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Culturally Informed Analysis and Ways to Disclose Local Musical Knowledge*

Overview[1]

Should we investigate musical features and practices in the first place? If the answer were "yes" which methods are particularly suited to disclose local knowledge and thus support a culturally informed analysis? First the notion of "culturally informed analysis" will be compared with earlier concepts of musical analysis in comparative musicology. When it comes to the study of musical concepts and practices, participant observation as the standard ethnographic method needs to include what has been called the "learning to perform" approach. In addition, new tools, especially ones making use of computer technology, can add to our range of available methods and techniques. This will be exemplified by drawing on two case studies, namely, *mbira* music from Zimbabwe and *karawitan* from Central Java.

Background

For early comparative musicologists such as Erich von Hornbostel, it was standard procedure to analyze music samples from various cultures documented on wax cylinders. These were usually supplied by people who had been to foreign countries on business not related to music research, yet these audio examples nevertheless formed the basis for the analysis of musical parameters such as melody, rhythm, [30] form, multipart structures and the like. This "armchair research" was later dismissed as inappropriate by Alan Merriam (1964) and others because it failed to take the cultural setting of the music under investigation into account.[2] Adopting the terms "folk evaluation" and "analytical evaluation" (Merriam 1964:31-32), he anticipated the distinction between emic and etic perspective which later became highly influential in ethnographic studies and ethnomusicology in general. At the time when Merriam published his seminal book, attempts were still being made, for instance by Mieczyslaw Kolinski (e.g. 1965) and later by Alan Lomax (e.g. 1976), to further develop the original approach of comparative musicology by devising analytical schemes that would

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[2] Merriam's famous "theoretical research model" (1964:32) distinguishes between the concepts of music, the physical, social, and verbal behavior of human beings, and the final result of the "music sound itself". While early comparative musicologists usually focused their studies on the latter aspect only, while assigning any other issues to ethnologists (Hornbostel 1986 [1905]:56), Merriam stressed the importance of trying to reconstruct what people think about music by interpreting their observable behavior.

cross-culturally fit any music. However, the pronounced shift towards regionally focused studies and a tendency to favor anthropological issues instead of musical ones in the wake of the "anthropological turn" as expressed in Merriam's new concept of ethnomusicology as being based on two equally important pillars, anthropology and musicology (Merriam 1964:3), led to a general decline of cross-cultural research and of musicological analyses. Merriam's often-cited definition of ethnomusicology as the study of music not only "in" (1964) but "as culture" (Merriam 1977:204) is reflected today in the notion of "music as social practice" (cf. website of the SEM[3]).

In the years following the publication of his *Anthropology of Music,* musical features were not often discussed in ethnomusicological studies although there have been exceptions to this prevalent trend. More recently, the publication of the volume *Analytical Studies in World Music* edited by Michael Tenzer (2006) has marked a significant change. In retrospect it seems that there has been the tendency to throw out the baby with the bath water: One prematurely refrained from explaining performance practices and musical concepts through musical analyses. Music must be considered a domain of specialized knowledge in the same way [31] language is, for example. General issues involving language or music may be assessed by somebody trained in anthropology, but when it comes to more specific aspects or in-depth studies, specialists, such as linguists or ethnomusicologists, are able to provide more insights based on their special expertise. What people actually do when they perform music and how they conceptualize these practices are research questions not to be neglected. On the other hand, a strictly etic approach ignoring emic concepts, i.e., not taking into account local knowledge, is obviously not acceptable anymore because it would only yield a limited or even distorted picture. Instead, we should aim at a "culturally informed analysis" – as Bruno Nettl has called it in the blurb to Tenzer's edited volume mentioned above - specifically stated, at studies of musical practices based on a thorough understanding of local culture and relevant emic concepts.

Methodological choices

When trying to disclose this local knowledge we are usually confronted with one of the following settings. In some cases such as the art music traditions in India (Hindustani and Carnatic music) we encounter local theories about music which we are obliged to compare to actual performance practices. In other cases we find musical concepts which are only partly verbalized, i.e., a specialized terminology may exist for some aspects of the local music without constituting a full-fledged music theory. Especially abstractions of musical

[3] "1) Taking a global approach to music (regardless of area of origin, style, or genre). 2) Understanding music as social practice (viewing music as a human activity that is shaped by its cultural context). 3) Engaging in ethnographic fieldwork (participating in and observing the music being studied, frequently gaining facility in another music tradition as a performer or theorist), and historical research." (SEM 2015)

phenomena such as a theoretical model of the tonal system or the difference between metrical and rhythmical features are often not considered relevant by local experts and therefore remain vague or do not exist. But even in music cultures with formal music theory we may expect certain lacunae, for instance, regarding aspects of performance practice, sound aesthetics, etc., which elude any precise verbalization in local communication. Especially in these cases ethnomusicologists need to find ways to unveil the concepts that musicians have in their minds, i.e., their tacit or procedural knowledge. Following Merriam, their observable musical behavior can serve as an important source here, but it may be necessary to employ more refined methods to actually reconstruct these implicit concepts. [32]

I: Learning to perform

Fieldwork and participant observation in particular are generally seen as the hallmark of ethnomusicology as compared to other domains of musicological research. As one special form of participant observation in connection with music studies, an ethnomusicologist may employ learning to perform the music under investigation as a research strategy (cf. Grupe 2005a). This approach can actually be traced to the early days of comparative musicology (cf. Abraham & Hornbostel 1909 on the "Erlernungsmethode"[4]), but has been successfully put into practice by a number of later scholars such as Percival Kirby ("participate in the musical performance", [33] 1934[5]), A. M. Jones ("join an African band", 1934[6]), Mantle Hood ("the

[4] "Im allgemeinen wird heutzutage bei der Sammlung von exotischen Musikproben der Phonograph verwendet, dessen Vorzüge genügend oft und eingehend erörtert worden sind. Wo phonographische Aufnahmen aus irgend einem Grunde unmöglich sind, muß man sich mit Aufzeichnungen nach dem Gehör behelfen. Auch diese Methode hat u. U. ihre Vorzüge und ist keineswegs ganz zu verwerfen, wenn sie mit der nötigen Vorsicht und Sorgfalt gehandhabt wird. Am besten ist es, wenn der Forscher selbst die Gesänge oder Instrumentalstücke der Eingeborenen so erlernt, daß er sie zur Zufriedenheit der Eingeborenen wiedergeben kann. Als Kritiker muß man sich musikalisch besonders Begabte – (wieder nach dem Urteil ihrer Landsleute) – wählen und auch die Sicherheit haben, daß die Zustimmung nicht nur aus Höflichkeit oder aus Interesselosigkeit erfolgt. So wird man am sichersten beurteilen können, was den Eingeborenen selbst das Wesentlichste an ihrer Musik ist - ihr Standpunkt weicht von dem europäischen oft erheblich ab. [...] Die Erlernungsmethode kann auch neben der phonographischen Methode sehr instruktiv sein, namentlich bei komplizierter Instrumentaltechnik (z. B. Trommelrhythmen), deren Eigentümlichkeiten und Beziehungen zur Konstruktion des Instruments und zur Melodik nur so zu ermitteln sind." (1986 [1909/10]:134f.)

[5] During his time as professor of music and music history at the University of Witwatersrand in Johannnesburg/South Africa, Percival R. Kirby (1888-1970) published a number of papers as well as a comprehensive monograph entitled *The Musical Instruments of the Native Races of South Africa* (1st ed. 1934) on the music at his "doorstep", i.e., of various ethnic groups in South Africa. It is based on a large collection of musical instruments which he studied under the expert guidance of local musicians. Among other things he investigated the subtle sounds of certain string instruments such as musical bows. Since recording technology at that time would not have allowed for proper documentation of their harmonics, he relied instead on learning to play them himself. He wrote "On [...] expeditions I frequently lived in native kraals, and participated in the musical performances of the people, the only way, in my opinion, for a European observer to learn and understand the principles underlying native music." (1965:vii; cited after Hood 1971:45 46).

obvious way of approaching the study of any music", 1971[7]), and John Blacking ("learn Venda music", 1967[8]). John Baily, who also employed this approach in his studies [34] on music in Afghanistan, has summarized its main advantages in a paper entitled "Learning to Perform as a Research Technique in Ethnomusicology" (1995).[9] In fact, after the Second World War this approach became more and more accepted[10] as a useful tool at least among those ethnomusicologists who adopted Mantle Hood's claim that "the primary *subject* of study in ethnomusicology is *music*" (1971:4; italics in the original). He advocated a culturally diverse musical training in order to improve what he called one's "musical literacy" (Hood 1971:24, 32-40, 242). Gaining high artistic competence is usually not intended, but being a learner often has certain advantages. For instance it may put the researcher in a clear-cut role among the members of the community he/she studies. Probably even more important are direct comments by local experts on the proper way of performing (cf. the experiences

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[6] "African Drumming" (in *Bantu Studies* 8:1-16, 1934; reprinted in Jones 1958). He described his practical experience in the following way: "It is the combination of […] simple rhythms which makes the glorious African harmony, which to the listener often sounds beyond analysis. A phonograph in this field is useless." (cited after Baily 1995:333)

[7] Mantle Hood commented on the statement by Kirby quoted above in the following way: "In retrospect, it would seem to be the obvious way of approaching the study of any music. But we must remember that ethnomusicologists publishing before World War II and its aftermath of rapidly emerging new and independent nations lived in an entirely different world. It had to be truly the exceptional European who would publicly demonstrate that he had something to learn from the peoples of a colonial possession by sitting down with them cross legged on a mud floor to learn their native instrumental and vocal music or by joining them in their dances. For the most part, the intellectual and occasionally, as the exception, the aesthetic curiosity and interest of the early researcher had to be satisfied, under the most favorable circumstances, by observation and by questions put to the performer. Very often the questions themselves were inapplicable, stemming, as they did, from the conditioning of a totally different tradition, European art music. And very often the musicians and dancers being questioned were quite unaccustomed to verbalizing about their respective arts." (Hood 1971:46)

[8] John Blacking reported about his research among the Venda in South Africa: "I decided to begin my general study of Venda music with a detailed study of the children's songs. I thought that it would be a good plan to learn Venda music by the same process as the Venda themselves, and that by singing children's songs I might also improve my pronunciation and vocabulary of the Venda language. My pronunciation was never very good, however, but I found that my subsequent ability to sing the children's songs correctly was a great asset in establishing friendly relations in areas where I was not known." (1967:28; cited after Baily 1995:333)
He continued: "My teachers were patient and insisted on correcting my mistakes, so that I began to learn what was expected of a singer and what tolerances were allowed. I learnt the songs both from adults and from children. On some occasions I made deliberate mistakes, and was therefore especially interested if I was not corrected: this would mean that I had sung an alternative melody which, though not that which my teacher knew, was perfectly acceptable according to the canons of Venda music". (1967:33; cited after Baily 1995:333)

[9] Baily (1995:332) proposed to drop the somewhat problematic term "bi-musicality" which Hood originally used and speak instead of "learning to perform", a phrase also used by Hood (1971:34-40), because it seems impossible to draw a clear line between different musics and "musicalities". Should proficiency in rock music be considered different from one gained in Western art music? Are the idioms of classical Indian music so different that somebody competent in both Hindustani and Carnatic music should be called "bi-musical"? In order to avoid this confusion Hood himself already suggested to merely speak about "musicality" in the singular (1960:59).

[10] Cf. the SEM website quoted above on "gaining facility as a performer or theorist" as a typical skill of an ethnomusicologist today.

reported by Blacking and others) and the chance of incorporating the performer's perspective in the research process and development of further research questions. [35]

II: Computer-assisted research

Making sure that the available fieldwork equipment was up to the most recent technological standards has always been the prevailing attitude among most ethnomusicologists (see further Grupe 2011). Way before the advent of computers, one helpful procedure in eliciting more detailed or specific comments on musical practices has been to let local experts comment on field recordings on the spot. This practice has been promoted by employing current computer technology. The technical basis can be the use of digital audio samples (sampling), commercial sequencer software, sound synthesis, or the development of dedicated software. These options offer a wide range of possible applications including the aural reconstruction of musical material that has been documented in a fragmentary fashion only, the aural presentation of findings, and in particular the evaluation of audio examples in a more experimental setting with the chance to control individual musical parameters. A case in point for the first option can be found regarding the repertoire of the log xylophone *amadinda* from Uganda. It is very simple to produce audio examples of traditional pieces which have been documented in notation but are not – easily – accessible as recordings. By using samples of original *amadinda* keys and controlling them with one of the widely used commercial sequencer programs it is possible to get at least a rough idea of how they might sound if played by accomplished musicians. In this way it is just as simple to present the individual musical parts as well as the resulting auditory patterns alternatingly and thus demonstrate the gestalt principles at work in these pieces (cf. Wegner 1993; Grupe 2005b).

Perhaps more important are the experimental settings mentioned above which are supposed to help in eliciting tacit knowledge. Their aim is to facilitate the study of musical concepts and practices without the need for verbal explanations on behalf of local experts who may not be used to this kind of discourse. In 1989 Simha Arom used a commercial synthesizer which offered a micro-tuning option to investigate – in an interactive exchange with local musicians in Central Africa – what models lie behind the tunings of xylophones in that tradition (Arom 1991). Ulrich Wegner employed the Synclavier system of controlling sampled sounds via a sequencer to produce audio examples of *amadinda* pieces for his experiments on the perception of so-called inherent patterns of this music (Wegner 1993). The most advanced setting at the beginning of this century has been devised and implemented by Nathalie Fernando-Marandola in her studies of the vocal polyphony of the Bedzan pygmies in Cameroon (Fernando-Marandola 2002). After producing multitrack recordings of performances with the help of headset devices, she then [36] digitally manipulated these recordings so that the musical pitch of the sung notes was slightly changed without altering the customary overall sound, the formants and the phrasing of the individual voices. Thus she could immediately discern the performers' responses to the

intonation in these new versions. This kind of setting results in a much more active role for the "informants" and at the same time the researcher may test hypotheses straightaway in the field.

Two case studies

Two case studies will now discussed in which I myself have made use of these two specific methods, namely, learning to perform and computer-assisted research. Concerning the kind of local knowledge one encounters in these two cases, it seems appropriate to make a distinction between two settings. In the first, much is indeed tacit so that we need to resort to observing the musical behavior of the musicians; in the second, observing their performances can be complimented not only by existing concepts from local music theory but also by giving local experts the opportunity to discuss specific aspects of their art in a way they normally would not by letting them comment on specially prepared audio examples of their music. In the latter case local knowledge is clearly not completely tacit in the sense that we were dealing with musical issues which are beyond verbal discourse. It just usually does not take place or remains fairly vague because without the actual sound it will be almost impossible to discuss certain musical features in any reasonable way. *Mbira* music obviously represents the first case, while *karawitan* is associated in part with formal music theory, but also with aspects which are usually not theorized.

1. *Mbira* music

Shona *mbira* music has been studied extensively (see Grupe 2004 for a general introduction and further references) and scholars such as Andrew Tracey, Paul Berliner, and Klaus-Peter Brenner have in their research successfully made use of incorporating their ability to perform *mbira* music themselves. Therefore when I started my own investigation of its performance practice and the concepts underlying this music, I was convinced that at least a basic knowledge of how to play this musical instrument would be essential to any serious scholarly study. Before I started doing fieldwork in Zimbabwe I learned several basic versions of standard [37] pieces from the traditional repertoire as being taught by a Shona *mbira* player then living in the same city as myself. This preparatory training very soon pointed me towards several aspects of this music, for instance, the issue of distinct versions, the segmentation of cycles, the relevance of motional patterns, and the systematic use of playing areas on the *mbira*, which all seemed to call for employing the learning-to-perform approach routinely in my research.

Consequently, while in Zimbabwe I not only observed performances and talked to musicians but also took lessons with some of them. In order to teach me a new version of one of the

standard pieces which are based on harmonic cycles and a fixed number of smallest time units (pulses) - very often 48 - the musicians needed to decide for themselves[11] where to start the piece, and how to split it into segments which could be practiced and memorized. They also had to choose a version suited to represent at least one way of playing a certain piece, which are usually characterized by various degrees of variation during a performance. It turned out that both the starting point and the segmentation usually corresponded to musical features that could be extracted by a structural analysis, thus corroborating the emic relevance of the interpretation of the musical features on behalf of the researcher, myself.

When playing *mbira* one is immediately struck not only by certain gestalt effects (auditory streaming) which shape the perception of this music but also by phenomena in the motional domain. For one, the parts of the left and the right hand interact in a specific way, but may also be treated as separate entities. This is evident when right and left parts of various versions of a piece are recombined to produce new versions or variations. Another motional feature which goes beyond the right-left distinction is the systematic use of the four playing areas of a *mbira*, namely, the lower left and the upper left manual both plucked by the left thumb, the (usually) three leftmost keys of the right manual plucked by the right thumb, and the rest of the keys of that manual plucked by the right index finger. Elsewhere I have explained this in more detail (cf. Grupe forthcoming, with examples) so it may suffice here to restate that these four areas are employed to produce two types of motional-rhythmic patterns. There are those which support the underlying ternary meter by having a constant, unchanging time relation to it. Once such a pattern is identified during a performance, the meter can be determined reliably even if the beat, which is marked in a complete ensemble by a pair of rattles called [38] *hosho*, is not audibly materialized. The second type of patterns can be described as masking or veiling the beat because their time relation to the underlying meter keeps shifting. It is, therefore, much more difficult to determine the beat only from the *mbira* patterns themselves, although it is possible if one knows the specific version of the piece being performed.

Learning to perform several *mbira* pieces and also various versions of them has not only helped me substantially in arriving at these findings, but it has also actually put such issues on my research agenda in the first place. However, I would like to point out that my focus has been on “learning to perform”, not on “performing” with the intention of achieving a higher level of proficiency. The process of learning itself already proved to be highly beneficial and added considerably to other forms of participant observation when it came to trying to understand how a (Shona) musician might perceive this music and what principles seem to be at work here. Again, the emic relevance of my own findings needed to be corroborated by looking for ways to determine how members of the culture react to such musical features and whether my distinction makes any difference or sense to them.

[11] In Zimbabwe I have been taught only by male musicians, although there are female players as well.

Obviously, my two abstracted categories, i.e., patterns supporting vs. patterns masking the beat, would be nothing that could easily be discussed with them, if at all, because such musical features are not topics for verbal discourse among Shona. On the other hand, at least experienced musicians would never have the least doubt about how a pattern relates to an actually played or only imagined *hosho* part, which represents the "meter" in our terminology. A simple test verified the distinction into the two basic types introduced above. When asking a neighbor of some of the musicians I worked with to supply the *hosho* part during a recording session of basic versions (*kushaura*) of some pieces, it became immediately evident how crucial the difference between the two types was for him. He easily managed to perform an acceptable rattle part if the *mbira* played a version based on a "commetric" (Kolinski 1973) pattern, but was completely at a loss when "contrametric" (Kolinski) ones were employed.

This first case study has demonstrated how the learning-to-perform approach may help in our efforts to arrive at a kind of analysis which incorporates emic views on structural features even if we encounter them in the form of tacit knowledge that needs to be disclosed by appropriate methods. While I have employed this strategy to a certain extent again in my studies on Central Javanese *gamelan* music, another methodological choice has been my focus here. Still, the aim remains the same: a culturally informed musical analysis. [39]

2. *Karawitan*

Karawitan is the name of what could be called the classical music of Central Java played on so-called *gamelan*, i.e., sets of musical instruments usually dominated but not restricted to gongs, gong chimes, and metallophones. As early as 1934 Jaap Kunst published his monograph *De Toonkunst van Java* (²1973), and many other ethnomusicologists have written extensively on *karawitan* afterwards, so there is no need to give a general introduction to this music here.[12] I would like to focus on one particular aspect instead that has intrigued several scholars, namely, the search for a musical grammar of *karawitan*. Even an only cursory glance at its performance practice may quickly lead to the assumption that quite a bit of it seems to be based on the application of musical rules especially when comparing the rather sketchy notation, which gives only a rough outline of some basic features of a piece (see below), to the fact that a large ensemble of more than 20 performers may be involved. Obviously they have not memorized every single detail because the rendition of a piece varies from one occasion to another.

In order to come to grips with the complex texture of the musical parts within such a performance it is useful to classify them according to a suitable principle. Different

[12] I recommend Pickvance (2005) as a comprehensive source.

taxonomies exist but for our purposes I prefer to group musical parts according to their function within the ensemble (cf. Supanggah 2011:54-56). Thus, four categories can be distinguished: 1) musical instruments rendering a version of the core melody called *balungan* (cf. Grupe 2005a:35-37 on various concepts associated with it); 2) musical instruments interpreting, embellishing or elaborating this *balungan*; 3) punctuating instruments marking the compositional form at structurally relevant points in time; and finally 4) the drums controlling the tempo and sometimes signaling transitions to specific sections. The "score" of a piece usually only consists of the core melody in *kepatihan* cipher notation along with information identifying the tuning system and mode, and also which one of the standard compositional forms for traditional pieces is the basis for the present one (see fig. 1). [40]

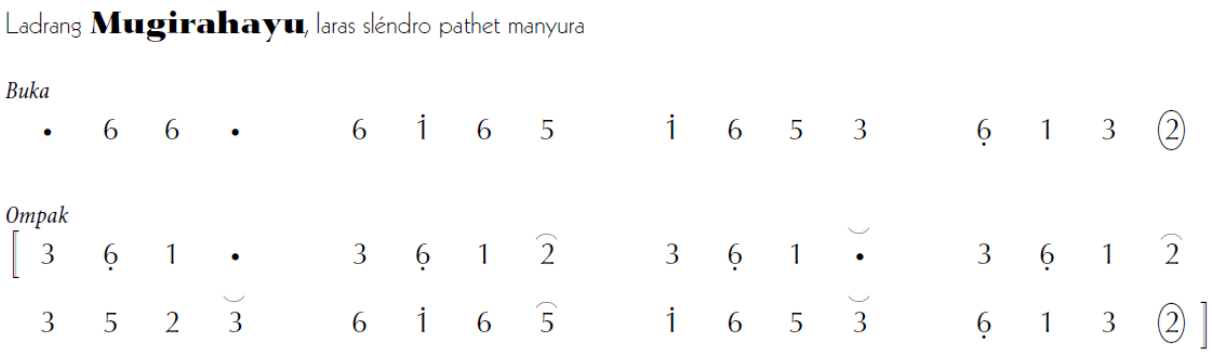

Fig. 1: Example of *gamelan* notation[13]

How does this kind of notation need to be interpreted in order to arrive at the various musical parts of an actual performance? Already many years ago several scholars have made attempts to explain the musical behavior of certain parts as being based on a kind of musical grammar (cf. Sutton 1978, Becker & Becker 1979, Hughes 1988). If this were the case current computer technology should enable us to produce actual audio examples by applying rules which we have been able to deduct from our analyses of *karawitan*. The validity or depth of our understanding of this musical tradition could be tested in this way. Such examples should of course be evaluated by acknowledged *gamelan* experts.

A pilot study which aimed at implementing this analysis-by-synthesis approach had been conducted as part of the *Virtual Gamelan Graz* (VGG) project from 2005-2007 (cf. Grupe 2008 for more details). While more recently *karawitan* has also inspired composers of

[13] Taken from Drummond (2015). The first term, *ladrang*, indicates the compositional form, in this case consisting of 32 beats per gong cycle. The word in bold face, *Mugirahayu*, is the name of the composition. It is followed by terms indicating the tuning system (*laras*), in this case the pentatonic *sléndro*, and the melodic mode (*pathet*), in this case *manyurå*. *Buka* means introduction, *ompak* is the main section of the piece and will be repeated several times. The dots added to ciphers indicate the register (below = lower octave; above = higher octave), and the curved lines and the circle mark the position of certain punctuating instruments.

electroacoustic music (e.g., Matthews 2014), our intentions with VGG were more directed towards scholarly research although the software would have been open to artistic utilization as well. The results were promising but producing audio output that would have been feasible for listening experiments with Javanese musicians still needed to be achieved. Therefore, a follow-up [41] project of VGG was started in 2012.[14] At first, attempts were made to create a more elaborate version of the original SuperCollider program (cf. Grupe 2008) that was supposed to emulate the musical rules of *karawitan* to a certain extent[15] but this soon turned out to be a too demanding task. Bringing together expertise in both *karawitan* and software programming in any one person proved to be impossible to find and experts from these two "worlds" usually found it very difficult to talk to each other in a mutually intelligible way. In any case within a reasonable timeframe, i.e., the time limits of the project duration, no solution for this problem could be foreseen so that any further development of the SuperCollider implementation was temporarily suspended. Instead, efforts were made to produce audio examples which would incorporate available knowledge about *karawitan* by other means in order to be able to carry out the desired listening experiments with Javanese experts. These examples were finally created with the help of commercial sequencer software driving sound samples of the original *gamelan* instruments from Surakarta/Java housed at the University of Music and Performing Arts Graz (KUG). They excluded all musical instruments capable of flexible pitch such as the spike fiddle *rebab*, the flute *suling*, and vocals. Others, which could easily have been emulated by the chosen setup but were not expected to provide new insights for the project as a whole beyond the appropriateness of their respective melodic patterns, such as the xylophone *gambang* and the zither *siter*, were omitted in order to reduce the number of parts to be presented and discussed.

As compared to a SuperCollider setup the main difference now consisted of putting in everything manually in advance as opposed to having the computer assemble the notes, parts, tempo changes, etc. in real-time. Any variation or interaction between parts also needed to be fixed for each version of a piece beforehand. This surely is a less elegant way than was originally planned but the final results could be evaluated by the musicians in exactly the same way. For them, the way the examples were technically assembled was definitely less important than commenting on the actual audio output. Thus, three renowned Javanese *gamelan* experts, Bp. Suraji, Bp. Suyoto, and Bp. Prasadiyanto, all of them accomplished musicians very well-versed in the *gamelan* tradition of Surakarta/Java and also [42] instructors at the local Academy of the Arts, ISI[16] Surakarta, were invited to the

[14] I gratefully acknowledge generous funding of this project by the Austrian Science Fund (FWF) as part of their PEEK program (project no. AR 143-G21, 2012-2015).
[15] I thank Dominik Hildebrand Marques Lopes for his collaboration in developing the audio functionality of the VGG SuperCollider implementation.
[16] Institut Seni Indonesia.

Southbank Centre London from December 7th to the 20th 2014 to participate in listening experiments.[17]

A selection of pieces taken from the traditional *karawitan* repertoire had been prepared and the choice was approved by the musicians. It was ascertained that different compositional forms (*ketawang*, *ladrang*, *gendhing*) as well as the two tuning systems (*laras*) and their respective modes (*pathet*) were represented in this sample. The experiments were divided into two parts: 1) issues concerning performance practice (*garap*) and 2) issues concerning the tuning and sound (*embat*) of the virtual *gamelan*s. Concerning the first, the musicians seemed quite astonished that a computer seemed to be capable at all of producing traditional *karawitan* pieces which they could immediately identify, but after the first surprise they quickly began a detailed discussion of successful features of the version they had heard as well as the various flaws. I will not address the relationship between the notated form of the *balungan* and certain other musical parts in any detail here because the way some instruments construct their melodic patterns, their so-called "treatment" (*garap*) of the main melody of a given piece, is an issue which exceeds the scope of this paper (see Pickvance 2005; also Grupe 2010, 2011, 2015). Suffice it to say that not only were several mistakes I had made immediately pointed out but also aspects of performance practice such as the microtiming (phrasing) and articulation of instruments including the gong chime *bonang barung* or the timbre and timing of drum strokes were heavily criticized for being too mechanic and sounding like a beginner, although every now and then there were also positive [43] comments on something that seemed to have been played well. In some cases the VGG version was considered to be acceptable to a certain extent but ultimately not appropriate because the given piece was conventionally expected to be performed in a different way. It turned out to be particularly helpful that two different types of pieces had been prepared. For the majority of them I had specific information on their usual performance practice from experienced Javanese or European *gamelan* teachers. However, I also deliberately picked a few pieces without this prior knowledge so that my version had to be based exclusively on general knowledge and generic rules and constraints. The musicians selected two of the four I had prepared in this fashion and their comments showed the very limited success of my endeavor so that the other two were not discussed any more.

[17] I would like to express my deep thanks to these three who became seriously involved with the project and very patiently put up with my poor renditions of the art of *karawitan* and my probing questions. They also performed several pieces for us which we documented on video. These versions by experienced musicians can thus be compared to the artificial, computer-based ones that were used during the listening experiments. I would like to thank Jonathan Roberts for transcribing the relevant passages of the discussions and translating them from Javanese and Indonesian respectively into English. I would also like to thank John Pawson for additional translation and for general assistance before and during our time in London. A special thank you goes to Sophie Ransby who has been immensely helpful in organizing the whole event. Babak Nikzat has very efficiently served as project assistant and has done all audio and video recordings. Several members of the South Bank Gamelan Players have kindly been willing to perform a number of pieces for us in a larger line-up.

Concerning the second issue mentioned above, altogether 18 different virtual *gamelan* sets had been prepared in advance by retuning the original samples of the Graz *gamelan* to other ones: partly traditional, partly new or experimental. For the traditional sets not only the local one housed at the Southbank Centre called *Lebdhåjiwå* was chosen so that the musicians could listen to a virtual version and play an appropriate one live without a change of tuning, but also measurements published in 1972 by Surjodiningrat et al. were used in addition to information on the tuning of the American *gamelan*s *Si Darius* and *Si Madeleine* (Miller & Lieberman 1999:161). Equidistant tunings and two that mapped the Javanese scales to diatonic ones were also prepared. Although Surjodiningrat et al. can provide only an approximate basis for a retuning because the frequencies may be too imprecise and at least cannot account for beats and timbre, it seemed nevertheless worthwhile to present rough approximations of some renowned sets.[18] It was pointed out to the listeners that they were about to hear (virtually) retuned *gamelan* instruments taken from the Graz set and neither the name of the emulated *gamelan* nor any other information was given up-front. Their responses were very precise and generally resulted in quite enlightening comments on the impression each virtual *gamelan* set evoked in them. Very often the three came to similar judgments complementing one another. As one of the British experts remarked, he found this [44] kind of discussion to be quite exceptional among Javanese musicians because usually there seems to be no reason but also no foundation for such dialogue.

The preliminary results, as the material collected in London has not yet been fully analyzed, may be summarized in the following way: There can be no doubt that musical rules do exist in *karawitan*. Generalizations concerning "typical" musical behavior to be expected in certain "standard" musical contexts are possible in principle. However, such "rules" are often overruled or invalidated on various levels. Pieces may be associated with a customary performance practice concerning for instance the formal development such as the order of sections, changes of the basic tempo and associated density of certain parts (*iråmå*), etc. Pieces may also have varying versions associated with specific performance occasions, e.g., accompaniment for *wayang* shadow-puppet plays vs. concert situations (*klenèngan*) vs. playing at weddings, etc. What might be appropriate in one such social context could be considered wrong or at least awkward in another. It is also essential to account for differences between the personal opinions of various experts. Musicians may disagree to a certain extent over some options (*garap*) and may even make different choices themselves on different occasions. Often there may be a consensus in the form of a mainstream opinion but there will hardly ever be a final, generally acknowledged standard or authority. Interpreting unknown pieces from *kepatihan* notation alone without all the specific

[18] The following ones were selected (s and p indicate their respective tuning system: s = *sléndro* set, p = *pélog* set): *Kanyut Mèsem* (s and p, Mangkunegaran, Surakarta), *Madu Murti* and *Madu Kusuma* (s and p respectively, Kraton Yogyakarta), *Mardi Swara* (s and p, Mangkunegaran, Surakarta), *Sadad Pengasih* (s and p, R.R.I., Yogyakarta), *Prècèt* (s, Mangkunegaran, Surakarta), *Udan Arum* (p, Mangkunegaran, Surakarta).

information usually available to local experts will most likely result in at least controversial or even utterly wrong versions, thus underscoring the limits of a purely "generic" approach.

In addition, the principles guiding pattern building need to be supplemented by other principles explaining the top layer or "surface" structure (Blacking 1971), for instance, as far as phrasing (microtiming) and articulation as well as the use of embellishments are concerned (*bonang barung*, *kendhang*). Very often these seem to have been paid too little attention in the search for the grammatical "deep" structure. However, musicians have a much more holistic approach with a wrong note potentially being less crucial than an unacceptable, beginner-style phrasing. This can be compared to experiences with languages, namely, that commanding grammar alone is not sufficient to produce idiomatic speech. Local dialects, idiomatic expressions, speech register, the social status of speakers, and preferences associated with certain historical time-frames – all have to be taken into account. [45]

Conclusion

If we want to understand musics of various cultures more thoroughly, and I think as ethnomusicologists we should, we need to do so by aiming at a kind of analysis that includes emic views on the subject in order to make sure that our findings are not mere artifacts of our own thinking but actually relate in a meaningful way to the cultural practices and musical concepts of the people who have created them. The plural "views" is not to be ignored as we need to acknowledge the fact that we will hardly ever encounter any monolithic, singular view on musics in any given culture or tradition. As far as (partly tacit) local knowledge is concerned, this paper has discussed two methods which may help us in eliciting emic concepts by reducing the need for their verbalization, at least in an abstract fashion separated from immediate musical experiences. In the case of *mbira* music, the teaching situation resulted in decisions by the local musicians that could be observed by the researcher and compared to the findings of his musical analysis. In the case of *karawitan,* experts were encouraged to transfer seemingly tacit knowledge into discourse by presenting carefully selected audio examples. Their responses demonstrated that much more than is usually the case can be verbally expressed very clearly if the necessary conditions, i.e., music/sound which can be immediately discussed, are given.

Whether we put ourselves in the position of somebody wanting to learn music or whether we employ current computer technology, the aim remains the same, namely, finding ways to communicate more directly with local experts when it comes to musical issues which may not usually be the subject of verbal discourse or are difficult to pinpoint in an abstract way without hearing the music. Avoiding vague recall of the sound of various *gamelan* sets – which may be located in different parts of a large city or beyond, and which may not be easily accessible due to social restrictions – and discussing actual audio examples instead can

be especially helpful for an assessment of questions connected to tunings (*embat*). Such examples can also help to clarify questions concerning the idiomatically proper or acceptable way of rendering a piece or certain passages therein. Having real musicians provide what the computer had to supply in the VGG project would not only have been impracticable, it would also have prevented us from testing certain hypotheses concerning "generic" rules in *karawitan*. Rather, the computer-assisted experiments have proven to be useful as new insights regarding other aspects beyond the musical grammar have come to the fore, thus forcing us to adjust our notions of how *karawitan* works. Too often such customary practices and conventions which [46] put constraints on actual performances seem to be taken for granted without being sufficiently acknowledged in research on *karawitan*. It is especially the musicians' holistic view of their art that has turned out to be crucial here. Ultimately we hope to be able to take all such aspects into account and thereby eventually achieve a musical analysis that is culturally informed and thus pays homage to the expertise of the musicians we work with.

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