhere from 13 to 15 bronze keys.



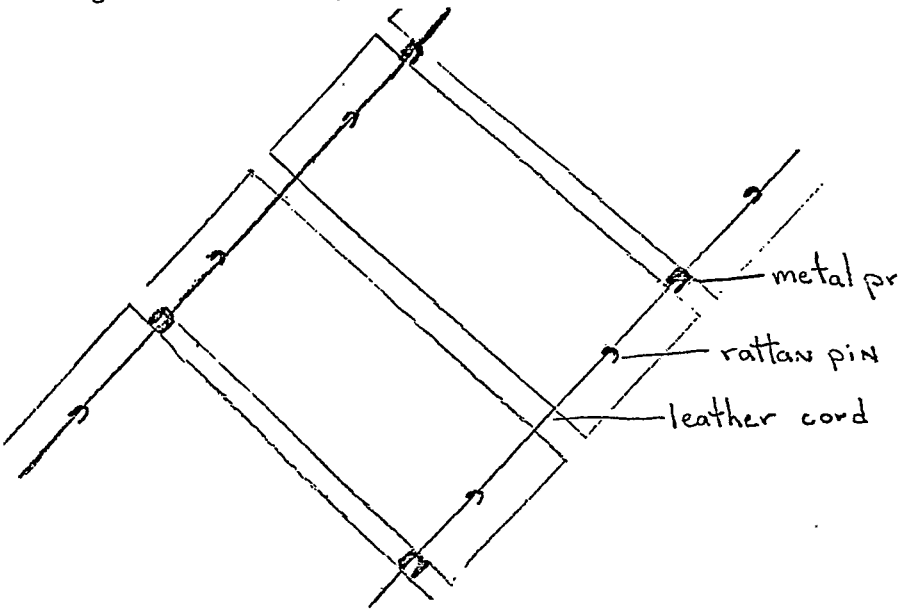
The gender barung is usually pitched from 127 to 146 1/2 c.p.s. to 684 c.p.s. The gender panerus is usually pitched from 253 c.p.s. to 1362 c.p.s., an octave higher than the barung. The single octave slentem is actually the lowest octave of the barung, pitched from 146 to 293 c.p.s. and the demung, an octave higher than the slentem, is pitched from 293 to 586 c.p.s. (Refer to pages 131 and 132).

All gender forms use bamboo resonators contained in a wooden frame, one for each key. When looking at a gender, all the resonators appear to be of the same length, but in actuality, they are not. The nodes of the bamboo tubes are left on in construction so the length of the vibrating column stops at the node. The resonators diminish in length as the pitch increases. These resonators give the keys an amazing lasting time.



Fine tuning of the resonators is accomplished in two ways. If the resonator is too long, it is cut, if it is too short, a neck of bee's wax is added to increase the length.

The keys of the gender are suspended, strung by two leather cords through rattan pins at each end of the key. The holes in the keys are drilled at the nodal points (points of no vibration) approximately 2/9 the distance from each end, as with the saron. The rattan pins are inserted through these holes. Also on the frame of the gender, between every two keys, are metal props which the cords are drawn through. This description of the suspension may seem a bit complicated but the drawing below should simplify things.

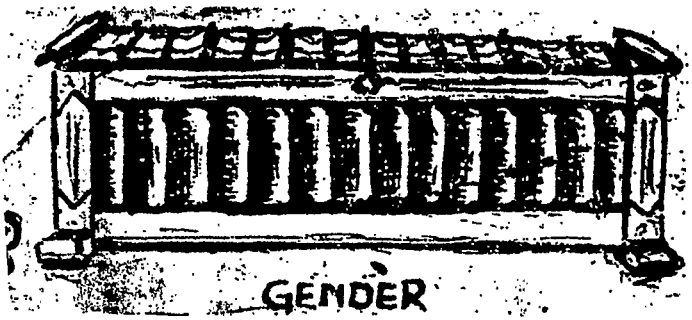


All genders are handmade, but different parts of the instrument are constructed by different craftsmen, much like an assembly line. Some fashion and carve the wooden frames, some match the bamboo resonators, some mould the bars by pouring a mixture of metals into a clay mold and then heating, some tune the bars.

In the "gender shop" there are men called "Nem" whose highest tone they can sing without effort is used as a standard for tuning. The small single octave forms are tuned about 3/4 of a tone apart to create pulsating beats and shimmers. The two larger genders start at a 1/2 tone apart and end up 1/4 tone apart in the higher register.

The tabuhs used for the gender are short-handled mallets with a thin wooden disc edged with cloth or rubber. In the single octave forms the performer holds one tabuh in his right hand while his left hand is free for dampening, similar to the saron player. With the multioctave genders, two mallets of the same type are used, one in each hand. The mallets are held between the index and middle finger and the

handle of the mallet rests against the palm. Muting of the keys is accomplished in a number of ways, always with the same hand that struck the key. Muting with the right hand is done with the thumb and side of the little finger. Muting with the left hand employs the back of the hand and the top of the little finger. If the gender player is playing extremely low tones to the far left of the instrument, muting is often accomplished with the elbow.



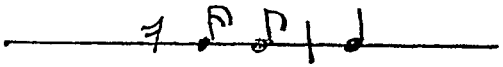
There is no arm motion involved in gender playing, but a quick finger stroke like that of a pianist. Smooth legato is produced by a rolling motion of the hand which carries the mallet from key to key. Most of the Multi-octave gender playing is in octaves, but the hands may break away and move in opposite directions.

The role of the gender in the gamelan differs according to size and range of the instrument. The two single octave gender, the slentem and demung, play the nuclear theme and also perform various ornamental passage work, but they are limited in their capabilities primarily because of their narrow range. The two multi-octave genders, the barung and the panerus, are primarily ornamental and improvisatory instruments. They carry all the melody and perform the preliminary solo. No two gender players play exactly the same thing although theoretically they should be in unison.

The melodic line is always supple and flowing and performed with elegance. Ornamental techniques add grace and emphasis to the nuclear theme and it is kept flowing and in constant motion by passing tones, grace notes, glissandi, and other techniques to be discussed shortly. Improvisation is played in strict tempo, usually two notes to every pulse. If the tempo is slow enough and the gender player has the skill, figurations can be played at twice that speed.

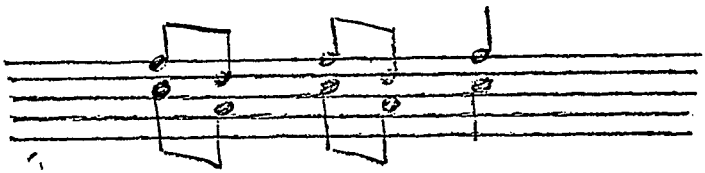
Below are four improvisatory, ornamental techniques frequently employed by the gender player.

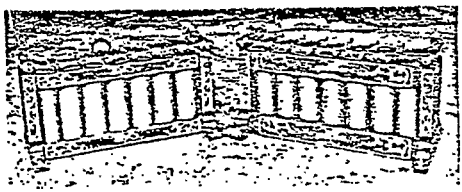
1) "pututgelut"-both hands, in turn, play the same note in quick tempo.
2) "semar nyampar"-the right hand plays three successive keys in the following rhythm:

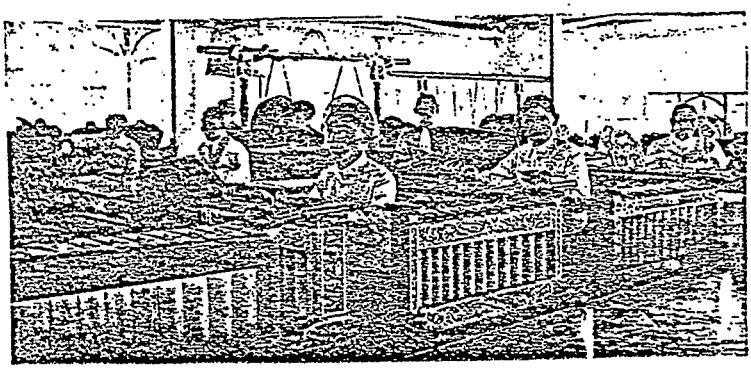


3) "petruk ngandul"-both hands beat alternately, each hand on a different tone.

4) "Salah gumun"-both hands play parallel motion, "to and fro", in fourths.



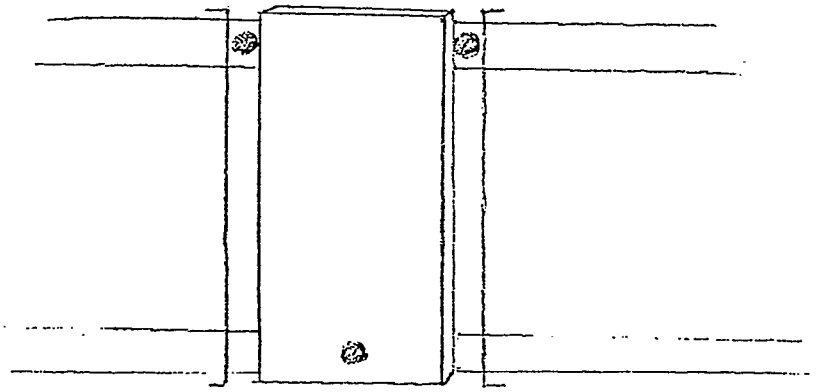




gender barung, gender panerus

Gambang Kayu

The last instrument under the classification of "bar-key" idiophones is the gambang kayu, a xylophone-type instrument with 16 to 21 wooden keys over a small wooden trough. The keys are of teak wood or occasionally bamboo and are held in place along the wooden frame by three pins-one through the key at a nodal point and the other two on either side of the key at the opposite end.



A large gamelan usually owns three gambangs-one for slendro and two for pelog. The instruments range from three to four or more octaves and, interesting enough, two notes of each octave in pelog are always missing. The range of the slendro instrument is approximately 122 c.p.s. and 1952 c.p.s. The range of the pelog instrument is approximately 115 c.p.s. to 1844 c.p.s. The notes pelog and eithe rbem or barang are always absent.

The tabuh used employ long flexible rattan with a soft wooden ball at the end covered with rubber, cloth, or wool.

The wooden frame of the gambang differs from that of the saron in that it is not hollowed from a log, but rather constructed of separate wooden planks.

The gambang kayu serves an ornamental, improvisatory role, mostly playing in continuous parallel octaves. Also, parallel fourths and fifths are common with an occasional parallel third or sixth mixed in. There is a style of playing called "salah gamun" found in the playing of one patet (patet nem slendro) in which the performer plays continuous parallel fourths.

Historical Accounts and Facts

The gamelan metalophones have a long history, originating in the Bantu districts of Africa, migrating across the Indian Ocean and through

the Zambezi Valley. The xylophones of Java are identical in pitch and compass to those in Africa, consisting of gourd resonators and wooden keys. They were all used first as solo instruments before being organized into gamelans.

Many reliefs are found on temple walls revealing the origins of the instruments in Java. The temple of Panaturan shows a 14th century scene of two xylophone players, a young girl and an old man. In the relief, a duet is played, and each player holds four mallets.

The sculptures of the buddhist monument Borodudr Buddha depict the saron as early as the ninth century A.D. There are many other carved scenes of musicians. The Majapahit temple of the 14th and 15th centuries in East Java show the appearance of knobbed gongs.

The bronze-keyed saron dates back to 800 A.D. in Java, not earlier. It is an evolution and adaptation of the xylophone-from wood keys to bronze slabs. The gender is a further adaptation, beginning around 1157 A.D.

In closing I would like to quote Mr. J. S. Brandts Bays from a May 4th, 1920 publication of "Nievwe Rotterdamsche", Courant, who sums up the beauty and power of the gamelan music in a single paragraph:

> "An evening in the Pakualaman. The gamelan gilds the time. The hours forget their usual course. The quarters shrink to golden minutes, minutes seem like blissful hours. Now in the softer moments, the music sounds as if I heard angels sing, now, when at half strength, as if I heard all the chimes in heaven. And then again, in the fullness of its mighty power, it is as if a storm of bronze thunders through my temples."

FOOTNOTES

[1]Hood, Mantle, and Maceda; *Music*, E. J. Brill, Netherlands, 1972.

[2]Hood, Mantle and Maceda; *Music;* E. J. Brill, Netherlands, 1971.

[3]Malm; *Music Cultures of the Pacific, Near East, and Asia;* Prentice-Hall, Inc., New Jersey, 1967, page 31.

[4]Malm, W. P.: *Music Cultures of the Pacific, Near East, and Asia,* Prentice-Hall, Inc., New Jersey, 1967, page 30.

[5]Kunst, Jaap; *Music in Java,* Martinus Nijhoff, The Hague, Netherlands, 1973, Appendix No. 2.

[6]Kunst, Jaap; *Music in Java,* Martinus Nijhoff, The Hague, Netherlands, 1973 Appendix No. 1.

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2) Lentz, D.A.; *The Gamelan Music of Java and Bali,* University of Nebraska Press, Lincoln, 1965.
3) Jones, A.M.; *Africa and Indonesia,* E. J. Brill, Leiden, Netherlands, 1971.
4) Hood, Mantle and Maceda, Jr.; *Music,* E. J. Brill, 1972.
5) Kunst, Jaap; *Music in Java,* Martinus Nijhoff, The Hague, Netherlands, 1973.
6) Human Relations Area Files, OB 1, 534
7) Belo, J.; *Traditional Balinese Culture;* Columbia U. Press, N.Y. 1970.
8) *National Geographic Magazine;* October, 1949; January, 1971.
9) Dobby, E. H.G.; *Southeast Asia,* John Wiley and Sons, Inc., N.Y. 1950
10) Malm, W.P.; *Music Cultures of the Pacific, Near East and Asia,* Prentice-Hall, Inc., N. Jersey, 1967
11) Record jacket from "Javanese Court Gamelan"; R. Brown and A. Toth; Explorer Series

DISCOGRAPHY

1) P-689, Music of Indonesia
2) 2193, Golden rain; Balinese gamelan music
3) 2199, Music for the Balinese shadow play
4) 2200, Music from the morning of the world
5) 2207, Javanese Court Gamelan
6) 2215, Gamelan Semar Peguligan

—————————O—————————

ONE APPROACH TO THE ANALYSIS OF DRUM SET PLAYING

By
Jon A. Krosnick

About the Author:

Mr. Krosnick is presently an undergraduate student in Psychology at Harvard University. He has studied with Fred Hinger since 1974, and has attended the National Music Camp at Interlochen, Michigan for the past nine summers. Most recently, he has studied with Niel DePonte. Mr. Krosnick has performed as a soloist with the Philadelphia Orchestra in 1976 and with the University of Michigan Orchestra in 1977.

> One of the undesirable consequences resulting from a surfeit of teaching methods, improvisation books, and other educational aids has been the virtual disappearance of the player who accelerates learning by playing along with records.[1]

David Baker uses this sentence to begin his article entitled "How to Transcribe from Records". It is often said that the best way to learn, in Baker's words, "subtlety, correct use of inflection, a feeling of swing, interpretation, style, etc. (is through) repeated hearings of those players who first defined the music."[2] Mr. Baker would probably agree that all innovative players, young and old, are worth listening to and analyzing.

Since so many recordings of contemporary drummers are available these days, they provide an excellent tool with which a student may study the art of drum set playing. I would not suggest that the student

transcribe drum "beats" primarily to incorporate them in his own playing; rather, I would advise that transcribing "beats" can help the student to see new ways of approaching both music and the drum set. Specifically, I would suggest that the student transcribe many examples of a particular drummer's playing so that he can begin to identify and understand the idiosyncrasies of that drummer's style of playing.

Drummers are recorded playing many different kinds of music in many different contexts. One very specialized context which provides many vehicles for learning is 'studio music'. In Don Heckman's words, "studio musicians do all the tough work for the stars: framing the action, filling in the colors, sometimes serving as "ghost" instrumental voices . . ."[3] There are four kinds of studio music: phonograph recordings, television backgrounds, movie backgrounds, and commercials. Thus, in any given situation, a studio musician may be asked to play any style or even to create a new style. The procedure almost always involves seeing the charts for the first time and recording the final takes within one three- or four-hour recording session. I will demonstrate below how a student might analyze a transcription of a studio drummer's playing. I have selected studio drumming because one drummer can be found playing a wide range of styles, and the music is typically well-recorded, sophisticated, and organized. First, however, I will present a bit of information about how these recordings are made and the job of the studio drummer.

Studio recordings are usually done in "layers", beginning with the rhythm section (piano, bass, and drums). The next day, the brass section over-dubs its part; the following day, the strings add their part, and finally the soloists improvise their contributions. For the studio drummer, there exists a unique challenge in this work. On that first day, he must reinforce the ensemble passages and the soloist's statements before these players arrive at the studio. Certainly, the drummer's playing has an influence on the soloist's improvisations.

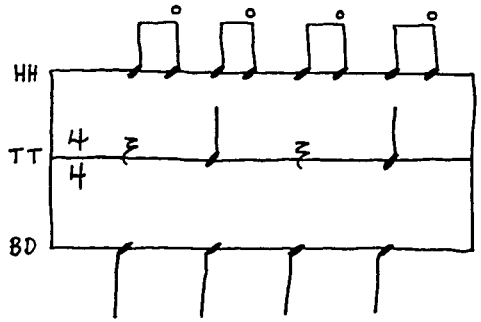
The studio drummer is also partially responsible for creating the "feel" of each tune. The "feel" is a result of the underlying melodic and rhythmic patterns that define the style of the music; these patterns are most often played by the rhythm section. The patterns are ostinatos, i.e. clearly defined phrases that are repeated persistently, usually in immediate succession.[4] Within the rhythmic patterns are accented notes and unaccented notes. The accents may be agogic (accents of length) or dynamic (accents of volume). Also, a simple concept of sound vs. silence may be used to design a pattern of accents. For the studio drummer, the drum set provides certain primary tone colors (snare drum, bass drum, hi-hat, and ride cymbal) as well as secondary tone colors for embellishment (tom-toms, other cymbals, etc.), so choice of tone colors and the use of silence help to place emphasis on certain notes. The drummer can organize agogic accents, dynamic accents, and tone colors to form a pattern, giving it direction and shape; this pattern is what

is called the drum "beat". In a musical context, the drum "beat" creates the "feel" and therefore establishes the style of a tune.

For any particular tune at a recording session, some of the patterns are established in advance by the arranger, while others are improvised by the rhythm section players. Sometimes these musicians coordinate their accents and on other occasions they do not; the artistic judgement is made by both the musicians and the arranger.

Steve Gadd is a studio drummer who, in apppropriate artistic settings, composes a drum "beat" for each tune to give it its own identity and "feel". His style is outstanding among those of present-day studio drummers, and he is one of the busiest of them. Many different recordings of Gadd's playing are available, so they make a good vehicle with which to study his drum "beats" and to see how they function in a musical setting. To determine the component parts of each drum "beat", we will use the tool of transcription. Rather than call the drum pattern a drum "beat", which might suggest a connection between the structure of the drum pattern and the meter or bar-line position as we perform the analysis, I will call the pattern a "phrase" that is repeated.

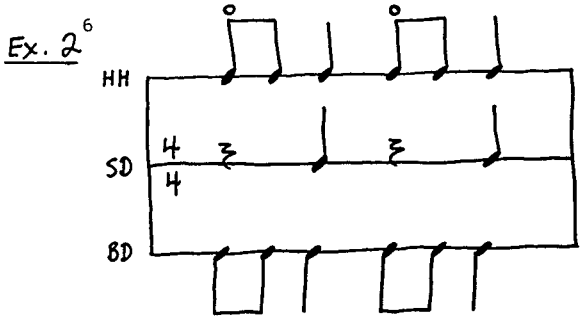
Ex. 1[5]



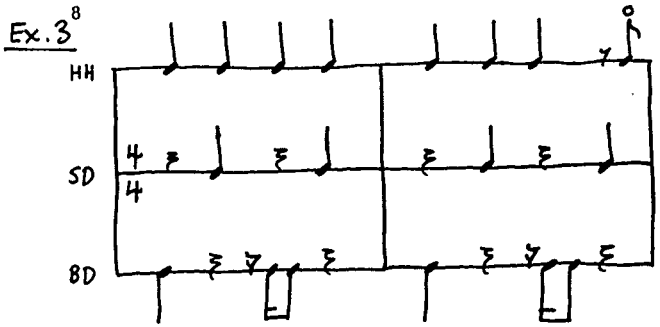
In the first transcription, the bass drum and the tom-tom play simple rhythms. The hi-hat plays straight eighth notes, but the second eighth of each beat is an open hi-hat note, which acts as a leading tone to each beat of the measure because of its tone color, creating a continuous flow from beat to beat. Although the essential phrase is two beats long, there is no special emphasis on the beginning of each two-beat phrase. Instead, the emphasis is on the back beats (beats two and four), created by the snare drum. Gadd has used this pattern on a number of recordings in the bridge of tunes in AABA form, where the chord changes at least once a bar, most often on the first beat of each measure. This harmonic emphasis on the downbeat of each bar, coupled with the bass drum's quarter notes, prevents the listener from thinking that the open hi-hat notes are on the beat, which might easily be done otherwise. This pattern also helps to announce the B section of the tune, since it contrasts with the A pattern which usually does not flow as continuously.

Example 2 uses the open hi-hat device for weight rather than as a leading tone to the subsequent beat. The phrase here is two beats long

like the previous example, but the open (strong) hi-hat note is on the first beat, and the line of three notes (two eighth notes and one quarter note) leads to the second beat of the phrase.



Example 3 is eight beats long, and we see that the snare drum plays a simple pattern of quarter notes on the back beats. The bass drum lands on the downbeat of each measure and plays a syncopated rhythm on beat three which creates an "imbalance in the listener's feeling of rhythmic security."[7] This imbalance is partially resolved on beat four by the snare drum (a primary tone color which is on the beat) and com-

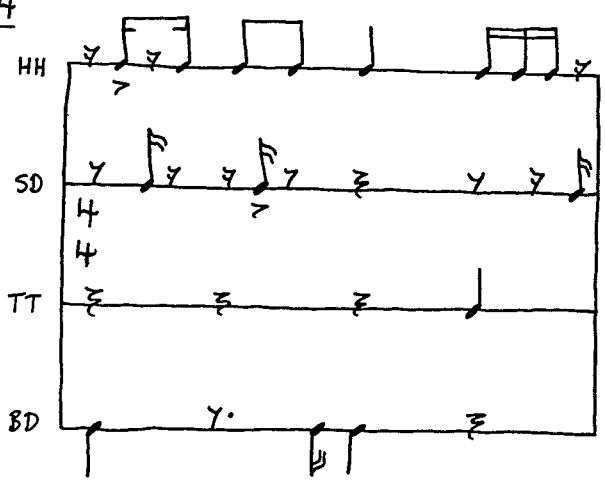


pletely resolved on the downbeat of the following measure by the strong bass drum anchoring. This partial suspension of rhythmic flow helps to lead into the downbeat of the following measure by phrasing into it and thus giving it extra weight.

The hi-hat has a simple quarter note rhythm until the last beat of the pattern. The open hi-hat note here also suspends the rhythmic flow, just as the syncopation on beat three in the bass drum line does, and serves to lead into the downbeat of the next measure. The last beat of this phrase carries a little more weight than the previous back beats since the tone color of the snare drum projects for the only time in the phrase without the added high pitches of the hi-hat. This heavy note leads to the beginning of the pattern, also. This device, as well as the open hi-hat note and the syncopation on the third and seventh beats, act as leading tones to important beats in the pattern.

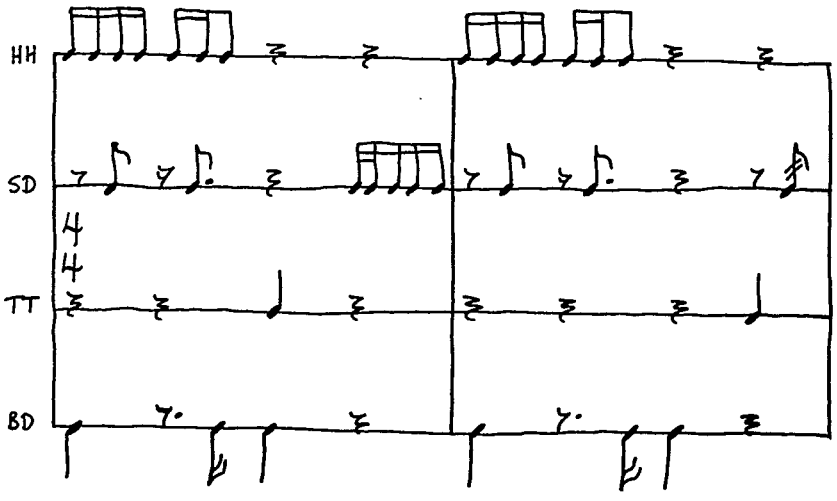
One device Gadd often uses in creating drum "beats" is the passing of sixteenth-notes from instrument to instrument around the drum set.

Ex. 4[9]



He uses agogic and dynamic accents to place emphasis; open hi-hat notes and silence (breaks in the sixteenth-note pattern) act to phrase the pattern. Example 4 shows this passing of notes. The syncopation of the hi-hat on the first beat and the snare drum on the second beat leads into beat three. The absence of the last three sixteenth-notes in beat three frames the emphasis on that beat, which is actually the end of the phrase. The high-pitched notes on beat four (after the silence) are felt as an upbeat to the rest of the pattern because of their position on the fourth beat and because they lead to the accented low sound of the bass drum on the downbeat. That leading effect is facilitated by the descending pitches at the end of the bar, i.e. hi-hat, then snare drum, and then bass drum. From an overall perspective, beat four actually begins the phrase, which ends solidly on beat three. We see here clearly all of the notes in the phrase moving in one unified line.

Ex. 5[10]



Example 5 shows Gadd's use of another device for phrasing into a beat: a burst of notes, either in the form of a roll or as rapid single strokes. The sixteenth-note flow of the hi-hat on beats one and two leads to beat three because of the sudden break after the seventh note. The weight on beat three is further framed by its tone color and the space that follows it before the next beat. Beat four jumps out with rapid notes to pick up the flow again, acting as a connecting upbeat, just as the fourth beat did in example 4. On beat eight, the tom-tom sets up the roll, and the roll leads into the beginning of the phrase. From the overall perspective, the notes come most rapidly on the fourth beat, and they gradually slow down to a stop on beat three of the following measure.

We have seen in these examples how Steve Gadd designs drum "beats" with accents in certain places and with certain devices to create direction toward certain notes. He controls the flow of the pattern and phrases into certain notes by using devices like bursts of notes, open hi-hat notes, silence, and syncopation.

When analyzing transcriptions of a drummer's playing, the student can examine the structure from certain perspectives. This organized approach will facilitate the identification of devices present and their uses. The first step is to determine the length of the phrase, as well as its starting point and ending point. Next, the shape of the phrase (i.e., how the notes proceed from the beginning of the phrase to its end) can be studied. It is at this point that the effects of accents, tone colors, and rhythmic structures become central to the approach. After studying a number of transcriptions of the same artist's playing, the student can begin to identify the devices a player uses and the ways in which he uses them.

The student may then use this knowledge as a guidepost as he creates his own drum "beats". Once the student decides upon the shape of his phrase, he may use devices like those we have examined to give his notes direction that corresponds to that shape. To understand the possible shapings of phrases in different musical contexts and to discover new techniques for creating the phrase, transcription is a valuable tool; this sort of analysis serves best as a way for the student to broaden his horizons of creativity.

Footnotes

[1]David Baker "How to Transcribe from Records," *Downbeat Music Handbook '77*, 1977, pp. 65-87.

[2]Ibid.

[3]Don Heckman "L.A.'s Most Valuable Players," *High Fidelity* 27 (July 1977): 142-147.

[4]*Harvard Dictionary of Music*, Second Edition, s.v. "Ostinato," by Willi Apel.

[5]"Keep Your Eye on the Sparrow," *Finger Paintings*. Earl Klugh. One 12" 33-1/3 rmp disc. Blue Note BN-LA737-H.

[6]"Captain Caribe," *Living Inside Your Love*. Earl Klugh. One 12" 33-1/3 rpm disc. Blue Note BN-LA667-G.

[7]*Harvard Dictionary of Music,* Second Edition, s.v. "Syncopation," by Willi Apel.

[8]"Undecided," *Romeo and Juliet.* Hubert Laws. One 12" 33-1/3 rpm disc. Columbia PC 34330.

[9]"Sea Lion," *Feels So Good.* Grover Washington, Jr. One 12" 33-1/3 rpm disc. KUDU KU-24S1.

[10]"50 Ways to Leave Your Lover," *Still Crazy After All These Years.* Paul Simon. One 12" 33-1/3 rpm disc. Columbia PC 33540.

MOTIVATION IN PERCUSSION TEACHING

By

William J. Schinstine

Editors Note:

Excerpts from a speech given before the Percussive Arts Society's Second National Conference.

Motivation might be defined as the art of getting a student to want to do what you want him to do.

The means of accomplishing this are many and diverse.

Creating the atmosphere of good learning is a most essential beginning. Motivation begins from the first contact with a student.

The first contact is usually with the parents, either on the phone or in person. This is the time to get some preliminary information upon which to prepare plans for the first lesson. Name, age, school, grade, previous musical experiences, other persons in the family who are musical, reasons for selecting you as the teacher, all are valid questions. Write these things down and place them in a roll book. Be sure the parents know your name, phone number and how to find your studio. Establish a lesson time, your fee, if a private lesson, and what you expect the student to bring to the first lesson. One might also include the cost of new books, sticks, etc.

All new students will not be beginners. However, at this point we will discuss the beginner and later the more advanced new student.

The studio or place where one teaches should, if at all possible, be a place that will help motivate the student. The equipment owned will tell something of ones ability. Drums, mallet instruments, practice pads, record player, tape recorder, records, tapes, pictures of previous musical activity, diplomas, pictures of successful former students, pictures of famous drummers, unusual percussion instruments, all will add to the atmosphere. What must be done is to feed the natural curiosity of the students. Further, one must periodically add to this list and share the discoveries with the students. One of the best ways to do this is to read the P.A.S. magazines and especially the ads. The teacher must become something of an expert about new methods, solo books and new equipment; keep looking for the new and better way to get the job done.

When that beginning student arrives, one must understand that he or she is usually somewhat frightened of the unknown. Most children

have heard all sorts of stories about how difficult it is to study music; about the long hours of practice required; about you-the-teacher-and how strict you are; and still they come. Usually a parent will accompany the child to the first lesson. Invite them to sit in and give them a definite responsibility for the success of the child's first week.

This first lesson is so important to all which follows, that I would like to share with you in detail just how I handle it.

If they have just rented a drum kit, they must first be shown exactly how to assemble it properly. At the same time, the main parts of the drum should be identified.

Get acquainted. Write down the name of the student, his nickname, address, telephone number, and his parents names. Make sure he knows your name and phone number.

Explain hand positions. Following the pictures in the book you use, help the student to hold the sticks properly. Be sure to explain the importance of perfect positions. Once this has been done, make excuses to remove the sticks, and ask the student to re-grip the sticks without help. This process should be repeated until one is sure the student can remember how to hold the sticks properly. **Do not allow a student to leave the first lesson until you are sure he can remember.**

Demonstrate how to strike the drum. Check for (a) changes in hand positions; (b) too much arm movement; and, (c) stick tips kept in the same general area.

Introduce this basic stick exercise as a rote lesson.

Left 10 - Right 10
Left 9 - Right 9
Left 8 - Right 8
Left 7 - Right 7
Left 6 - Right 6
Left 5 - Right 5
Left 4 - Right 4
Left 3 - Right 3
Left 2 - Right 2
Left 1 - Right 1

Then repeat from the bottom and go to the top. This should be done five times daily; before school, after school, before supper, after supper, before bedtime. Also, suggest they hold sticks while watching TV during the first week.

When the first lesson is finished, take time to encourage parents to supply their child with a cassette tape recorder if one is not already available. There is no device more helpful to the beginning drum student. If they have one, record the entire first lesson so there is no doubt about what is to be done at home.

At the second lesson, the teacher must determine if the hand positions and stroke are sufficiently developed to permit note reading. If not, additional preparatory work must be assigned. Under no circum-

stances should one let the student believe he has been unsuccessful. DO NOT REPEAT THE FIRST WEEK'S ASSIGNMENT. Alter it by skipping numbers such as: 10 - 8 - 9 - 7 - 8 - 6 - 7 - 5 - 6 - 4 - 5 - 3 - 4 - 2 - 3 - 1 and reverse. The student must believe he made some success and that this is an addition to that work. Praise every success.

When you feel the student is ready to note read, explain whole, half, and quarter notes in terms of an inch, a circle and money. Fourth graders frequently do not fully understand these concepts. Here the parent can be of help to follow your lead and add much to the child's success. If difficulty persists, the students should measure all sorts of objects until they become familiar with all divisions of an inch. This will give you a much more solid base with which to later relate to 8ths and 16ths.

Once music reading begins, I tape record each musical exercise, giving a preparation of stick beats and count. At the end of each example I say "Rewind and play it again until you are sure it is correct". Children like to work the recorder. MOTIVATION.

Each new technique should be carefully recorded in this way so that the student will have no excuse for misunderstanding.

As students progress, give them extra supplementary material using the new techniques but allowing them to prepare it themselves. Encourage them to record themselves until they get a perfect performance. You can be sure learning has taken place when the student can successfully use material in a different but similar situation. This technique is called the **transfer of learning** and is essential to a successful learning process.

After a few weeks of preliminary reading, I usually assign my *Little Champ First Year Drum Solos* along with the piano accompaniment record. These are assigned as supplementary and re-enforcing material. Always, the student has learned the music reading problems in advance. The accompaniments begin in exactly the same rhythms as the drum part. Gradually they become somewhat different.

Throughout the early instructional period, the most effective motivation is the student's success.

As soon as you are certain the student can successfully participate in band or orchestra, encourage him to do so. If necessary, call the school music director and enlist his cooperation. Be sure the student brings his band parts to his music lesson. Encourage him to tape some rehearsals. At the lesson, you can then demonstrate exactly how his part fits the music.

These are all motivational devices intended to help the student get the maximum knowledge and enjoyment from his musical experiences. Remember, he must be successful to enjoy the experience.

If one has done any teaching at all, you no doubt have had a student who really had a bad lesson and will comment, "I can't understand it, I played it perfectly at home." Every time I hear this one, I suggest the student prepare a perfect tape at home and present it to me for

his next lesson. Seldom will that student ever again make such a remark.

When students have difficulties, I always keep in mind that no student deliberately plays a bad lesson. If it is bad, one must search with the student to discover why it was bad. If the reason was lack of practice, why didn't the student practice? Was he sick? Did he go away? Did he forget how to do the assignment? (Not valid if you had taped it for him.) There will be many excuses and in time one will hear them all. Frequently you will have to dig to get at the true reason. Leave no stone unturned. Call the parents. If this doesn't work, call the school or principal or counselor. Find the students' real potential in terms of I.Q., reading ability, and school work habits. Perhaps one is expecting more than the child can possible give. One such case came to me, in which the parents failed to reveal the true facts about their child. After considerable struggling and little success in helping the boy read and understand music, a call to his school revealed he was in a class for mentally retarded children. Once I knew this and the areas of retardation, I was much better able to cope with his instructional problems.

Another student who had severe reading problems was found to have a sight defect. After this was helped, the reading improved rather remarkably.

Physical problems of all sorts can become handicaps to learning. The really good teacher studies his pupil carefully. No one can motivate a student without the facts. Does he like baseball, football, basketball, tennis, swimming, TV, movies, hobbies, etc.? Ask questions. Pry frequently. One must motivate the whole person, not just the part you are teaching. If he does something aside from music well, recognize it and use it to your advantage. The more you know about a student, the more you can relate to him.

One of the best motivations for a student is to be a good model. As a teacher, don't be ashamed to show off occasionally in front of your students. Even if the material is way over his head, a vigorous display will give a student something to admire.

A student can become truly inspired by his teachers ability to perform. If you perform professionally, invite students to a performance. Also, keep students informed about local performances worthy of their attendance. Parents should be encouraged to take their children to such events. In our town, we have a nationally famous ballroom where nearly every top name band has appeared at one time or another. Many students have been motivated to great heights by attending these performances. Several have made it back as members of one of the bands.

Duets are a wonderful experiences for pupils. To actually perform with their teacher motivates many students to greater preparation. I susually tape record both parts of duets so that students can play either part with me while practicing alone. However, at the lesson I prefer to do it live.

Goal setting is an important aspect of successful learning. Frequently it is necessary to discuss goals with students. They often set

goals too far range to reach. These may be reasonable long range goals, but students must also learn to set short range goals they can reach. Improvement can be achieved in a more orderly fashion if daily and weekly goals are set. Never are goals to be absolute. They must be kept flexible but obtainable. The world won't stop because one can't play flam paradiddles at M.M. 208 in the first two weeks. Set the goal as the next notch on the metronome. If one can motivate a student to be goal oriented, you will have to do very little more motivation. The student will be truly self motivated.

Most of our students come to us to learn to be snare drummers. We should make every attempt to encourage them to be total percussion oriented. To accomplish this objective requires massive amounts of motivation.

Students will not readily accept or remember instruction forced upon them. There must be some need to use information in order to retain knowledge and skills. We can not always depend on the schools to supply this need. A much more dependable method is to create a percussion ensemble. It requires players to perform on all sorts of percussion instruments. Further, one can control the learning experience with the selection of music and who is to perform specific parts. This creates the incentive for students to learn and remember the techniques of performance on many different instruments. Also, it is a lot of fun. Even small groups can be of great value if one selects the music carefully.

Creating the incentive for students to want to learn the keyboard percussion instruments is somewhat more difficult. My own experience was stimulated by a junior high music teacher who insisted the only way I could be in the orchestra was to be responsible for the bells and xylophone parts. At my next lesson, I discussed this with my teacher, who pointed out that it was not really so difficult. Immediately I went looking for a second hand xylophone. Once this was obtained the lessons proceeded with considerable motivation. I now wanted to do what others wanted me to do. If more instrumental music directors would encourage drummers to acquire a knowledge of keyboard playing, many more would accept the challenge.

Within the studio, motivating students to want to play keyboard mallet instruments can be accomplished in many ways. It will be difficult to do if you don't have an instrument in your studio. Just seeing it each week will arouse some students. I often play marimba or vibes for drum students. Observing the enjoyment I get from playing, will tend to create enthusiasm. Mallets are always available for a student to try. When this time comes, I usually teach him a simple tune by rote. Success formula again. I have purchased several inexpensive bell sets which are loaned to sudents to further stimulate their curiosity. As success follows success, parents are soon persuaded to purchase a full sized instrument.

Of course, the cost of a full sized marimba is still one of the greatest obstacles in motivating students to study keyboard mallet instru-

ments. Used instruments can frequently be found. The new synthetic bar marimbas are somewhat less expensive than the rosewood models.

With the more experienced students I have formed a mallet ensemble. In order to schedule practice sessions, each of the members' lessons are arranged in consecutive order. We can then combine these times to occasionally practice together. Over many years, I have developed an extensive library of arrangements for this group. Included are the accompaniments for most of the standard solo literature. Solo and accompaniment parts are exchanged. Not only do students more carefully prepare their solo parts, but they acquire a greater amount of reading experience while others solo. Many students are motivated to try their hand at arranging and composing for the group. There are so many motivational experiences to come from such a group, that it is impossible to relate all of them. Occasionally these groups perform publicly which adds considerably to their motivation.

Motivation toward greatness can seldom be achieved unless a student experiences great performances. Every opportunity should be given students to hear great musicians in live performances. I have seen students turned on by a single performance of the Philadelphia Orchestra or a performance by Buddy Rich.

Motivation of the new student who has had previous instruction must be approached very carefully. Usually they arrive at your doorstep motivated by a desire for improvement and change. They obviously expect improvement over their previous instructor. The kindest thing you can do is to listen to them play and evaluate the steps needed for correction and change.

Most frequently, these students have failed to understand or recognize their problems. If one can possibly afford it, a video tape recorder can be most helpful. New students are video taped at their first lesson. Immediately, I replay the tape and we observe the problems together. I can then point out rather dramatically, the areas of technique which need attention. Students simply cannot challenge those pictures. Very often they see the problems for the first time. Usually, they are immediately motivated to make the improvements the teacher suggests. This technique is also valuable by allowing the students to see exactly the condition of his progress. There is a stop frame device which allows one to freeze any particular point you wish to make, such as rabbit ears in the left hand.

With this new student, tackle large problems first, such as incorrect hand positions and movements. Ask to see previous material studied. Spot check to be sure they really did learn the material. Don't take anything for granted. Try to assess their goals and desires so you can tailor the assignments toward improvements needed. Avoid belittling the former instructor. Always be able to justify recommended changes. Most other motivations discussed for beginners will work well with advanced new students.

Solo contests, tryouts for district, regional, state, and national performance groups present a strong motivational tool. Be sure to find out when these are to occur for each student. Plan to begin preparation of the material well in advance of the performance date. Take time to prepare the material yourself so that you will always be able to give an expert performance. In fact it is even a good idea to record the material for your students to study. These events will really become greater motivational tools as your track record of student successes mount. Remember, sightreading is usually a part of these auditions. If you include a liberal amount of sightreading in student lessons, they will not fear this area. A well prepared student is generally a successful entrant.

Now one might ask, what about all of the artificial motivational devices so many teachers use? Such things as stars in the books, candy or other rewards for a good lesson, play money, gifts, etc. If they work for you, use them. My personal feeling is that they are the wrong tools. In 25 years of public school teaching, I have seldom found a student who remained in music only to receive the annual award pin, letter or whatever. These were only incidental rewards. The real reason people stay with music is the satisfaction a successful experience brings to the individual. Certainly a written "good lesson" in the student's lesson book might create a feeling of pride, when he goes home and can show it to his parents. However, if it really was not a good lesson, the student will begin to regard mediocrity as his goal. That, one must never allow to happen.

You, the teacher, are responsible for motivating your pupils. Your success, as well as the pupils' success, depends upon how well you are motivated to motivate.

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Letters to the Editor

Dear Mr. Fluegel,

I read Mr. Marvin, Jr.,'s article "One Viewpoint of Percussion in the Public Schools" (PERCUSSIONIST Vol. XV, No. 2) with interest as I am a music educator with a percussion background who is concerned about a sensible feeder program in the fifth grade.

A little arithmetic is very revealing when recruiting percussion students. The average high school concert band can use about six percussionists. If there is a wind ensemble and orchestra one might be able to stretch that number to ten before discipline problems start to occur from those waiting their turn to play. That works out to two or three students per grade. *Two or three,* compared to the twenty-five or thirty who want to play drums in fifth grade.

Here are some things I would like to share that I have done in an attempt to have a sensible program for beginning percussionists:

I ask the general music teachers to present the sections of the orchestra in this order: Strings, Brass, Woodwinds, Percussion. This is the reverse order of the usual interest responses. I also ask that they present *all* of the percussion instruments with no emphasis on drumset. This helps to reduce the choosing of percussion on sheer excitement.

When our bands and orchestra play in the elementary schools I ask that there be little or no featuring of the drumset. Set receives much attention from TV, and rock groups but there is very little opportunity for drumset players in the normal public school, or even college.

My beginning percussion students must have a percussion kit (bells and a practice pad) to take lessons. I make it clear from the beginning that every percussion student must study all of the percussion instruments. I use the same method series with all of my instrumental students and am happy with the percussion book because it has the bells playing exactly the same melodies as all the other instruments. The percussionists can develop the same musicianship as the other students. The book has special pages for snare drum, triangle, bass drum, and tambourine but I supplement it with dittos containing roll studies, simple rudiments and two-drum studies. Alternating lessons between bells and drum has worked well, but I would prefer to have each bell melody also have a drum part.

I teach matched grip which gives the student access to all of the instruments from the start and reduces frustrations. I emphasize a fundamental percussion grip and motion. It seems to me that teaching a percussionist to hold sticks and mallets should be done with the same care

that is used to teach a violinist to hold a bow. I am working toward marching the percussion section with horizontal drums and matched grip.

I arrange each piece of band music to have parts for snare drum, bass drum, and bells. The players rotate parts so they start out with a good idea of what will be expected of them in the high school band. This avoids the idea that one can become the "lead snare drummer" or "the timpanist."

I have done several marimba recitals in the school and community in hopes that parents and students will see some musical value in being a percussionist.

Recruitment, I have found, must be done on more of a basis than just interest and enthusiasm. Some students pick drums because they haven't learned the names of the notes in music class and they believe that drummers don't have to read notes. Some write down drums because it is easier to spell than clarinet or baritone. (I use a list were they can circle the word "percussion.") Some parents will mention that their son or daughter problably didn't inherit any musical ability but they must be meant for the drums because they are always beating on pots and pans and chairs in the kitchen. And then there is the feeling that trombones and violins are too expensive, so play drums because all you need is a pair of sticks. (After all, that's the way Uncle Charlie learned to play when he went to school.) While it is possible to see the reasons for these ideas it is not possible to believe that they will result in a talented percussion section.

Next year I hope to improve my recruiting by using scores from an aptitude test which includes rhythm memory, and by interviewing each prospective student for coordination and rhythm abilities.

I hope that other teachers in the elementary schools will share their ideas so that there can be a general increase in sensible approaches to teaching the beginning percussionists in the public schools.

Sincerely,
Marlin L. Barnes
Orchestra director and
beginning band director
Camden Central Schools
Camden, NY

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We would like to express our appreciation to these outstanding organizations in the music industry for their support of Percussive Arts Society, Inc. and hope they will continue to consider PAS as a worthwhile and stimulating force in the percussion world.

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