



Article: Curatorial considerations guiding the conservation of a Javanese gamelan orchestra

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CURATORIAL CONSIDERATIONS GUIDING THE CONSERVATION OF A JAVANESE GAMELAN ORCHESTRA

Sam Quigley*

In 1990 the Museum of Fine Arts, Boston acquired a complete nineteenth-century Javanese gamelan. Most probably the oldest such ensemble in North America, it includes about 60 individual instruments comprised of bronze keys and gongs supported by elaborately carved and painted teakwood cases. Owing to its age and the damp conditions in which it was stored for the past several decades, much of the casework had been infested and required extensive compensation, in order to restore the instruments' musical functionality. The type and extent of compensation was guided by both physical and musical considerations.

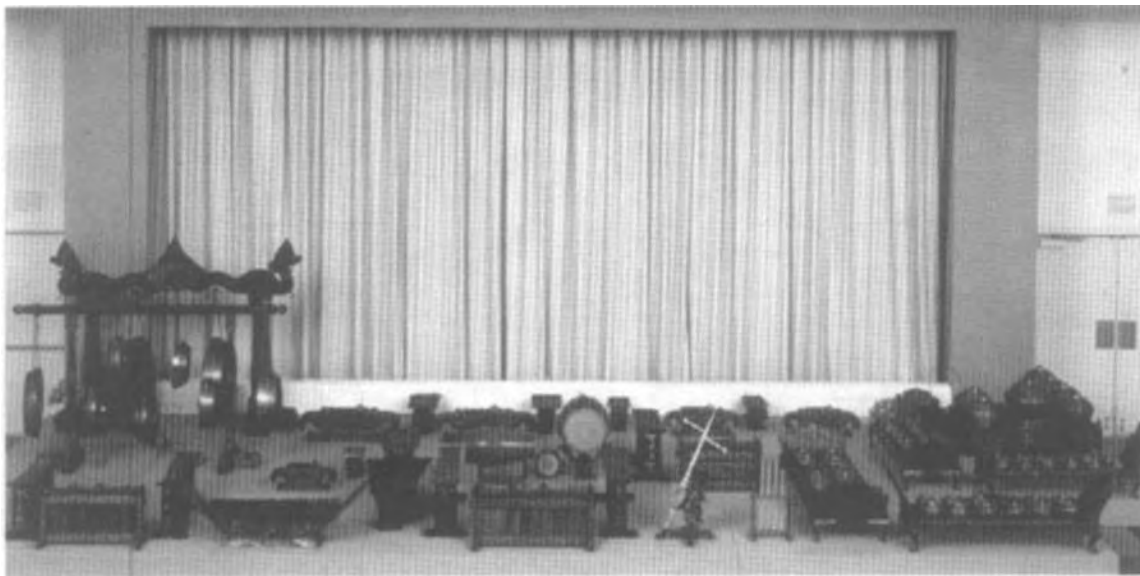


Figure 1. Most of the Blora gamelan on the MFA's Remis Auditorium stage after conservation.

I. Musical Instruments in the Museum Setting

Among collectors, curators and conservators of musical instruments, the question of whether to play or preserve has been vigorously debated.¹ Not so very long ago, it was generally taken as an article of faith that because of their very nature, musical instruments should be restored and maintained as implements with which music can be made. As an increasing number of precious originals were subjected to extensive restoration, appropriate alarms were voiced which have now somewhat mitigated this earlier attitude.

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CIMCIM, the Committee of ICOM on Musical Instrument Museums and Collections, has had a very active working group on conservation which has convincingly advocated restraint regarding restoration projects. One of the results of their sometimes heated debate was the publication of CIMCIM's *Recommendations for Regulating the Access to Musical Instruments in Public Collections*. While recognizing the contradiction between musical usage and preservation, they propose a balance: "The task of the museum is twofold: its responsibility for the safety and preservation of its instruments and its goal to further their study and disseminate the information thus obtained. In this manner the museum acts as a link between the craftsmen, performers and scholars of today and their counterparts whose work is represented in the collection."² The CIMCIM recommendation on access for performance is succinct: "Instruments from public collections should not be allowed to be played for motives of idle curiosity or individual pleasure; nor should they be considered as practice instruments."³

I subscribe to CIMCIM's guidelines and share the concern of those who feel that in many cases there is a need to be even more conservative especially with regard to restoration of keyboard instruments.⁴ However, like most of my colleagues, I view the obligations to educate and to preserve as *equally* fundamental to my role as curator. Whenever possible I try to encourage exploration and understanding of music different from our own, whether it be separated in time or by distance. Since one primary function of musical instruments is to produce sound, it follows that one primary way in which we learn about them is to use them for that purpose. Thus, I am inclined to permit musical usage of our collection under carefully controlled circumstances when the likelihood of harm is remote and the educational benefits are clear.⁵

The Musical Instruments Collection at the Museum of Fine Arts, Boston includes more than 1200 instruments representing nearly all the world's major musical cultures. Originating with the British clergyman, Francis W. Galpin, who assembled the original collection,⁶ usage of the instruments as a means to better understand early European music has always been an important educational function of the collection. Indeed, the remarkable resurgence of interest in historically informed performance partially stems from this mode of musicological research. Recently, as awareness of the global community has become increasingly important, we have greatly expanded our activities. One major music tradition for which our collection lacked examples, however, was that of the large gong chime orchestras found throughout Southeast Asia. Viewing this as an omission too large to be left unaddressed, the Museum's director at the time, Jan Fontein, gave me permission to seek out a Javanese gamelan for the collection. From the outset an important criterion for acquisition was the viability of the gamelan as a playable ensemble for cross-cultural educational purposes.⁷

II. Acquisition of a Javanese Gamelan

Whereas instrumentation, decoration, and performance practice of gong chime ensembles vary,

there are definite regional styles. In Java, where the tradition still flourishes, a gamelan always includes an assortment of knobbed gongs — both vertically and horizontally suspended, a group of metallophones and double-headed hand drums. A gamelan is usually forged of bronze in a single smithy, musically unified by a unique realization of one of two generalized tuning systems, and fitted with carved teakwood supports which share a consistent decorative scheme. Because of this "familial" quality, an ensemble is always maintained as a single unit and, as an indication of respect, usually known by the formal name given to the largest gong.

Other than the completeness of its instrumentation, the primary musical character of a gamelan is embodied in the bronze sounding elements. Everything else, however beautiful or lavishly decorative, is merely support for the bronze. As such, the resonator cases and gong stands are analogous to the legs of a piano or a stand for a harpsichord. It is the bronze which is considered most precious both in monetary and spiritual terms. Gongs in particular are accorded great respect, given formal names, and are believed by some to be mouthpieces of the gods. Indeed, anyone who has witnessed the process of forging gamelan instruments will understand how it can be viewed in mythic terms: elements are taken from the earth, transformed in fire, and finally quenched in water. Once made, some feel that they provide a connection between the temporal and spiritual worlds.⁸



Figure 2. The *sléndro gendér barung* as first encountered.

In 1988, I engaged Bpk. Tentrem Sarwanto, the highly regarded gongsmith with whom I had worked previously, in order to help locate an ensemble for acquisition. I valued his extensive knowledge and wanted to benefit from the opinions of a professional instrument maker to inform my own perspective in evaluating ensembles. After searching for about six weeks, I was taken to the coastal city of Blora to see a large gamelan comprised of about sixty individual instruments. This ensemble met all of my criteria except for one: its condition. Many of the wooden supports showed evidence of insect infestation and some components which had been completely undermined by extensive tunnelling were structurally unsound. This, I was told, was

undoubtedly one of the reasons it had been on the market for the previous eight years. I was also told that it had not yet sold because its musical character was unusual, that extensive tuning would be required to make it compatible with current musical taste. Knowing that most potential Javanese buyers would probably replace the wooden cases and might also re-tune the bronze, I came to believe (and I know this will sound very politically incorrect) that the acquisition by the Museum of this gamelan would be the most important part of its conservation.⁹

III. Physical Compensation of the Blora Gamelan

Depending on one's vantage point, the Blora gamelan is either a single musical unit or an assemblage of individually complete parts. As such, its conservation required compensation on two levels: 1) individual instruments needed work to stabilize various components — work which was determined essentially by non-musical, physical considerations, and 2) the musical unit required the addition of a few instruments to replace those which were missing — decisions which were made exclusively on the basis of musical considerations.

Javanese Woodcarvers



Before shipping the gamelan, I had decided to engage Javanese woodcarvers to make the several new decorative pieces I knew would be necessary to replace pieces which were beyond reclamation. Instead of asking an American carver to learn and copy an unfamiliar style, it seemed preferable to employ local craftsmen who were connected to the tradition and could work quickly and easily using traditional tools while being guided by their own aesthetics. In this way, I would also have the benefit of their professional opinions to inform my decisions about which

Figure 3. Javanese woodcarver making replacement part.

pieces should be replaced. In resolving to employ Javanese carvers, however, I had opted (without discomfort, I might add) to accept slight dissimilarities owing to different cultural values regarding the making of replicas. Whereas conformance to well-established norms is admired in Java, making an exact copy of something, be it a carving, a musical performance,

or culinary treat, is not, since it precludes the opportunity for expression of subtle differences in personal style. Including this somewhat unpredictable element of Javanese tradition in the process seemed entirely consistent with the nature of the project and, upon close inspection, the slight differences would help distinguish the new from the old. Upon my arrival, therefore, I sought out Bpk. Notoharsono, a respected woodcarver in Surakarta with whom I had worked previously. When I requested his help he was surprised that anyone would want to salvage the old cases instead of making new ones.

Nonetheless, he was willing and we proceeded to determine the extent of the work. Shortly thereafter, he set about the task of copying the original designs and having his men fabricate and attach what turned out to be seventeen new pieces, mostly feet of various sizes.

Regarding the preservation of the original pieces which were replaced, there was an attitudinal gap so vast that it was nearly comical. As if it were not enough that this American curator had requested the



Figure 4. Original and copy of *sléndro kempul* stand feet.

replacement of only seventeen components when the whole set might have deserved replacement, Bpk. Notoharsono was even more surprised when I insisted upon the return of the original decrepit pieces. Indeed, in that distant context, I must admit to feeling a bit silly in demanding the preservation and shipping of what even I might have otherwise considered to be firewood. It was not until we unpacked the shipment in Boston that I learned how vital the preservation of the original pieces was. Only then, in bright sunlight, did I see for the first time an inscription subtly carved into one of the pieces I had been tempted to leave behind. The inscription indicates that a Chinese gentleman caused something to happen with this gamelan in A.D. 1867. Exactly what it was that happened has not yet been determined, although it may have been the year in which the black set of instruments was joined with the red set.¹⁰ Regardless, had this piece been discarded, a crucial bit of information would have been lost. The importance of preserving parts replaced during restoration was driven home to me by this incident more thoroughly than by any other experience or study.¹¹

Museum Conservators

Although in this paper I am primarily concerned with presenting the rationale behind the conservation work, it is also important to summarize the actual measures taken in the lab. In

presenting the following, I would like to acknowledge Pamela Hatchfield for the invaluable assistance she gave both in the overall direction of the project and in correcting my brief description of it. I also would like to acknowledge each and every one of the eleven conservators who worked on this project.¹² I owe them all a great debt of gratitude for their excellent work and cooperation.

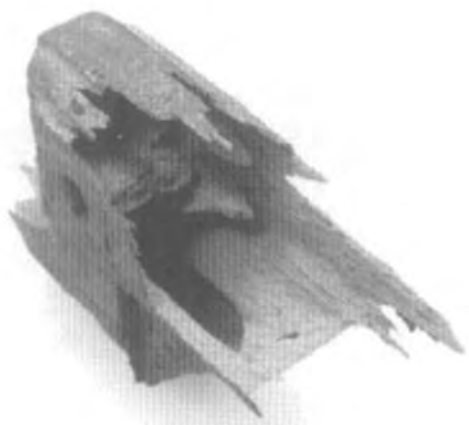


Figure 5. Insect-damaged portion of *sléndro bonang panerus* crossbar shoulder.

It was decided to fumigate the wooden parts of the gamelan using sulfuryl fluoride in a refrigerated shipping container temporarily rented for this purpose prior to introducing the instruments into the museum. Fumigation was chosen over freezing as the method to rid the gamelan of any remaining infestation for two reasons: the sheer quantity and, in some cases, the thickness of many of the pieces of wood, and the technical concerns voiced by local U.S. Customs, and Fish, and Wildlife officials. Once inside the building, we determined that the paint on each wooden component of the red-painted set should be re-adhered with warm hide glue and faced with lens tissue. It was clear that the most recent

of three layers of paint was the thinnest and had been applied without adequate surface preparation (fig. 6), which was why it was flaking off so badly. After securing the paint, the surfaces were cleaned with cotton swabs dampened with deionized water. Losses and undermined areas were sealed with Acryloid B-72¹³ and then filled with a 15% solution of Acryloid B-48N¹⁴ in ethanol/acetone, 1:1, bulked with glass microballoons and calcium carbonate. In areas of major structural loss, such as one of the uprights of the large gong stand, pieces of closely fitted pine

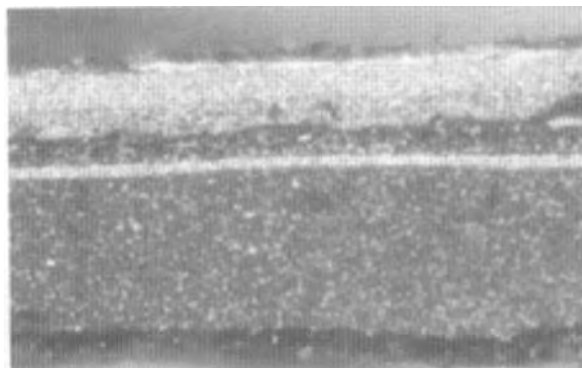


Figure 6. Paint chip from *sléndro* (red) at 20X.

and maple were glued into place using Acryloid B-48N resin in ethanol/acetone, 1:1, to provide

structural integrity and surfaces for recarving and inpainting.



Prior to shipment from Java, a few structural pieces of seven instruments had been identified for replacement but were reserved for American conservators since they were not decorative and there was not enough time to engage the Javanese for this work. Once in the lab, these instruments were dismantled and reassembled after new parts were glued into place. Finally, all compensation, both the new structural pieces carved by Javanese craftsmen as well as all areas that had been filled were inpainted using acrylic paints chosen to match the decoration.¹⁵

Figure 7. *Pélong gendér barung* showing added structural parts.

IV. Musical Compensation

The Blora gamelan required musical compensation on two levels: individual instruments needed attention to produce adequate volume, and a few sounding pieces were missing from the ensemble as a whole. Tube resonators are critical to amplify the sound produced by bronze keys on a number of instruments. Bpk. Tentrem, the gongsmith, had strongly recommended that all of the bamboo resonators be replaced because of their sensitivity to climatic change. Accordingly I commissioned a new set using soldered galvanized steel, the material now preferred in Java, but initially we tried to utilize the original bamboo. Unfortunately, the 50% +/- 5% RH of our gallery and storage area is considerably lower than the norm for tropical Java and the bamboo split and therefore proved musically ineffective. After two years we installed the new steel resonators, having painted them a dark green, a color chosen to be unobtrusive and reminiscent of newly-cut bamboo.

Two large hand drums and two bamboo flutes included with the ensemble were broken and musically unusable. Replacement drums and flutes were purchased and the old pieces were preserved for study. The new orange-yellow nylon rope by which many pieces were hung temporarily for display to potential buyers was replaced with proper red-dyed cotton cordage. Finally, to preserve the fifty-five surviving mallets (from as many as eight old sets!) I purchased a complete set of new mallets which are appropriate for modern performance.

Tuning of the Gamelan

The process of tuning a gamelan is wonderfully irrational and successfully accomplished by only a few experienced gongsmiths and tuners. Unfortunately, it is also utterly irreversible since it involves permanent removal of material from the sounding pieces.¹⁶ Accordingly, it was a foregone conclusion, even before beginning our search, that anyone playing the gamelan in the Museum would have to become comfortable with or otherwise accommodate its tuning, whatever it might be. Given the range of possibilities, however, this was more easily said than done. Nevertheless, to re-tune it would be ethically indefensible.



Understanding the orchestration and tuning of the Blora gamelan was complicated by the fact that it is somewhat unusual compared to the norms now prevailing in Central Java. Furthermore, what is considered "normal" tuning in Java is already a complex subject for several reasons. First, there is no exact theoretical standard such as equal or meantone temperament—each gamelan is a unique interpretation of a generalized system which can be described but not prescribed.¹⁷

Figure 8. Gary Stewart injecting Acryloid B-48N bulked with microballoons and calcium carbonate into gongstand upright.

Second, unlike strings or winds, the bronze of an old gamelan, once tuned, will not change over time as a result of environmental factors—a tuning can thus be understood as a reflection of an aesthetic of a previous era. Without delving into the enormous body of published work on comparative tunings, suffice it to say that most gamelan tunings fall within one diatonic whole tone of one another and that each internal intervallic schema conforms to fairly specific norms.¹⁸

Because of a recent trend toward standardization, it is now nearly impossible to ascertain what instrumental resources and tuning characteristics might have been found in outlying regions during previous eras. While the city of Blora is recognized as a part of Central Java, it lies far to the northeast of the capital cities and as such, reflects influences which are quite identifiable.¹⁹ Further complicating the issue is the fact that it had been held as a frozen asset by a Chinese family, possibly for as long as three generations and it is likely that individual pieces were not added to it nor was its tuning "modernized" since at least the 1930s, and quite possibly, much earlier.²⁰

While it may not be possible to use the old gamelan to play the now forgotten music specific to the region of Blora, the addition of only a few individual gongs would make it fully capable of the modern Central Javanese repertoire. In this way, the Blora gamelan would more readily be an ensemble with which we could realize our cross-cultural educational goals. Choosing which gongs to add, however, is an extremely vexing problem since two of the instruments -- each comprised of a set of gongs -- lack one important tone while another grouping is missing another equally important tone.²¹ The solution to the puzzle is not readily apparent since each option requires musical compensation by the addition of one gong to each of three individual instruments.



Figure 9. Pamela Hatchfield re-adhering flaking paint with hide glue and lens tissue.

Furthermore, because of the importance of these three instruments to the ensemble, making this choice determines whether the gamelan will be characterized by a high or low pitch level.

Since the two options are equally problematic the decision is necessarily subjective and must be based on musical considerations. Several professional Javanese musicians have studied the ensemble yet none have stated a preference unequivocally. Even the gongsmith, Bpk. Tentrem, was uncertain as to the best solution but in the end recommended the high-pitched option.²² Although I wavered considerably over the past four years, it is now my conviction that the high-pitched interpretation is more faithful to the ensemble. Accordingly, we plan to commission Bpk. Tentrem to make three new gongs to "compensate" the gamelan's instrumentation (and therefore its musical capabilities). This, it seems to me, is a reasonable solution which by no means undermines the authenticity of the ensemble or the educational usage to which it is put.

V. Summary

Resolving the dilemma between usage and preservation is a constant challenge for the curator of musical instruments. Because of the very nature of musical instruments, understanding their function is an essential element to our work. In some cases I feel that it is inappropriate to try

to make museum instruments sound again because of their rarity, age, fragility, construction or original state of preservation. On the other hand, it is my belief that some instruments, because of their construction, can be used without concern, a gamelan being one such example. Having determined musical functionality to be a criterion for acquisition, the compensation of the Bloro gamelan was determined by both physical as well as musical considerations. Nothing extraordinary was done to stabilize its physical state and only a few new gongs were necessary to enhance its educational value as a musical ensemble. As a result, the Bloro gamelan is now preserved as historic evidence for organological study and is viable as a fascinating musical ensemble which can be used in performance for cross-cultural education and enjoyment.

Endnotes

1. The bibliography is too numerous to list; a few titles, however, are important to mention.

Barassi, E.F. and M. Laini, eds. 1987. *Per una carta europea del restauro: Conservazione, restauro e riuso degli strumenti musicali antichi*. Florence: Società Italiana di Musicologia), Florence. (see especially English language articles by Myers, O'Brien, Montagu, and the plenary discussion pp. 391-445).

Barnes, J. 1980. Does restoration destroy evidence? *Early Music* VIII/2 (April): 213-18.

Karp, C. 1979. Restoration, conservation, repair, and maintenance. *Early Music* VII/1 (January): 79-84.

2. CIMCIM, Recommendations for Regulating the Access to Musical Instruments in Public Collections, *ICOM News* 1986. Vol. 39.

3. Ibid. A more recent CIMCIM publication makes the point that using exact reproductions both preserves the original and facilitates the educational role of museums on several levels. (*Recommendations for the Conservation of Musical Instruments: An Annotated Bibliography* 1993. CIMCIM Publications, No.1).

4. For further information, see my entry on conservation in *Encyclopedia of Keyboard Instruments*, Vol. III (I. Kipnis, ed.), Garland Publishing, forthcoming.

5. In determining the extent and kind of usage, I regard the CIMCIM *Recommendations...* as very useful. It provides suggestions about using strings, winds, keyboards, and drums, but it offers no such help on the subject of idiophonic instruments, that is, instruments which are usually played by striking them, such as a bell or xylophone.

6. Nearly 600 of his instruments were purchased by William Lindsey and given by him to the Museum in 1917 as a memorial to his daughter, Mrs. Leslie Lindsey Mason, one of the passengers who perished—on her honeymoon—with the sinking of the *Lusitania*.

7. Other criteria were: the gamelan had to be representative of the tradition, i.e. a complete and unified ensemble of some size; the bronze sounding elements had to be of very high quality; the case decoration had to be visually compelling; to be consistent with the rest of the Museum of Fine Arts' collection, it had to be datable to at least the nineteenth century and its condition had to be good. If at all possible, I also wanted to find one which was out

of circulation.

8. For a discussion of spiritual power associated with gamelan see: Becker, J. 1988. Earth, Fire, *Sakti*, and the Javanese Gamelan. *Ethnomusicology* 32(3): 385-391. In this light it is no wonder that gongsmiths—the ones who manipulate these primal elements to create and tune the sounding elements of the gamelan—are also held in high esteem.

9. I am well aware that some feel it unethical to make such judgements, that the fate of cultural properties should be decided solely by the practitioners of that culture, that interceding in this manner is cultural imperialism. In this instance, I make no apologies for taking a contrary view. Whereas I concede that the Blora gamelan *might* eventually have been sold and preserved in Java were it not for its purchase by the Museum, it is my opinion that this was highly unlikely. Furthermore I believe that, by receiving an export license from the Indonesian government (which is mostly controlled by the Central Javanese) after complete disclosure and forthright discussion of the merit of our request, its fate was, indeed, properly decided.

10. What this inscription means and other information regarding the provenance and dating of the Blora gamelan is beyond the scope of this paper. These issues and a detailed study of the bronze elements are the focus of another article, in preparation.

11. Although they occupy space in our crowded storage area, all replaced pieces are kept for some future study should anyone have reason to conduct one.

12. Michelle Barger, Arthur Beale, Susanne Gansicke, Alec Graham, Pamela Hatchfield, Jean-Louis Lechevre, Mimi Leveque, Maureen Russell, Leticia Stevens, Nina Vinogradskaya and especially, Gary Stewart.

13. Acryloid B-72 is manufactured by Röhm and Haas Company, Independence Mall West, Philadelphia, PA 19105, and is available from Conservation Materials Ltd., 1395 Greg Street, #110, Sparks, NV 89431, (702) 331-0582.

14. Acryloid B48N is manufactured by Röhm and Haas Company, Independence Mall West, Philadelphia, PA 19105, and is available from Conservation Materials Ltd., 1395 Greg Street, #110, Sparks, NV 89431, (702) 331-0582.

15. Mention must be made of the three ivory and four wooden fiddles (*rebab*) which were found disassembled in two boxes along with six bows and two bridges. Each of the ivory instruments was missing a few small pieces (eighteen in all) and these were made whole with replacements turned from polyester resin "alternate ivory" which was then tinted with earth color dry pigments applied by brush with methylene chloride. This was done to allow for assembly and display in their complete state, not to restore musical functionality since another *rebab* is used when the gamelan is played. Unlike the string section of a Western orchestra, only one *rebab* at a time is played with a gamelan. A complete ensemble usually includes one for each of the two tunings, although it is not uncommon to find several extras.

16. Filing in the center of a key lowers the pitch while filing at the ends raises it. Tuning a gong is accomplished by filing around the knob, on the instrument's face and shoulder or, when more significant change is desired, hammering to alter the shape and internal dynamics of the instrument. Only an experienced tuner can determine whether or not the bronze is thick or malleable enough to be changed at all. It is not uncommon, especially in the case of old instruments, for the tone to degrade or for the piece to break as a result of ill-advised hammering.

17. For a fascinating discussion on the tuning process see Vetter, R. 1989. A Retrospect on a Century of Gamelan Tone Measurements. *Ethnomusicology* 33(2): 217-228.

18. For data relevant to this topic, see Surjodiningrat, Wasisto, et. al., *Tone Measurements of Outstanding Javanese Gamelan in Jogjakarta and Surakarta*. 2nd ed., rev. Jogjakarta: Gadjah Mada University Press. (1st ed., in Indonesian, 1969).

19. Much has been written about the stylistic characteristics found in coastal (*pebisiran*) batik. See, for example, Elliot, I. McC. 1984. *Batik, Fabled Cloth of Java*. New York, NY, pp. 93-174. There are equally notable regional characteristics in woodcarving, puppetry, music, and many other art forms.

20. Additionally, one cannot ignore the possibility that the gamelan might never have been considered complete or its tuning considered to be pleasing.

21. A crude analogy may be of some help: If one wanted to play a tune in F major on a piano which is missing all the strings tuned to "F," it could be transposed down to E major and probably be acceptable. However, if the pianist is accompanying an orchestral saxophone in F, the transposed tonic, i.e., E, would be out of the sax's range. This would necessitate a different transposition, probably upwards to the key of G major or to any one of several other possible tonalities. In the Blora gamelan, however, there are only two alternatives from which to choose: the sléndro tone row -- to continue the crude comparison -- can be sensibly used in either E or F. Two important instruments - each comprised of a grouping of gongs -- lacks the tone "F" while another grouping is missing "E."

22. Both Bpk. I.M. Harjito, Artist in Residence at Wesleyan University, and Dr. Rahayu Supangga, Director of the National Performing Arts Academy in Surakarta, were uncomfortable with making a final determination after considerable thought. Interestingly, Dr. Supangga pointed out that high pitched tunings were preferred in the coastal region.