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Session 1.2 A:

Panel Sound Recordings – A Neglected Source or a Challenge for Ethnomusicology?

Paper 4:

Audio Recordings – another Case Study: Restudying and Re-restudying Historical Recordings of Nzakara Harp Songs

Klaus-Peter Brenner (University of Göttingen, Germany)

As an ethnomusicologist with a strong interest in the cognitive reality behind the sound structures of ›the music itself‹, I would like to contribute to our panel a case study that exemplifies how ethnomusicological research can benefit from the use of sound recordings in general and of archived historical recordings in particular. The subject of my paper is a sample of historical Nzakara harp-song recordings and their subsequent – partly complementary, partly controversial – evaluations by different researchers and from different angles. Please note that my presentation will be necessarily restricted to a sketchy outline of the whole story. So, for a full account of it I would like to refer you to the bibliography in your handout.

Linguistically, the Nzakara belong to the Adamawa-Eastern branch of Joseph Greenberg's Congo-Kordofanian super family, and they inhabit a region in the South Eastern part of the Central African Republic. Culturally and politically, they are closely interwoven with their immediate neighbours, the much better known Azande. The recordings under discussion were made by French anthropologist Éric de Dampierre during the 1960s, and they represent a musical tradition that was still flourishing in those days, but 30 years later had almost completely died away. Dampierre himself dealt in several publications with some of this material from an anthropological and Africanist linguist angle, focussing particularly on the poetic – sometimes satirical – song texts and their symbolism in relation to the socio-cultural context.

In 1995 French mathematician and music informatics specialist Marc Chemillier published a musical analysis of a selection of these recordings, concentrating mainly on the two court music genres *ngbàkià* und *limanza*. In a special group of harp patterns accompanying and structurally underlying the song performances of these genres, he had discovered, and then described from an arithmetical perspective, consistent inherent mathematical properties – striking evidence of a tradition of implicit mathematical thinking and a finding of great significance, because it established one of the rare links between ethnomusicology and ethnomathematics. As to the musico-cognitive dimension of this phenomenon he suggested that the harp patterns were composed, and conceived of, as transposing two-part canons. And these in turn he believed to be conceptually linked to the cosmologically significant duality concept on which the Nzarara’s cult of twins is based as well as to the two-rowed and shifted leaf structure of a certain plant associated with that cult. By doing so, he tried to link his musical analysis to Éric de Dampierre’s anthropological writings on the cultural context and, more specifically, to establish a Levi-Straussian kind of deep structure underlying and unifying two different fields of cognition within the Nzakara culture. Nevertheless, Chemillier had to concede that he was not able to present any direct or indirect evidence that might have verified or, at least, supported his conjectures.

Ngbàkià and *limanza* patterns are made up of long regular progressions of dyads, where the allowed con-sonances are restricted to the two-step and three-step intervals of the underlying non-equidistant pentatonic scale. During performance these patterns are cyclically repeated without variation.

Fig. 1 shows the five harp pitches and the five allowed con-sonances *in abstracto*.

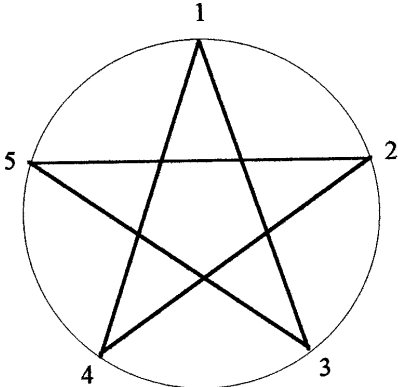


Fig. 1: The five pitches of the Nzakara harp (representing, conceptually, five tone chromata or octave classes of pitches) and the five con-sonances (dyads) allowed in the Nzakara harp patterns, shown *in abstracto*.

Fig. 2 shows them in relation to the harp's tuning plan and the playing areas of the player's hands.

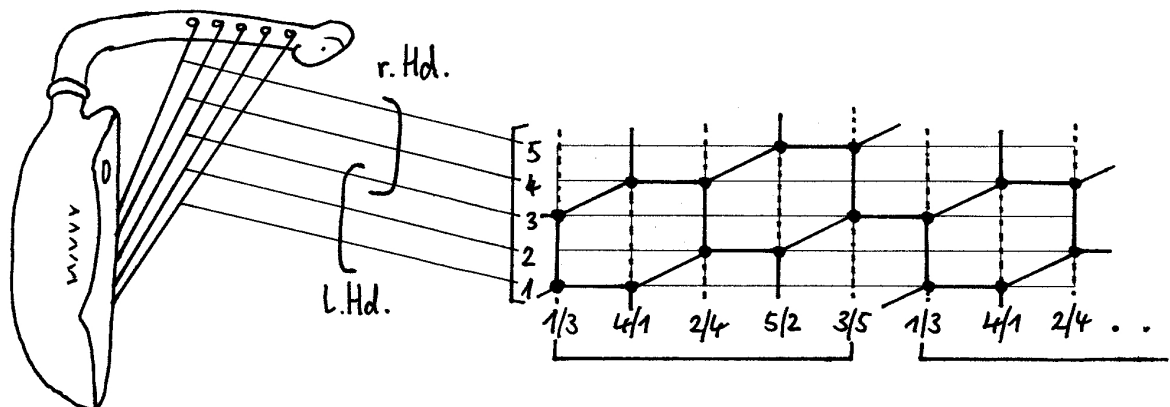


Fig. 2: The five con-sonances (dyads) allowed in the Nzakara harp patterns, shown – in systematic order – in relation to the harp's tuning plan and the playing areas of the player's hands.

Audio-Example 1

Fig. 3 shows one of the *limanza* patterns and illustrates how it is executed by the player's two hands.

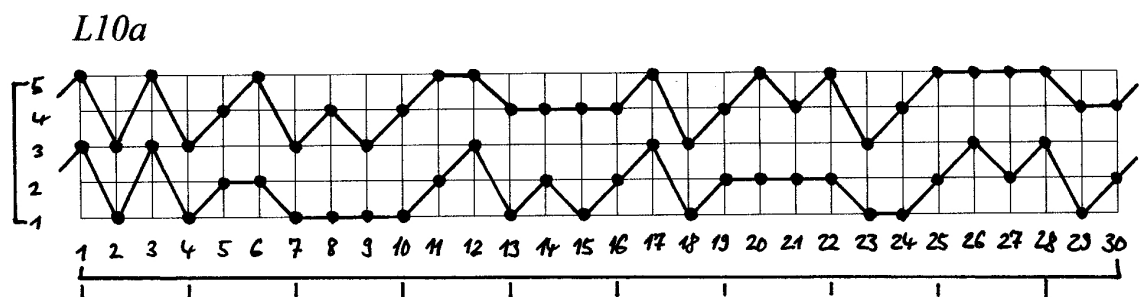


Fig. 3: *Limanza*-pattern *L10a*, as played on the five-string harp. Grid notation: horizontal lines represent pitches, vertical lines represent time units. — Graphically marked with connecting lines: the parts of the player's two hands, i. e. the ›played image‹.

Audio-Example 2

Fig. 4 shows the same *limanza* pattern, but illustrates the two-part canon structure, extrapolated by Chemillier from the ›played image‹ of this pattern and claimed to be the cognitively relevant one. Please note the series of tones on the first scale degree that are functionless in Chemillier's canon structure and whose existence he could not convincingly explain, classifying them as ›anomalies‹.

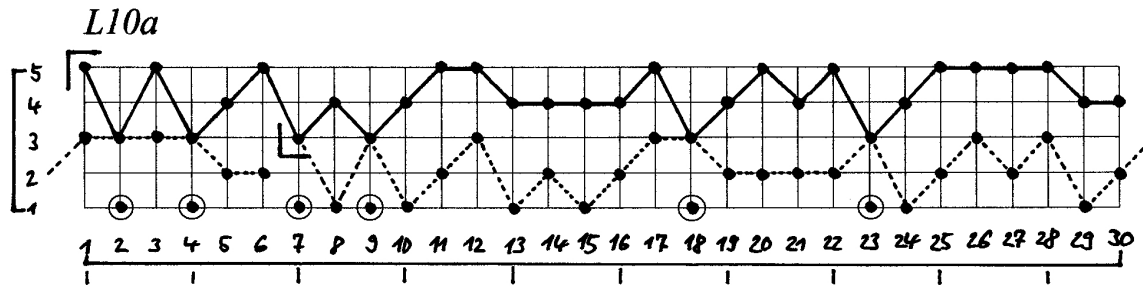


Fig. 4: *Limanza*-pattern *L10a*. — Graphically marked with small angles and two different connecting lines: the two-part canon structure, extrapolated, by CHEMILLIER 1995, from the ›played image‹ of this pattern and claimed to be the cognitively relevant structure; rejected by BRENNER 2004. Encircled: Chemillier’s functionless tones, classified as ›anomalies‹.

Audio-Example 3

In Fig. 5 you can see the two-rowed and shifted leaf structure of the plant *bisibili* which Chemillier believes to be conceptually associated by the Nzakara with the assumed two-part canon structure.

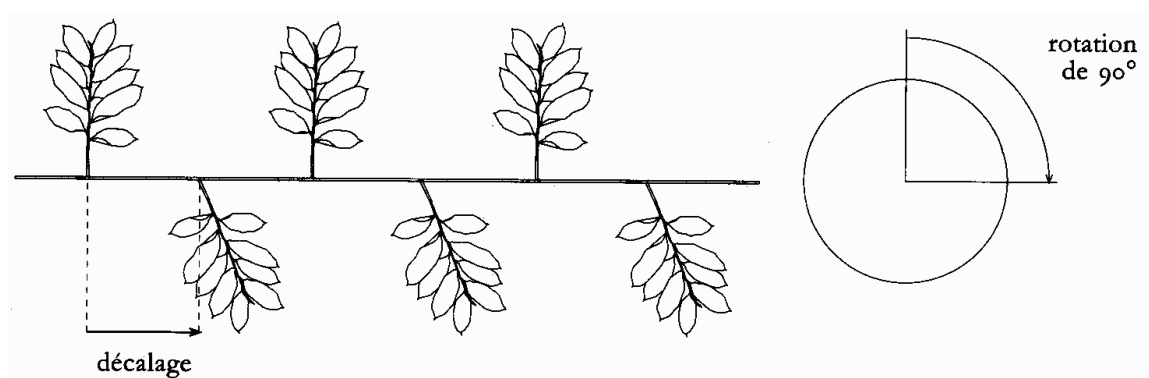


Fig. 5: The two-rowed and shifted leaf structure of the plant *bisibili* that is ritually used by the Nzakara in their cult of twins (drawing from CHEMILLIER 1995: 189). Assumed, by CHEMILLIER 1995, to be conceptually linked to the two-part canon structure; assumption rejected by BRENNER 2004.

In 2004 I presented – in an extended review essay of Chemillier’s study – a reassessment of this material, based on musico-cognitive considerations, extensive transcriptions and re-transcriptions and much intra-African cross-cultural comparison. This resulted in a clear falsification of Chemillier’s canon-hypothesis, and, as a consequence of this, also of the assumed conceptual links between the harp patterns and the duality concept behind the cult of twins, etc.

My main objections were these:

- Firstly, with slight deviations for which he gave no convincing explanation, Chemillier took the ‘played image’ of the harp patterns for their ‘heard image’, being unaware of the fact that these two aspects can, and frequently do, completely diverge in the musical styles of Sub-Saharan Africa.
- Secondly, it can be shown that Chemillier’s assumed canon structures, with their specific combination of compulsory melodic *and* harmonic features, are definitely uninventable and unimaginable under the specific cognitive preconditions and restrictions of pure orality.
- Thirdly, Chemillier failed, in his analysis, to take the vocal parts of the harp songs into account. So he was unaware of the fact that the Nzakara musicians make use of a musical strategy wide-spread in Central, Eastern and Southern Africa, namely, the tone bank principle, which means that they vocally extract varying melodic lines from the structure of the cyclically repeated polyphonic instrumental pattern. Typically, these vocal lines are neither limited to the range of one of the two hands’ playing areas nor to the ambitus of the harp tuning as a whole. Revealingly, no instance has yet come to light in which a Nzakara musician extracted vocally one of Chemillier’s assumed canon parts, let alone both of them.
- Fourthly, as a consequence of his omissions, the crucial clue to the real concept behind the harp patterns, which, as a matter of fact, existed in Dampierre’s recordings, necessarily escaped Chemillier’s attention.
- Fifthly, Chemillier took into account hardly any comparison with other instrumental styles from Sub-Saharan Africa as, for instance, those of the baGanda or the maShona. This might have opened his eyes for a cognitively possible generative principle, namely the combination of modal shift and spatial permutation of a given musical object.

In my review essay I then established a counter-hypothesis, according to which those mathematically structured harp patterns most probably were composed, and conceived of, as the five-fold temporal and spatial sequencing of a given cell where the cell is made up of a short progression of dyads.

This is shown for the exemplarily chosen *limanza* pattern in Fig. 6. Here the cells are illustrated with frames.

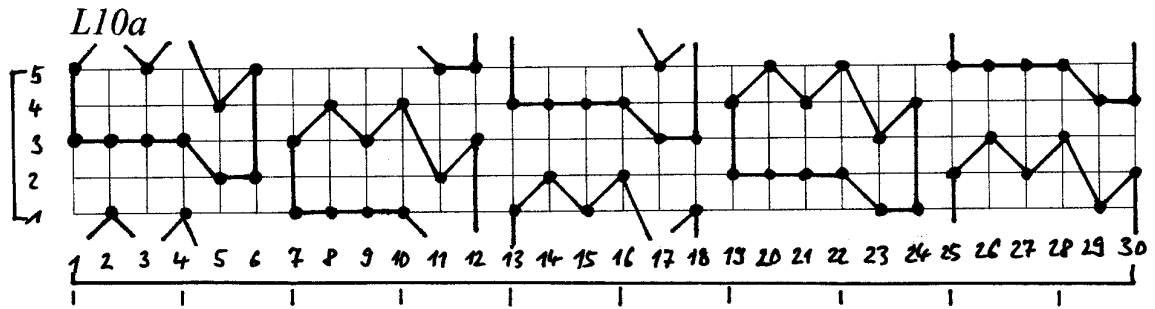


Fig. 6: *Limanza*-pattern *L10a*. — Graphically marked with connecting lines: the five-fold – within the harp’s ambitus spatially permuting – cell-sequencing structure, shown, by BRENNER 2004, to be the cognitively relevant structure.

The Nzakara performance practice bears strong evidence for the harp tones representing octave classes of pitches. Transcribing them accordingly in a grid of cyclically grouped time and space units brought to light the intrinsically geometrical nature of their mathematical properties, namely, a perfect ›five-color diagonally translational symmetry‹.

This is illustrated in Fig. 7.

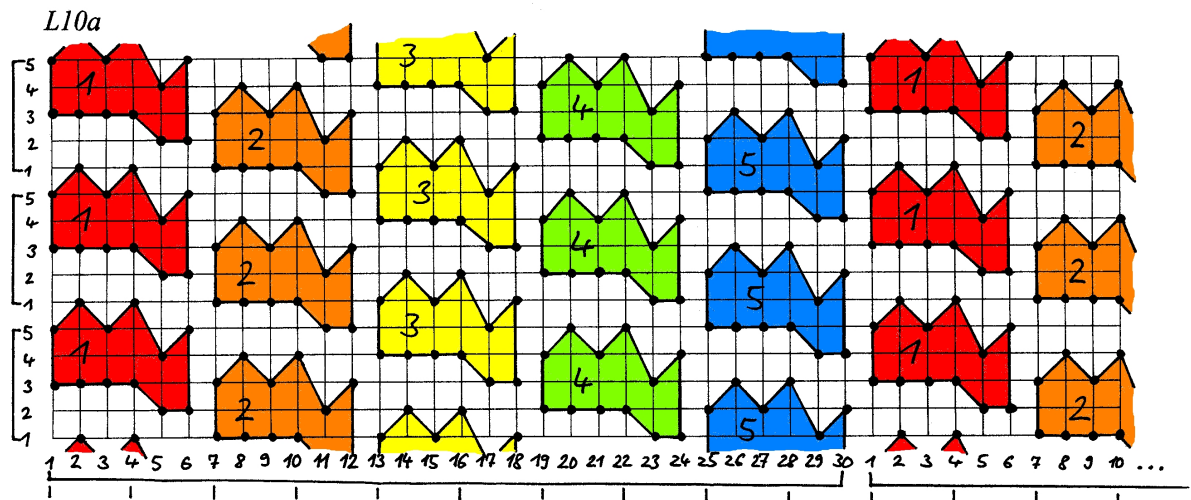


Fig. 7: *Limanza*-pattern *L10a*. — Grid notation vertically extended to show the cyclicity of the five tone chromata (octave classes) represented by the five harp pitches. Graphically marked: the five-fold cell-sequencing structure. Cells numbered according to their spatial relation to the cycle of tone chromata. The whole pattern can, geometrically, be classified as a ›five-colour diagonally translationally symmetric plane pattern‹.

Audio-Example 4

One of the most striking arguments in favour of this cell-sequencing-hypothesis was found in the fact that Nzakara harpist-singers make use of the afore-mentioned tone bank principle not only in a general, arbitrarily meandering, but often in a very specific and revealing way.

What they do is this: they extract from the harp pattern a vocal melody which demonstratively follows, and thereby brings to the fore, an aspect of the inherent cell-sequencing structure itself, thus providing – though non-verbally – conclusive evidence of its cognitive relevance.

This is illustrated in Fig. 8 and the corresponding two audio examples, the second one of which is one of the original recordings made by Eric de Dampierre in 1969.

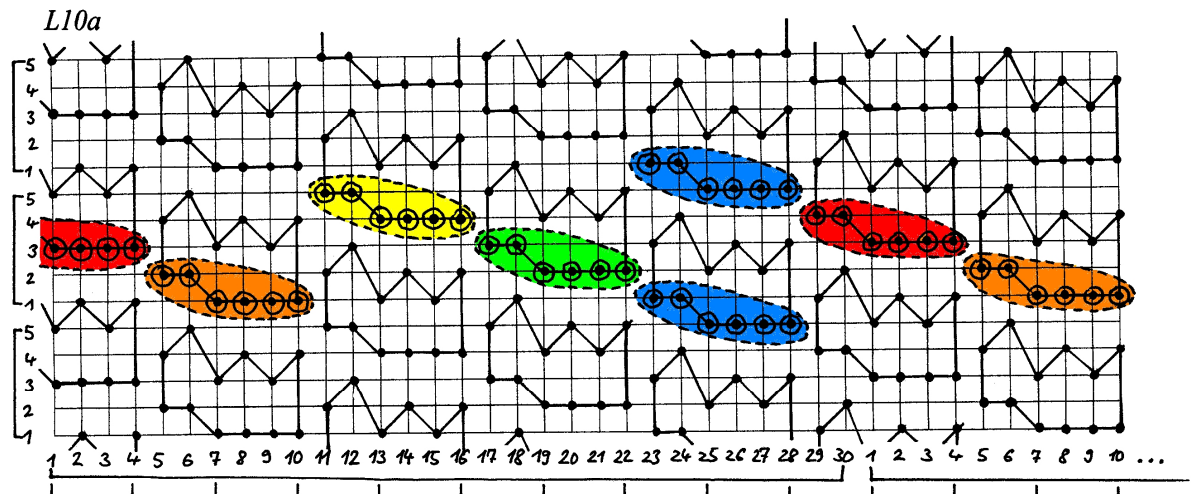


Fig. 8: *Limanza*-pattern *L10a*. — Graphically marked: the five-fold cell-sequencing structure. Encircled notes and groupings: a melodic ›channel‹ picked out vocally from the instrumental ›tone bank‹ by harpist-singer Maliba in a performance recorded by DAMPIERRE in 1969. This ›channel‹ obviously follows the cell-sequencing structure, thus providing clear evidence of its cognitive relevance.

Audio-Example 5

Audio-Example 6

In spite of the players' inevitable *two-handedness*, the concept behind these patterns is actually not based on structural *duplicities*, but – as the simple consequence of a rigorous application of the sequencing procedure to a *pentatonic* scale – it is consistently based on *quintuplicities*. Obviously, this also cuts the ground from under Chemillier's assumption that the structures of these harp patterns – as opposed to their semantic dimension – might cognitively be linked to the Nzakara's cosmological *duality* concept, their cult of *twins* and to the *two*-rowed visual structure of the ritually used plant *bisibili*. And, by the way: regardless whether cognitively relevant or not, and no matter of whatever length and gestalt – for mathematical reasons every melodic line that is structurally extractable from such a harp pattern occurs in *five* different positions, and this, of course, also applies to Chemillier's putative canon parts. So even if they were cognitively relevant, they would in no case

constitute a two-part, but invariably always a five-part canon, and no ›anomalies‹ would occur.

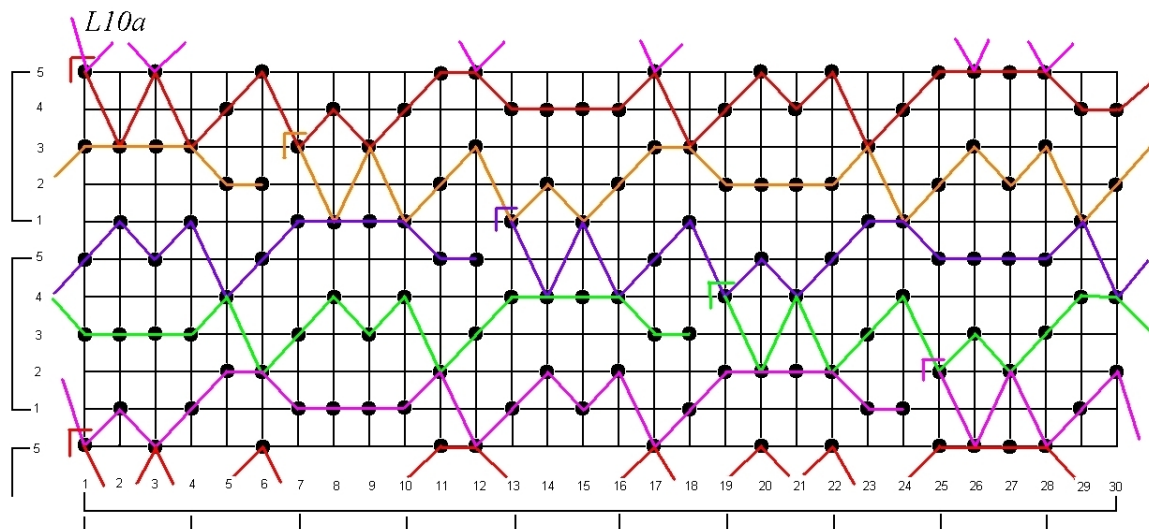


Fig. 9: *Limanza*-pattern *L10a*. — Regardless whether cognitively relevant or not, and no matter of whatever length and gestalt – for mathematical reasons every melodic line that is structurally extractable from such a harp pattern occurs in five different positions, and this, of course, also applies to Chemillier’s putative canon parts. So even *if they were* cognitively relevant, they would in no case constitute a two-part, but invariably always a five-part canon, and no ›anomalies‹ would occur.

Audio-Example 7

Since 1995 Chemillier has disseminated his canon-hypothesis through many further publications, the last one of which came out in March 2007 and contains an extended reply to my review essay. Recapitulating and comparing both of our views, he suggests some kind of compromise: On the one hand, he frankly concedes that the harp patterns under discussion most probably were invented as cell-sequencing structures, but then, on the other hand, he obstinately insists on the untenable assumption that, once having been invented that way, they might also have been conceived of as two-part canons, thus downplaying, blurring or even completely ignoring some of the main objections that I had previously raised. – Surely, our discussion will have to be continued in the future.

Conclusion: Only a synthesis of the anthropological with the musicological results, bringing together the semantic and contextual with the conceptual and sound structural aspects of the music under scrutiny, allows for an optimal understanding of a given musical style as a form of cultural expression. After all, ›thinking in music‹ is itself an aspect of culture and a kind of human behaviour, and as such it is not opposed to ›music in culture‹, but, on the contrary, necessarily forming its very core. The grammars of musical styles deserve to be studied in as

much depth as, beyond any doubt, the grammars of languages do. Therefore, in my view, the use of sound recordings is absolutely indispensable in ethnomusicological research, and, as I have tried to demonstrate here, it may well include the use of archived historical recordings.

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[updated 2007-12-15]

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