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Notation, Transcription, Visual Representation

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Notating African Music: Issues and Concepts

Gerd Grupe

Abstract

Some 100 years ago Carl Stumpf and Erich M. von Hornbostel promoted what they called the phonographic method as the central means for studies of foreign musics. Transcriptions have been regarded as an indispensable prerequisite for any scholarly analysis of orally and aurally transmitted music ever since. In the light of claims that the visual domain might be an unnecessary or even inappropriate way of approaching music, it may be necessary to reassess the issue of why we need to visualize the music we study. By looking at musics from sub-Saharan Africa it can be demonstrated that listening alone is not always effective and reliable in understanding music: in many cases, for instance, there is a difference between played parts and the aural impression. In order to reconstruct this relationship some sort of notation is needed. Another case in point is the exploration of the motional dimension in African music particularly in respect to "patterned movement" (John Baily) in instrumental playing. If we, therefore, cannot do without the visual representation of sounds, which notation system is suited best to our ends? What has become of Mantle Hood's three possible solutions to this question? Are there specific traits in African musics which require special kinds of notation or is there any universally applicable system? In presenting two case studies, it will be shown that different purposes may call for different ways of representation, that more specialized systems may be more appropriate than Western staff notation in certain cases, and that a combination of notation and tablature may be advisable in order to account for specific structural aspects of some African musical idioms.

1. Introduction

If the question is raised as to whether transcription should be considered today as being "on the defensive",[1] we first need to address a crucial point, namely: Why transcribe and, thus, visualize music at all? After all, from our own musical experience, we know that listening is an effective and reliable way of learning and understanding music. Listening is indeed a main way of learning in many traditional settings where the student has to listen closely to what his or her teacher does, rather than relying on verbal elaborations on the particular features of the respective tradition. Yet the stu-

dent typically also watches the teacher closely in learning and performance so that eventually he or she will be able to emulate or imitate the master, and so a visual aspect is already activated in much learning. Moreover, in scholarly discourse typical means of communicating findings have always included verbalization and visualization. If the aim is to communicate structural features of music without employing what Mantle Hood (1971:226, 230) referring to Charles Seeger has termed "the music mode of discourse" about music, i.e. performing, can we really do without the full range of appropriate tools?

In employing these tools, we need to keep in mind the differentiation between transcription as descriptive music writing (Seeger 1958), where the process of transcribing results in some sort of notation, and notation as a symbolic system for the visual representation of sound in general. The function of the latter type of music writing may be prescriptive, but it may also serve as a means of visualizing certain structural aspects of a particular kind of music, for instance in the form of a more or less abstract model (see further, Ellingson 1992a, 1992b; Arom 1991).

2. Transcribing and Notating African Musics: A Brief Overview

In 1909, Erich M. von Hornbostel, a pioneer of musicological studies on African musics, started to publish a series of short articles on various African musical traditions. He transcribed selected pieces from wax cylinders, notating them in Western staff notation and analyzed their rhythm, multipart structure, and form (Grupe 1998a). He found the music of the Pangwe, or Fang, of Cameroon and Gabon to be especially unruly and unmanageable ("widerhaarig", Hornbostel 1913:349) because of its numerous syncopations and irregular placing of accents. Likewise, he characterized the rhythm of songs from Rwanda as extraordinarily complicated ("ungemein kompliziert", Hornbostel 1917:406). This made him question where to place the barlines in this kind of music. In 1928, he published the results of his considerations in a pioneering article (Hornbostel 1928) which later gave rise to fruitful discussions (including Blacking 1955, Waterman 1991, Grupe 1998a).

These and other early attempts at notating African musics demonstrate that there is no neutral or "objective" way of writing down music. Rather, any notation and particularly transcriptions must be understood as approximations which first and foremost reflect those aspects which the transcriber deems relevant in the respective music. Since early transcribers usually did not have any first-hand knowledge of the music they were attempting to write down, their notations primarily document what they themselves considered important, thus at the same time revealing some of the transcribers' basic notions and concepts of music. Regarding African musics, such an approach, called the "phonographic method" by Hornbostel (Abraham and Hornbostel 1909) and criticized later as "armchair ethnomusicology" (Merriam 1960), could only produce phonetic transcriptions, because the underlying principles of the musical idioms were not yet understood. Although Hornbostel was aware that apply-

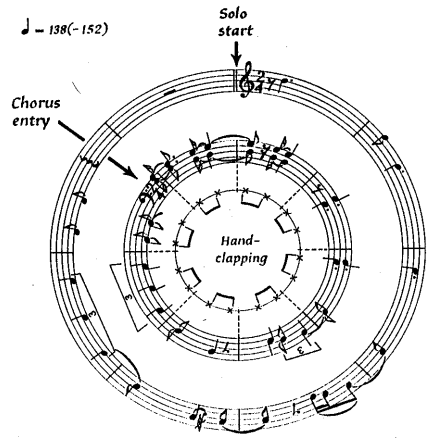


Fig. 1. Circular notation of a Xhosa song (Rycroft 1967:99).

ing concepts of Western art music unreflectingly to non-Western musics might result in serious misinterpretations (Hornbostel 1917), certain basic assumptions like the temporal organization of music in measures were not really questioned at the time.

Even when more comprehensive monographs on African music appeared in the late 1950s and early 1960s, authors such as A. M. Jones (1959) and Rose Brandel (1961), made every effort to fit their musical examples into Western measures. In order to account for the numerous offbeat accents they encountered in their material, they resorted to placing ever new time signatures throughout the transcribed pieces. These may be compared with, for instance, an article by Gerhard Kubik on African music dating from the same year as Brandel's book, where he introduced the concept of "form number" which indicates the pattern length, i.e., the number of smallest time units or elementary pulses within a given cycle (Kubik 1983 [1961]). The limitedness and disadvantages of the "Hornbostel paradigm" (Ellingson 1992a:125) become clearly apparent when comparing Brandel's attempt at transcribing xylophone music from Uganda with Kubik's method and findings (Kubik 1960, 1962).

While some early scholars like Jones and Percival Kirby (1934) had first-hand knowledge of the music they studied, it was only after the impact of American cultural anthropology on the discipline now called ethnomusicology that doing fieldwork became a widely accepted prerequisite for any serious study of (African) music. To the extent to which a deeper understanding of a particular musical tradition and its underlying principles and concepts could be achieved in this way from an intracultural or emic perspective, scholars were enabled to present phonemic transcriptions, i.e., notations that particularly in the case of cultures without much verbalization of musical concepts integrate the musicians' implicit knowledge. Thus, two interrelated aspects need to be considered when discussing the change in attitude towards transcribing and notating African musics. First of all, the music must be thoroughly understood, then the decision as to how the findings may best be presented needs to be

addressed. An interesting case in point is David Rycroft's decision to show the cyclical nature of Nguni songs by presenting them in staff notation arranged in a circle (Rycroft 1967). His circular notation (see Figure 1),[2] only rarely adopted afterwards, exemplifies the strategy of sticking to the well-established system of Western notation while, on the other hand, modifying it according to specific needs that dates back to Abraham and Hornbostel (1909).

Other modifications of standard Western staff notation were guided by the intention to account for the elementary pulsation with its isochronous spacing and its absence of regular metric weight. Both Andrew Tracey (1970) and Paul Berliner (1981) notated lamellophone music from Zimbabwe in this way (see Figures 2 and 3).

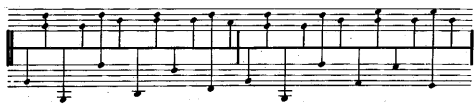


Fig. 2. Mbira *transcription with two treble staves (the lower one is to be read 8va basso), common central beam, equidistant spacing, and centered noteheads (Tracey 1970:17).*

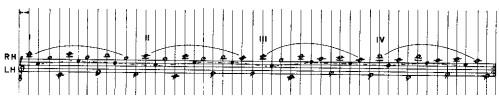


Fig. 3. Mbira *transcription with one treble staff, equidistant vertical lines, centered noteheads, and different notehead shapes indicating melodic lines (Berliner 1981:93).*

Apart from these metro-rhythmic aspects of African musics, their particular tunings also have had a bearing on the question whether Western staff notation may or may not be suitable. The discovery of other tuning systems, especially ones based on equidistant models where the individual degrees may, however, show a certain amount of flexibility in their intonation,[3] has prompted several scholars to employ a redefined version of Western notation. Here, each tonal degree is assigned to a line of the staff without using the spaces in between. Thus, an equipentatonic system needs five lines, an equiheptatonic one seven (see Figures 4 and 5).

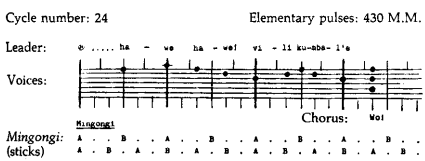


Fig. 4. Angolan song transcription with seven-line staff (Kubik 1985:57).

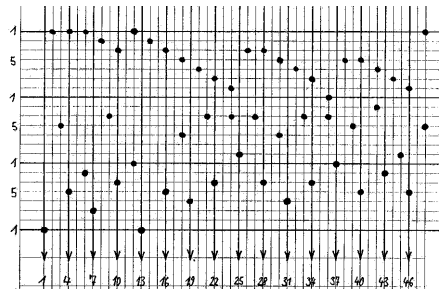


Fig. 5. Mbira *transcription with one line per scale degree (Brenner 1997:216).*

The notation of percussion parts, where the timbre of different strokes plays a major role, particularly demands a different approach, since Western staff notation is not well suited to this specific purpose. For this reason, in the 1960s and 1970s, scholars including Koetting (1970), Pantaleoni (1972), and Locke (1978) investigating West African percussion ensembles and in particular the music of the Ewe in Ghana dealt with the problem of how to write down the various parts. Obviously, merely notating the rhythm would have been insufficient. Therefore, some employed tablature systems which rendered the different drum strokes (the means of striking as well as the specific area of striking on the drumhead) in the form of newly devised symbols. The resulting sound was verbally described in a legend.

Since it had become apparent that the correlation between music and dance steps should also be taken into account, especially as far as the beat relation is concerned, Moses Serwadda and Hewitt Pantaleoni (1968) adopted an arrangement that brings to mind the so-called Labanotation for dance movements developed by the choreographer and dance instructor Rudolf von Laban. They arranged playing areas on the drumhead into vertically aligned columns, which are read from the bottom up as in Labanotation. The method of striking, for instance, use of the left or right hand, with or without a drum stick, are indicated by pertinent symbols. At the same time, equidistant horizontal lines provide a grid of smallest time units, i.e., the elementary pulsation (see Figure 6).

A close relative of this system is the so-called *time unit box system* (TUBS) developed by Philip Harland. James Koetting (1970) demonstrated its application to Ewe music in a widely read article. Contrary to Pantaleoni's tablature and in accordance with our reading habits, TUBS is read from left to right. The various symbols are put into the appropriate boxes and may be defined in an accompanying legend (see Figure 7).

Closer scrutiny of the playing techniques of African musical instruments, and this does not only apply to percussion instruments, eventually revealed the necessity not only to investigate the relation between music and dance movements but also the motional patterns of instrumental performance themselves, i.e., the way how hands and/or fingers interact in the production of sounds. As early as 1971, Roderic Knight pro-

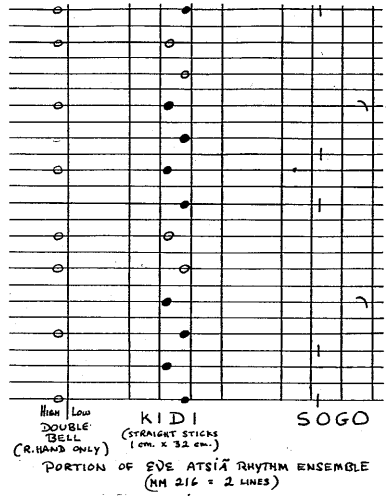


Fig. 6. Drum tablature (Serwadda and Pantaleoni 1968:52).

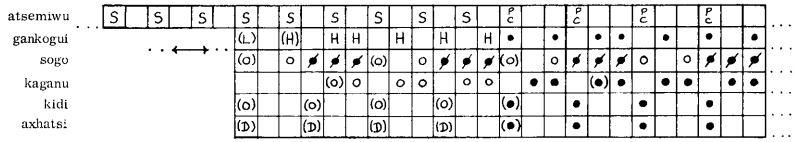


Fig. 7. TUBS (Koetting 1970:129).

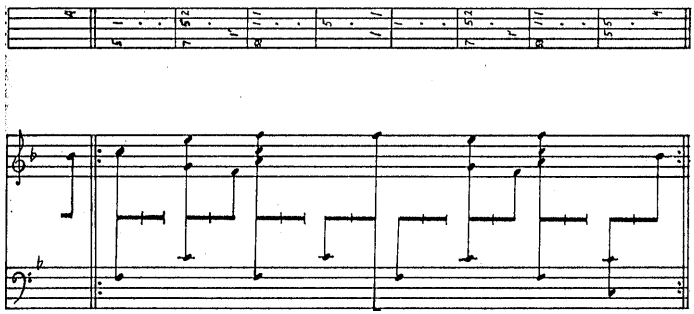


Fig. 8. Staff notation and tablature combined (Knight 1972:113).

posed the combination of a five-line staff with an instrument-specific tablature to capture both the tonal as well as the motional aspects of *kora* bridge harp playing (Knight 1971, 1972, 1973). In this way, both how the four fingers are employed in producing the melodies and these melodies themselves can be visualized comprehensively.

3. Hood's Three Solutions to the Problem of Notation Seen in the Light of African Musics

As we have seen, by the early 1970s a large number of possible solutions were being proposed regarding the appropriate method of writing down African musics. According to Mantle Hood three possible ways of approaching the problem of notation may be differentiated. Firstly, there is the Hipkins solution of using indigenous systems, secondly, the Seeger solution of seeking help in signal processing equipment, and, thirdly, the Laban solution of developing a universal system of notation (Hood 1971:90-104).

As far as indigenous systems are concerned, mnemonic syllables are sometimes used to verbally reproduce patterns, especially timelines.[4] But apart from this kind of "oral notation", other, particularly written, forms of notation were not customary in African musical traditions before the impact of ethnomusicological research, which has stimulated African musicians in some cases to adopt or invent notational systems. Two cases in point occur in kiGanda xylophone music and Shona *mbira* music. Writing about the first-mentioned tradition, Kubik remarks:

> Numbering xylophone slats is almost an established tradition in many parts of Africa…. To write down a xylophone tune with numbers is a logical development of an already familiar African concept. (1969:24)

While Shona musicians traditionally rely only on memory to recall *mbira* pieces, the experience of ethnomusicologists working with notation has led some *mbira* players to experiment with various forms of tablature (Grupe 2004).

Relying solely on technical help in the process of transcription has so far not proven to produce the expected results. Looking back on the use of the melograph or sonagraph, for instance, the hope for a comprehensive and "objective" rendering of the sound examples soon gave way to the more modest intention of visualizing specific aspects of melodic contour (melograph) or timbre (sonagraph).[5] Even with today's much more advanced possibilities in digital signal processing (Deutsch 1994), the task remains for the researcher to interpret the output in the form of graphs and/or numbers. Even the most colorful display of a spectrum or a waterfall diagram does not speak for itself.

In a way, its widespread use made Western staff notation sort of a "universal" system during the early stages of investigating African musics. But, as has been pointed out above, new, more specialized forms of representation soon emerged. This is not to say, however, that Western notation can be considered completely ob-

solete today. Simha Arom, for example, has employed it quite successfully in full-page scores of Central African horn ensembles as well as for illustrating the melodic and rhythmic models underlying the pieces of that repertoire (Arom 1991). Kofi Agawu even advocates the use of Western notation not only to "facilitate entry into the world of African musical art" (1995:187) but especially in order to avoid constructing a "different," "exotic" picture of African music which might result from representational systems that differ from conventional Western staff notation (1995:185-95). He seems to be particularly sensitive to possible "political" implications of the choice (see his discussion of "The Politics of Notating African Rhythm", 2003:64). A review of the various attempts at developing new ways of notating African musics, in my opinion, however, seems to underscore an effort to come to grips with certain drawbacks of Western staff notation if used for non-Western music, rather than revealing any intention of artificially creating new systems on ideological grounds. In any case, a truly universal system of notation is nowhere in sight. There seems to be a constant weighing of pros and cons between a conventional well-established system versus ever new idiosyncratic ones, not all of which have yet "fallen by the wayside" (Agawu 2003:64).

4. Two Case Studies

In this section, I would like to begin by presenting several different ways of notating a composition taken from the repertoire of the kiGanda xylophone called *amadinda*. They will demonstrate how different purposes require different kinds of representation. Then, I will go on to consider the notation of Shona *mbira* music. The aim, here, is to point out that the close connection between sound and motion in this case calls for a "two-track" solution by combining notation with tablature.

The *amadinda* piece called *Ndyegulira ekkadde* is based on two interlocking series (A and B) of twelve isochronous notes each, played in simultaneous octaves. Thus, its form number is 24. The *amadinda* has twelve wooden slats or slabs and is tuned to a more-or-less equipentatonic scale. A third part (C), played in the highest register in single notes, consists entirely of degrees one and two, no matter whether they appear in part A or B. Figure 9 shows how Gerhard Kubik (1969:60) renders the composition:

```
2 * 1 . 2 . 2 . 2 . 5 . 2 . 1 . 1 ! 2 . 3 . 5 .
5 . 4 . 2
```

Fig. 9. Ndyegulira ekkadde *(after Kubik).*

The ciphers represent the five tonal degrees of kiGanda music. A dot marks a silent pulse. Part A is given in the upper line. The asterisk, which shows the starting point of the third part (C), follows the figure to which it refers. The exclamation mark indicates the entrance point of part B, which is shown in the lower line. Its three notes are to be repeated consecutively.

This type of cipher notation ensures a very compact form devoid of any redundant symbols. On the other hand, it is necessary for its reader to reconstruct some aspects of the piece in order to reach a complete picture. While any sort of notation needs familiarity with its conventions and some degree of verbal explanation, in the above case the third part, for instance, must be deduced and is not immediately evident. Compare, therefore, a modified version which aims at a compromise between efficiency and economic use of space on the one hand and being comprehensive and easily comprehensible on the other hand (Figure 10).[6]

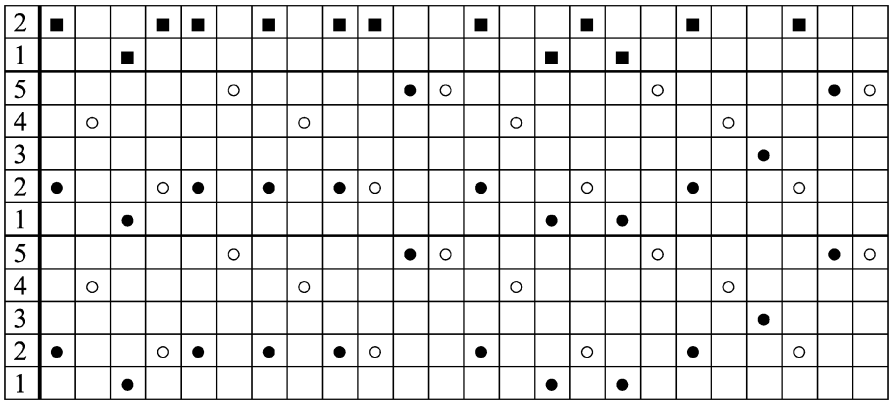
```
A    2 . 1 . 2 . 2 . 2 . 5 . 2 . 1 . 1 . 2 . 3 . 5 .
B    . 4 . 2 . 5 . 4 . 2 . 5 . 4 . 2 . 5 . 4 . 2 . 5
C    2 . 1 2 2 . 2 . 2 2 . . 2 . 1 2 1 . 2 . . 2 . .
```

Fig. 10. Ndyegulira ekkadde *renotated.*

The starting points of parts B and C are indicated by □. Once the piece has begun the parts are continually repeated.

The reason for choosing ciphers in favor of staff notation lies in the first place in the equipentatonic nature of the kiGanda tonal system. Furthermore, assigning one symbol, here either a cipher or a dot, to each pulse gives a clear visual impression of the interlocking technique as well as of the rule by which the third part (C) is generated from the other two. The result is a "non-durational" notation (Kubik 1985:56) that has advantages over a Western score also in respect to the metro-rhythmic aspects of this music, since it clearly reflects the temporal organization of *amadinda* music with its rapidly fading sounds and its absence of accents or metrical sub-divisions.

Another dimension of *amadinda* music, namely that it requires an "active listener" (Arom 1991:504) who picks out various melo-rhythmic patterns from the overall sound, points to a certain disadvantage of cipher notation, however. The complex resultant of parts A and B entails a process called *parsing* or *auditory stream segregation* (Bregman 1990, Wegner 1993). In ethnomusicological parlance the term "inherent patterns", coined by Gerhard Kubik (1979), is normally used for this phenomenon. In order to illustrate how this process takes place, another form of visualization would be preferable over cipher notation, since the latter lacks a graphic representation of the melodic contours and tonal range. The next example adopts the time unit box system (TUBS) mentioned above to demonstrate graphically how different melo-rhythmic patterns may emerge in the case of *Ndyegulira ekkadde* (see



● = Part A
○ = Part B
■ = Part C

Fig. 11a. Ndyegulira ekkadde *in TUBS notation; overview.*

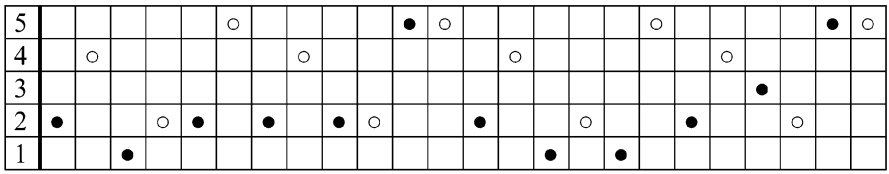


Fig. 11b. Melodic core, devoid of any octave duplications.

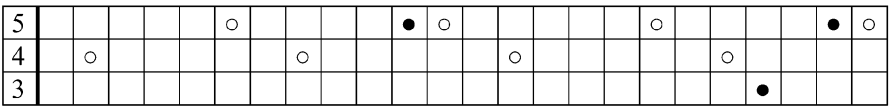


Fig. 11c. Emergent tonal bands formed by adjacent pitches (see also Fig. 11d.).

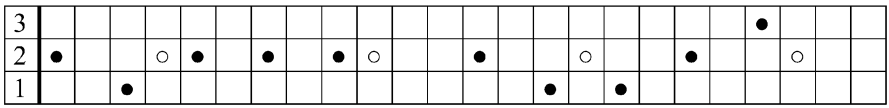


Fig. 11.d. Emergent tonal bands formed by adjacent pitches.

Figures 11a-d). If presented in this way, it easily becomes apparent why basically two main melodic lines emerge when this composition is played.

Whether degree three is considered to be part of these patterns seems to vary with different (Western) listeners.[7] In any case, both options represent possible ways of hearing. The first inherent melo-rhythmic pattern (Fig. 11c) consists of two halves which are exactly identical, the second pattern (Fig. 11d) is, except for the third degree, identical to part C, of course.

The next example is taken from the repertoire of the Shona lamellophone called *mbira* (*dzavadzimu*) (see further, Tracey 1970, Berliner 1981, Brenner 1997, Grupe 1998b, Grupe 2004). Instruments consist of more than twenty metal keys with a total range of more than three octaves arranged in three manuals (B = bass, L = left, R = right). They are plucked by three fingers (left and right thumb as well as right index finger) yielding four playing areas. The left thumb covers both the B and L manuals, the right thumb plucks lamellae R1 through R3, i.e., the three innermost ones, and the right index finger R4 through R9 (and further, if present). Figure 12 shows an instrument with a right hand manual up to R10.

Fig. 12. Layout of the lamellae on a Shona mbira *(made by Frederick Mujuru).*

Close scrutiny of *mbira* playing reveals that "patterned movement" (Baily 1985:237) plays an important role in this music. While its auditive dimension is characterized by cyclic chord sequences, motional patterns form a complementary dimension in the performer's perspective. The three manuals and the four playing areas of the *mbira* are very often employed in a systematic manner resulting in what may be called motional-rhythmic patterns, since both aspects, movement and audible rhythmic formulas, intertwine. In order to visualize both the rhythmic gestalts and the motional patterns by which they are generated, it would seem advisable to adopt Knight's proposal of combining notation with tablature (Grupe 1998c), as has been done by August Schmidhofer in the case of Malagasy xylophone music (1995).

With a range of more than three octaves, use of a bass and a treble staff seems to be the obvious choice for notating *mbira* music. Contrary to Tracey and Berliner who both assign the lowest tone on the instrument to G (see Figs. 2 and 3 above, for example), I prefer notating it as C. As a result, the left hand can be notated in the bass staff, while the right hand, except for lamella R1, fits into the treble staff. Although the tuning of Shona *mbira* does not correspond exactly to Western equal temperament,[8] I nevertheless prefer conventional five-line staves over modified ones with one line per scale degree (see Figure 13). In the case of the *mbira*, seven lines per octave results in a system of at least 23 lines. I find this sort of notation rather awkward for the purpose of melodic and harmonic analyses and would suggest its use only for ethnomathematical applications where it, indeed, has clear advantages (for example, Brenner 1997).

Tuning plan of a mbira dzavadzimu: Keys and their notation

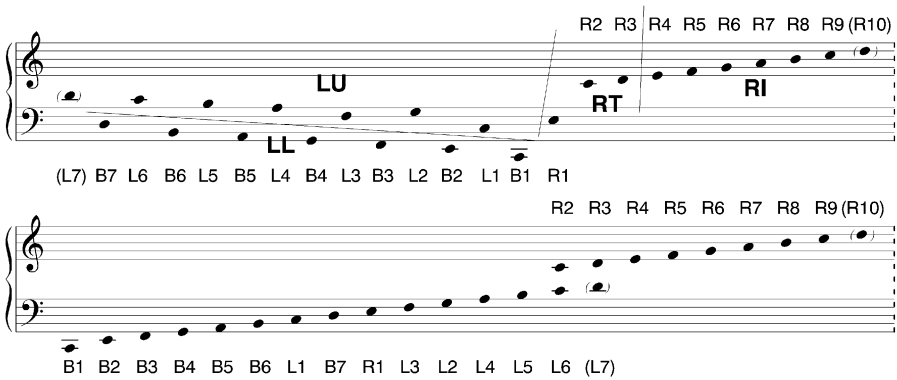


Fig. 13. Notating Shona mbira *music.*

As far as the motional side of things is concerned, the four relevant playing areas can be accommodated in an adapted version of the TUBS. In Figures 14 and 15, they are labeled LL for the lower left, or bass, manual, LU for the upper left, or L, manual, RT for the R(ight) manual as far as it is plucked by the right thumb, and RI for the remaining lamellae of the R manual plucked by the right index finger. The figures relate to the numbering of each manual shown already in Fig. 13. Thus, the combination of both notation and tablature enables the reader to appreciate both the tonal and the motional dimension of *mbira* music. The short vertical lines above the treble staff mark the elementary pulsation with longer ones indicating the beats. Small noteheads and figures in parentheses indicate a melodic variant. Figure 14 shows the motional-rhythmic pattern abstracted from the *kushaura* part of the piece "Chakwi" as played by Virginia Mukwesha (Fig. 15).[9] Other configurations typical of Shona *mbira* music can be found elsewhere (Grupe 2004).

RI	x		
RT		x	
LU		x	
LL			x

Fig. 14. Motional-rhythmic pattern abstracted from Fig. 15.

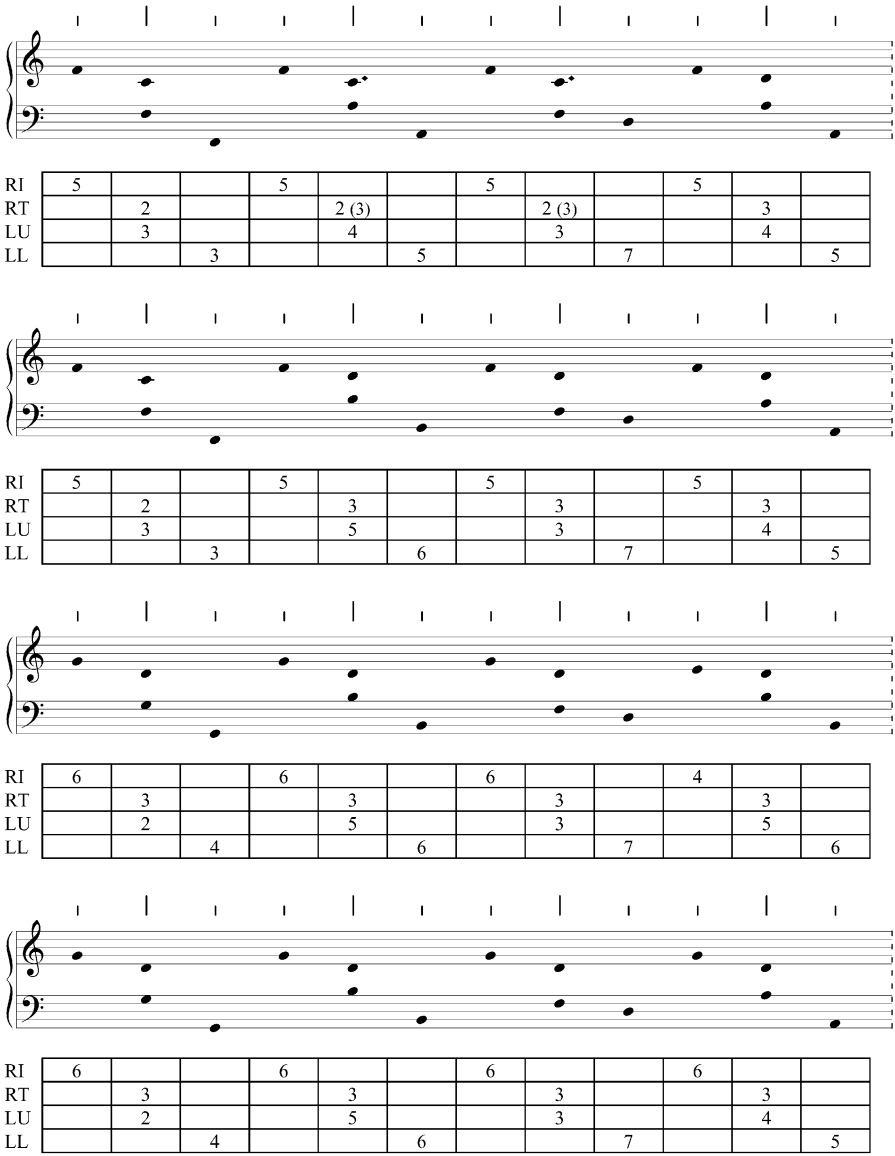


Fig. 15. Kushaura part by Virginia Mukwesha from "Chakwi."

5. Conclusion

Is "transcription on the defensive"? Yes, if the question alludes to the Hornbostel type of phonetic transcription. No, if the question aims more generally at the usefulness and efficiency of visualization as an aid in understanding the structural principles of music. In the latter case, notation continues to be a major tool in explicating and communicating ethnomusicological findings. Musical idioms abound where helping our hearing by means of some sort of notation remains irreplaceable.[10] Simply listening to music of other cultures will most likely result in poor or no understanding at all of the principles at work (see also Baumann 1993). The question remains, in which way can emic conceptualizations pertaining to music be conveyed in print apart from through verbal explanations? Using different notation systems, selected according to the purpose they need to serve, seems to be the most suitable option. In this way, also, the specific traits of a particular musical idiom can be visualized appropriately. Regarding African musics, a case in point is the close connection between the motional and the sound domain in instrumental playing. As has been shown above, only a combination of suitable notation and tablature systems yields a comprehensive picture of both musical dimensions.

With the rise of new technologies and media like interactive multimedia presentations, new forms of visualization emerge that may contribute to achieving this goal. Developing meaningful applications based on these techniques will be one of the challenges for ethnomusicologists wishing to present their findings more vividly than would be possible by using conventional methods.[11]

Notes

1 A panel was especially directed at this topic under the title *From the innocent to the exploring eye: Transcription on the defensive* during the 19th ESEM conference (Gablitz/Vienna, September 2003).

2 In the handclapping part (the innermost circle) the individual claps are erroneously notated as eighth instead of quarter notes.

3 Kubik 1985 proposes the notion of "elastic scales" for such situations.

4 An example is the formula *kon kon kolo kon kolo* (Kubik 1972).

5 Volume 2, no. 1 of *Selected Reports in Ethnomusicology* (1974) contains several articles on the use of the melograph; Graf 1967 is one instance of sonagraph research. See further Ellingson 1992a.

6 See also Kubik's notation of the piece *S[s]ematimba ne Kikwabanga* (1985:56).

7 How indigenous hearers react to this piece has not yet been investigated (but see Wegner 1993).

8 The Shona tonal system is discussed in Berliner 1981, Brenner 1997, Grupe 2004.

9 The *kushaura* is the basic part of an *mbira* composition.

10 In contemporary jazz, for instance, there are strategies which are meant to disorient the hearer particularly in respect to time—and they succeed. What lies behind these irritating ways of playing, and how the listener's disorientation is achieved, can only be understood by writing down what has been played (see Krieger 1999).

11 An example is an internet resource like www.ethnomus.org, with its animated graphics.

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