SYMPOSIUM ON TRANSCRIPTION AND ANALYSIS:
A HUKWE* SONG WITH MUSICAL BOW

organized by Nicholas M. England, with contributions
by Robert Garfias, Mieczyslaw Kolinski, George List,
and Willard Rhodes, and moderated by Charles Seeger

INTRODUCTION
Nicholas M. England

On November 2, 1963, for the Eighth Annual Meeting of the Society for Ethnomusicology at Wesleyan University, the morning session was given over to a "Colloquium on Transcription and Analysis." The materials collected and printed here under the new title, "Symposium..." (since there is after all no colloquy involved), represent the devoted labors of Robert Garfias, Mieczyslaw Kolinski, George List, and Willard Rhodes, along with their Chairman-Moderator for the session, Charles Seeger, to bring to life an idea that has been in the minds of Alan Merriam and David McAllester, perhaps others, for some years.

Simply stated, the idea was that several ethnomusicologists should transcribe and analyze the same piece of recorded music, then bring their results together for comparison at a meeting of the Society. The aim: to provide material for thought not only to the participant transcribers, but also to everyone interested in the discipline of ethnomusicology regarding one of the most important tools of the trade, the transcription—as Seeger puts it, the "visual documentation of sound-recording" (see his "Report," p. 277, below)—and the interpretation of it.

As Program Chairman for the 1963 meeting, I invited the four ethnomusicologists named above to join in the project, and they willingly accepted the task. They each worked independently, without inter-communication, using only the tape recording of the music chosen and a bare minimum of information regarding its cultural setting and the technique employed in its performance.

Believing as I do that one great strength of our Society lies in the varied individual approaches that are (and have been) made toward the data of our discipline, I left the assignment open, instructing the participants as follows in a letter of October 8, 1963:

About transcribing and analyzing the song: You will probably want to follow certain usages that have become fairly standard in ethnomusicological works to date. However, I feel strongly that standardization should not be the governing principle of your work. It would seem vital to the

*For purposes of publication here it seems best to use Hukwe, the most commonly encountered name in ethnographic literature for the Bushmen under consideration. At the session of the Eighth Annual Meeting, in which these materials were first presented, the name, Kwango, was used instead; it is the root of the name (Ila-kwengo or Mbasa-kwengo) by which the Mbutu, a neighboring and later-dwelling Bantu tribe, designate the Hukwe. The Mbutu appellation has been adopted by many Bushman and Bantu peoples living in the area; Hukwe themselves often use the name.

(N.M.E.)
success, and more important, to the ultimate meaning of the project that you transcribe the example according to your individual conceptions of what transcriptions should be and do.

The transcription can be as rough or as detailed as you feel necessary to successfully convey a picture of the sounds to the reader and thus facilitate the demonstration of your individual analyses of the music. You may wish to put down the whole minute and some twenty seconds of music, if you prefer an abbreviated form.

As for analysis, I have nothing to say. You will each bring up the points you think important for an understanding of what [the old man's name] is doing with regard to the acoustical phenomena themselves and their organization into a musical organism.

For want of a reliable transcription and translation of the words being sung on the recording (see below in my remarks, p. 225), I thought it best to transcribe the text of the songs that their assignation, or at most to consider it only if they desired to make some point that would not require for its validity the meaning of the words. And it might be added here that if any vocal music can legitimately be divorced from its text for purposes of analysis, Bushman song in general is a likely candidate.

The texts consist largely of meaningless syllables for vocalization in combination with irrelevant interjections such as 'Oh, Mother!' or 'They say.' However, in addition, each song will have at least one key phrase that recurs (if it happens better, occurs intermittently throughout any performance of the piece. Such phrases of course carry more than their basic word meanings; they are somewhat similar to the 'catch words,' [an Mohave shaman's songs] banded full of meanings and surrounded by an extensive halo of implicit meanings."

(Devereux 1957: 1038). Members of the culture (or non-members who know it) and often do possess the additional information necessary to elaborate upon the key phrase(s) actually sung. I say 'may and are provided' to emphasize the fact that it is common for a Bushman to know and perform a song and its usual text without a knowledge of the additional information that the few words convey.

For the Symposium it was initially planned that the four contributions be preprinted and distributed to the participants and their Chairman-Moderator, as well as attending members of the Society, so that everyone might come to the session prepared to criticize and comment on the results of the transcribers' labors. The participants were called 'victims' by someone writing the planning stages. And certainly we know that there was an element of courage involved in taking the stand for such a project. However, needless as it is to state in so many words, I would add here that for the success of this Symposium and those of a similar nature that will, hopefully, take place in the future, it is imperative that any thoughts of competition among the participants be put aside, even if before they come to mind. It was largely through my own neglect in keeping communications open among the participants that this meeting was put aside, and thus, the fourth of Seeger's excellent list of lessons (see p. 276, below) was learned.

Regarding the music around which all of this activity has centered, the records will be more nearly complete if my report includes the fact that initially it was planned for the music example to be selected from the existing literature of ethnomusicology, preferably from a work published twenty or more years ago. The purpose was to bring into the picture the transcription and analysis of a fifth expert, one who had already set at a fixed piece, and further, to discover what profit (not to mention excitement) might be gained from reworking the older data in the presence of the experts.

It was ill-luck, indeed, that the original plans could not be brought to fruition. There were difficulties in selecting the right piece and, having done so, of procuring an acceptable copy of it from the original field recording for use by the four transcribers. The problems eventually proved too great for solution within the allotted time. In the end, a Hukwe bow song was chosen instead to serve as the vehicle for this Symposium.

I recorded the song—"Du!" (Clan, Taurotragus)—at fidlo, South West Africa, on September 30, 1959, during a brief, four-day exploratory visit by the seventh Peabody-Harvard Kalahari Expedition to the immediate Bantu neighbors, the Mbuksuzu. fidlo is located at approximately 18° 4' South Latitude and 22° 34' West Longitude. It is situated on the southern bank of the Okavango River, nine miles southeast of Andara near Popa Falls, one of a series of rapids that occurs in the course of the river just before it enters into its complex swamp tract that extends for another two hundred miles, roughly to Lake Ngami and the Boiselle River in the Bechuanaland Protectorate.

I was not at the time, nor am I today, qualified to handle the Hukwe language and those related to it. And to compound this inadequacy, there was in 1959 no competent interpreter available for our trip to fidlo and vicinity. Consequently, all information had to run a giddy course from Hukwe, through Panagola (the South African mine language), into English—by way of our excellent interpreter of Bushman languages, Kernel Ledimo, himself a Batuwana man—from the mouths of the informants to my notebook or that of Lorna Marshall, ethnologist for the expedition.

It is for these reasons that my transcription of the text of 'Du! cannot be trusted even though I took it down in phonetics from the performer of the song as he spoke it to me, line at a time, upon auditioning the tape of his own voice. Word-for-word translation proved hopeless, so that I emerged with only a synopsis of the meaning of the words (see below, p. 231). However, since the recording of four ten is being issued as a supplement to this number of ETHNOUSICOLoGY, Dr. Oswin Köhler, Director of the Seminar für Afrikastistik at the University of Cologne, has kindly consented to attempt a reconstruction of my transcription. His analysis of the text will be published in the next number of this Journal as a postscript to the Symposium.

The Hukwe and their Music: General

The Hukwe belong to a large, Kalahari-centered aggregation of Bushman bands that speak languages related to Hottentot. Summarily rejecting the earlier theory that all Bushman languages "...are of the same general structure, and can be regarded as belonging to one language family. . ." (Schapera 1918: 31), Ernst O. J. Westphal classifies Hukwe, and other languages that he grouped with it, as plainly Hottentot and not Bushman (most recently in Westphal 1952: 248-250). However, Oswin Köhler, mentioned above, prefers to call them the 'Central gender and Bushman language Group,' taking the position that despite the cleavage between them and the Bushman non-gender languages, "...it will offer a better working basis for further research if we look upon them as originating from one common, though very remote, stock. . ." (Köhler 1963: 224).

Hukwe-land begins roughly at Andara, or just east of it, in the Caprivi Strip and extends into the southeast corner of Angola for an undetermined
An accurate figure for the total population is unknown, however, as a well-informed estimate, Kühler gives the following numbers: 500 persons or less in the 14 communities (Ndzalzini is one of them) of the Caprivi Strip along the eastern Okavango in South West Africa and Angola; and possibly 1500 persons in all when the Huwke who live farther north in Angola and those who live in Buehuanaland are counted (Kühler 1961:2).

Throughout their land, the Huwke live in close contact with various Bantu tribes, e.g., the Mokusho or the Lozi. This fact, along with the extremely meager literature published on the Huwke, makes it difficult to account for a culture that is consistent throughout their region. It must be stressed, therefore, that all of my remarks here refer to the Huwke of jidzalzini and vicinity and, of course, relatives and friends in other parts of Huwke-land for whom the jidzalzini inhabitants can speak.

At jidzalzini the werf (an Afrikaans word commonly used in southern Africa to indicate Bushman villages or temporary encampments) is situated about three-quarters of a mile from the river on the sand dune that rises gradually from the banks to a height of perhaps fifty feet above the river's rock-bed. Below, close to the back, the Mokusho village of Nدمogo (which name the Huwke use interchangeably with jidzalzini to designate their place) is located. It is one of several Mokusho communities between Andara and Bagani, approximately, over which the rule of Chief Macusi extends from his seat in Andara.

Despite the fact that jidzalzini, along with other Bushman werfs, is located within the boundaries of this Mokusho chiefdom, Kühler informs us that they are not Macusi's subjects. They pay no tax to him nor any tribute to his chief. And Kiand nt. The Huwke recognize one of their people, Katiya, as owner of the werf by right of inheritance from his father.

He is their headman in roughly the same sense as those of the zululand bands of xhosa in the Nyea Nyea area of South West Africa.

Still a hunting (with poisoned arrows) and gathering society, the Huwke have augmented their otherwise typically Bushman means of subsistence by limited crop cultivation (they grow millet) and cattle ownership (they they buy) from Mokusho neighbors presumably in exchange for farm labor and hunting services, as do several Bushman bands living in contact with Bantu. Men seek their wives in other werfs of Huwke-land, but residence is taken up at the husband's home werf.

The people maintain their traditional belief in 'Hl:sga and Kani—the former, a male god who is met with commonly in beliefs of Central—gender-language Bushman bands (e.g., the Nharo—Narwa in the literature); the latter, a female god, and to my knowledge, a new name to add to the list of Bushman supernatural beings. They share with all other Bushmen whom I know belief in the spirits of their dead who bring only trouble and sickness: the Huwke have for such a spirit, Jigvha, is also common to all Bushman bands.

These spirits do not serve as messengers of the gods as do their counterparts to the south. It is Kani who performs this function, specifically in matters of medicine and curing. He comes to the medicine man (jeulkina, medicine owner) with instructions concerning the sick, i.e., whether they live or die, and if the former, what the medicine man must do to cure the patient.

Information on the practices of medicine men was difficult to obtain, perhaps because of the strong interdiction by South West African authorities against witchcraft and sorcery among Bantu inhabitants—and possibly by extension in the Huwke minds to the supernatural traffic of their medicine men. However, the tradition does continue. An old man agreed to demonstrate how he might perform it if the others were medicine men, though he insisted he was not—nor did he know any—upon whom testimony he went to fetch a piercing through the center—long axis—of a small food tin that contained seeds.

From his demonstration and the discussion of it afterward, it is clear that medicine taking takes a different form from that of Bushmen to the south. Among the latter, most males become medicine men at one time or another during their lives, practicing commonly in groups at large curing ceremonies determined by the patient or family involved—a condition that does not necessarily hold in more southerly Bushman bands.

There was no demonstration by the Huwke "actor," nor any illuminating information in the later discussion, of the stigmatized condition such as that example. However, I know from the latter that meetings with supernatural beings take place during the time when a medicine man's soul is absent from his body; and since Kani does make his appearance to the Huwke, it seems likely that a state of trance is at some point involved. In any case, it is the time to hold a curing ceremony, either for curing sickness patients or for exploring the general condition of the members of the community.

Concerning the musical culture of the jidzalzini Huwke, a brief general survey must suffice here, with detailed comment being reserved for the bow song that is the subject of this Symposium.

Group chordal song comprises the larger division of Huwke music—probably the activities of which the music is a part. There are repertories of 1) medicinal song (jew "jiki"), 2) social dance song (Igana "jiki"), and 3) menstruation medicine man cures to the music of the former, but several individual men are the participants men may sing strains of the melody from time to time, but the essential vocal sound is that of the women's chorus.

These songs are similar in certain aspects of style and texture to songs of the same type sung by more southerly Bushmen. And it should be noted leader—chorus type of song, typical of the Bantu, as have other Bushman groups of the same (central gender) language group—e.g., the Ts'xitu of the Mzabba Depression area in Buehuanaland.

Huwke, even in the absence of music examples to illustrate the point, it is well to state here that Huwke chordal songs differ in important musical details from those of other Bushmen. Furthermore, there are two unusual performances of Igana and Igana song: 1) thin, rectangular wooden boxes clapping (perhaps at the same time to serve as a highly practical palmoaxical, approximately cylindrical, and single-headed, identical in most
Unfortunately, neither time nor my relationship with the women allowed me to hear and record the music that they sing, clap, and dance themselves during the ceremonies attended upon the menarche of a young girl. However, informants state that there is such a repertory of song, and I can only quote them, adding as I do that drums are not used and that men do not participate. And finally, regarding music for Hukwe rites de passage, all informants agree there are no songs that are exclusively for men, such as those sung in more southerly bands on the occasion of a boy's initiation into adulthood.

The other division of Hukwe music is a more personal, private type of song. Instruments of variable pitch figure in it prominently even though the performer might sing along at the same time. As far as I could determine from interviews and from all such songs that I recorded, this is solo music. If there is a vocal line, it is supplied by the player to his own instrumental accompaniment. All these songs are concerned with animals—their howling, their stalking, their habits.

The Hukwe have borrowed the sanza from their Bantu neighbors; they have also borrowed the Bantu regional name for the instrument: /sanza or /fanza. It is an eleven-keyed version, of a form and tuning common to Bantu and Dushman sanzas alike in the Okavango regions of Angola and South West Africa. Only a few men play the /sanza; they learn the songs from the Mushaka, and no one among them knows more than four or five tunes.

Women prefer to play the "tsikaba (bow string)" as they walk from place to place or sit to rest by their huts. It is a mouth-resonated musical bow made of a reed stalk (about twenty inches long) strong with the hair of an animal tail, or a piece of nylon fishing line when it can be procured from the stores along the Okavango. This type of bow is fairly common in southern Africa, and it is played, for example, by women of the Gereking, Mbirdi, and Tswaomo tribes, to name only close neighbors of the Hukwe. Since the bow is used as resonator, players of this bow do not sing; the music is purely instrumental. Kirby notes that among the Venda a second performer might sometimes sing the overtone melody being resonated by the bow player (Kirby 1955: 224); however, I have not encountered such a practice in performances of this type of musical bow among the tribes mentioned above.

One other instrument is played by the Hukwe—adult males only. It is another mouth-resonated bow, and since the little piece that provided the raw material for this Symposium was played on such an instrument, it will be described in the following section devoted to the recording from which the four ethnomusicologists did their work.

'Du', the Music of the Symposium

Kafolo, an older man of the /idzile community (see p. 235, above), is playing his regular hunting bow ('ts') and singing in the performance of 'Du'; recorded on Side 1 of the record supplement to this issue of the Journal. His bow has a hardwood stave four feet, seven inches long with a string of animal sinew. However, the venatic weapon has been adapted for musical purposes: Kafolo has loosened the sinew considerably and braced it back to the stave with a piece of sial cord at a point (roughly two-fifths of the stave length between the string knots) that will provide division of the overall string length into two parts, the sounded pitches of which lie a major third apart. In the recorded performance of 'Du', the third is approximately F-A; at times, the bow string might slip or Kafolo tune it differently so that the basic pitch level of the third varies, but it is always within this pitch vicinity.

He sits cross-legged to perform, holding the bow-stave between thumb and forefinger of his left hand—stave toward him, string out. The right end of the stave touches ground to Kafolo's right while the left end rises toward his left shoulder, diagonally. Cupped in the palm of his left hand, with the aid of the other three fingers, he holds the dried shell of a medium-sized calabash so that one surface of it makes contact with the bow string. Opposite that contact point, the shell has been sliced off to leave an opening about four inches in diameter. He holds the bow close in, contacting the stick just below his sternum with the rim of the calabash opening.

Kafolo beats on the two divisions of the braced string with a thin stick approximately one foot in length. He holds the bowler near one end in his right hand; thumb and forefinger grasp the stick and act as a kind of fulcrum while the remaining fingers actually cause the stick to move gingerly up and down. Neither his hand nor his wrist is tense; as a result, the stick can be moved quickly and easily to beat on either side of the sial tie according to the succession in which Kafolo desires the fundamentals to vibrate.

As they sound out, Kafolo employs the muscles in the area of his diaphragm, either to sustain his breath or to relax it so that the opening in the resonator can be closed entirely or opened by varying degrees to change the size and shape of the chamber, and consequently the air column trapped therein, causing it to resonate sympathetically with one of the upper partials of the two fundamentals.

The overtone melodies thus produced seldom utilize many different tones. In 'Du', there were only three used: partials 3 and 4 of the lower fundamental, and partial 3 of the higher (perhaps also partial 2 of the higher fundamental—see Kolinski's transcription, measure 4, pulse 1). In another piece Kafolo calls into play, as well, partial 4 of the higher fundamental. Kuyoe Nyae (kuywa) players, employing a closely similar musical bow technique, sometimes further extend these limits by dipping down to the second partial of both fundamentals. But in the end, the relationship between the pitches of the two string divisions and the average size of the calabash (or often an empty dried melon about 2 size) that can be managed as a stomach-controlled resonating chamber definitely limits the choice of overtones to a few.

This particular aspect of the playing technique has not been reported before; however, a version of it was in use by Nyae players observed earlier in the century: Describing the performance of a 10 Kuywa player in Angola, Dorothea F. Bleek writes, "... By slightly altering the position of the left hand and calabash, he can vary the note a little..." (Bleek 1928: 121). And Kirby states that a Thonga player alternately moved the Calabash away from and pressed it against his bare chest (Kirby 1953: 210).

Although he does not elaborate on the acoustical results of the Thonga player's action, Kirby earlier describes a similar practice on an unbraced bow and notes that the "tone" is varied by that means. From his discussion, however, it is clear that he has in mind adjusting, by movement to and from the breast, the size of the air column within the calabash so that it will better resonate several of the partials along with the fundamental in a "clear chord" (Kirby 1953: 198-199). There is no mention of selecting
specific partials by means of controlled movement of the calabash against
the skin. We are left to wonder, then, whether the overtone melody line
from a maneuvered rigid resonator is a new development or was perhaps
present but unobserved at the time.

Which of the bow lines does Kafolo consider more important? This in-
triguing musical question (and others like it) is difficult to answer in the
case of Bushman music. If indeed the people give thought to such matters, they
find it not only impossible, but also quite foolish to verbalize about
them. We can only then to the music for some kind of answers.

There is evidence that with certain types of musical bows the overtone
melody is the principal one. When the mouth is used as resonator and selec-
tor of partials, as in the case of the ’tstlkaa (p. 228, above), many overtone
partials are available—the mouth being at once more flexible and smaller
so that the conjunct partials (from 7 up) as well as a few of the disjunct
(from 4 to 7, say) can be effectively isolated and resonated. Thus, more
complicated melody lines can be produced, and they are likely to be the
more important ones.

Writing about the iyugile (a Venda reed bow like the ’tstlkaa), Kirby
describes the harmonics as the “...faint series of sounds that constitutes
the real melody played upon the instrument.” He adds: “...Should a
listener be asked to sing the tune just played by a performer upon this in-
strument, he would naturally sing the melody produced by the resonating of
the string in this manner, and not the tune heard directly from the fingers
and plucked string...” (Kirby 1953: 223).

Later Kirby describes, and gives a transcription of, a Venda man’s at-
tempt to play a pre-existing melody (the Venda national reed-flute dance)
with the mouth-resonated harmonics of his tsigwana, a braced musical bow
(Kirby 1953: 231). Clearly in this case, the harmonics melody is the im-
portant one while the fundamentals are necessary only as generators of the overtone
series.

With calabash-resonated bows, however, the answer is not as clear.
First of all, the mouth is now free to add a simultaneous line of its own to
the musical complex; second, the calabash is a rigid and larger resonator so
that fewer and lower partials are available for a melody line. In Nyae Nyae
I have collected bow songs in which the singer might follow for a moment
the overtone melody but diverge thereafter into an independent melody, leav-
ing the bow harmonics to go their own way. In these instances, I would posit
some truly contrapuntal concept on the player’s part, at least insofar as the
vocal and overtone lines are concerned. (The player, incidentally, sings his
vocal melody as the important one of the song.) Yet the fundamentals
are there to be heard plainly and distinctly; perhaps they also figure in the
contrapuntal concept.

Kafolo’s song is yet another type. His vocal line is always independent
of the overtone melody, insistently so. The latter, not complicated as a
melody, has the quality of an ostinato as does the fundamental line; together,
the two bow lines appear more as two-part harmony than as counterpart.
Obviously more and deeper work is indicated with regard to these matters.
However, I would vote in favor of Kafolo’s awareness of all three lines in his
song—the vocal line most important, with a two-part harmony accompa-
niment.

The intense energy of his singing style is heightened by the angular,
leaping melody, and vice versa. This, along with the extremely close

microphone position used for the recording will perhaps lead the listener to
believe that Hukwe bow songs are something bigger in overall sound than
fused together with Kafolo’s other instrumental songs of the type performed by Bushmen
in general. Twenty feet away from the little hut in front of which Kafolo sits
playing, the music might be heard faintly; forty feet away, only the clicking
of the bow on the string will come through. Thus he might, as other Bush-
men in his vicinity have better, sing and play for an hour or two, quite
alone, repeating the same songs time and again.

It should be inserted here that while the appended recording presents a
complete performance of the song, ’Du, it is complete only as of that hour
of that day on which it was recorded (invariably under unnatural circum-
stances—microphones, wires, foreign costumes). At another time, Kafolo might sing
’Du for fifteen or twenty minutes without stopping. Then again, he might
not sing it at all.

The text of ’Du is concerned with Elanda going away to another country.
Köhler suggests that the words, “another country,” refer to Bechuanaland
beyond the borders of which the Djetjes Huka would have no hunting rights.
And it is understandable that the Kwango [Huka] hunters are keen on
keeping the game within their hunting grounds, especially such fine and big
game as the elanda. The motif of the song is not new and not invented by
Kafolo, as I noted a similar song in 1962 in the Western Caprivi.

Not knowing what Kafolo thinks, I only conjecture that he makes this mu-
sic for his own pleasure. And while I would not join Passarge in saying of
such “interne Musik”: “...Sie versetzen ihn [the performer] in halbe Betä-
bung und lässt ihn vergessen die Leiden des Lebens...” (Passarge 1965:
685), I admit it is for me difficult not to think that Kafolo, utterly absorbed in
the performance of his animal songs, can withdraw to some extent (even
amidst the heavy traffic of a warf) from the constant, very close contact in
which members of a Bushman community live.

’Du was recorded with an Ampex 601, single-track tape recorder onto Audiotape
low print-through, 3 1/2 inch ‘Mylar’ tape. The Electro Voice Model 630 microphone
used was placed near the opening of the resonator in order to better apprehend both
the overtone and Kafolo’s quiet voice (it was his habit to sing with head bent down).
’Du is from 2 of Reel 1 (July 36, 1953) in the Marshall Collection.

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FOOTNOTES

1. In spelling Bushman words, I employ the alphabet of the International Phonetic Association, modifying it only to include the yu, o, and e. In the literature symbols for the click sounds: [1] = diphthongic [y], [1] = avicular [y], [1] = palatal, and [1] = lateral [y]. "Kis" click, [1] = diphthongic [i], is not used by Bushmen of the area under consideration, and Kuk, [1] = diphthongic [a], is seldom used the palatal click. The symbol [1] following a click symbol (e.g., [1]k) is employed in the orthography only to indicate a voiceless release as opposed to the following click symbol (e.g., [1]g). Marks immediately following a click symbol indicate the tone used in pronouncing that syllable: ', rising'; ', preceding a syllable indicates the tone used in preceding a syllable in pronouncing that syllable; ': falling', ': low'; ': high'; high; syllables with no such marks are pronounced at medium level. Because of possible interference with tone marks and the unavailability of italic type for the International Phonetic Alphabet, Bushman words are printed here without italics or the substitute underlining; their spelling and appearance will, I believe, prejudice confusion with words of other languages. " indicates glottal stop.

2. See also K. Marshall of Cambridge, Massachusetts.

3. I wish to join our Editor (see "From the Editor,...") p. 2 in thanking the Department of Music of Columbia University for the special grant that made possible the printing of this number to the number of the Journal.

4. For topographic details of the Popp Falls vicinity, see Wellington 15x5: 498.

5. "Kung and Kuk are the most common of many spellings in the literature. Over the years I have come to the decision..."


7. See Schapera 1951: 177-195. For a splendid summation and analysis of the literature to 1950 (the date of his work's original publication) on Bushman supernatural beings. A recent general account of the Kung (g')eWasi) beliefs is given in Marshall 1962: 221-247.

8. See Marshall 1962: 238-251. For a description of the g'ieWasi "Ceremonial Curing Dance." I have a study in preparation on the medicine songs of the g'ieWasi and neighboring Bushman groups and their beliefs and practices surrounding the music; it will, hopefully, appear within another year.


10. The beads played by a Thogga man pictured in Kirby 1965: p.43 are similar to those of the Hauke women though the latter do not attach leather straps to the beaded.

SYMPHONY ON TRANSCRIPTION AND ANALYSIS (GARFIAS)

TRANSCRIPTION I: ROBERT GARFIAS

Notes and Comments

This transcription of the Hauke melody shows some departures from standard transcription techniques. It is not, however, designed as a universally applicable method. In fact, it might be better argued that each genre or tradition be transcribed according to the special system devised to illustrate best those aspects of the performance on which the analyst wishes to concentrate. No system of transcription, mechanical or otherwise, can preserve all of a musical example accurately and it is up to the transcriber to select or emphasize pertinent parts of the entire configuration. The standard Western notation system tends to reinforce those aspects of the sound pattern which are compatible with our own notation traditions and in varying degrees to distort or omit others.

This system used here emphasizes certain aspects at the expense of others. The fundamental of the bow part has been transcribed in standard notation in even rhythmic values. In contrast, the voice line has been transcribed to show pattern and to highlight the duration of each pitch and type of entrance by means of a graph, thus emphasizing the transients and durations. Of the body, the voice body has been indicated as a straight line, although, in fact, mechanical transcription with equipment such as the Seeger Micrograph would undoubtedly show a much more fluctuating pitch. It seemed more important to indicate the different types of entrances and connections between pitches than the minor fluctuations of pitch which are, in any event, not really discernible by the ear. Thus, this transcription is a compromise between standard Western notation which would show nothing of the attack and decay qualities and the more precise melograph transcription which might show too much.

It seemed foolhardy on the basis of this one example to decide to omit certain portions of the example and to emphasize or as more repetitions of others and therefore the example is given in its entirety. Only the fundamental of the bow pattern and the voice line were transcribed. A higher overtone pattern produced by the bow resonator can be heard on the recording but because it was not clearly audible during the entire duration of the example, it has been omitted here. A cursory examination of the components of a single bow tone with the aid of a wave analyzer showed a wide range of overtones covering a range of fifty cycles above and below the fourth partial of the lowest of the two bow tones at approximately 3% of the volume of the fundamental in terms of voltage readings on a Packard-Bell Wave Analyzer. Therefore one could give only a very subjective description of the melodic pattern produced by the resonator of the bow without resorting to a careful plotting of the relative voltage at each frequency, a pattern which might be better visualized on a "gray scale" than with staff notation.

It is also difficult to discuss form in an isolated example. This particular structure of voice and instrument relationship may be specifically for a composition of this speed or rhythmic type. On the other hand, the
that a distinct sense of contrast is noted when it is varied in measures 13-20. A variant pattern for group one (---) appears sporadically but does not seem to affect any other part of the general form by its appearance. A second variant pattern (----) appears only in the special group of measures 13-20.

In the voice line two distinct types can be noted after the previously mentioned instrument-like introduction of measures 4-8. The A type of phrase first occurs in measures 9-12 and corresponds to the first statement of the text. The B phrase runs from measure 13 to measure 15. Both phrase-types complement each other, and, with considerable variation of detail, always alternate with each other. The entire example consists of eight statements of the A phrase-type and seven of the B phrase-type. In spite of the variants, each type consistently manifests distinct characteristics. The A phrase-type shows more independence from the bow pattern and tends to emphasize the octave drop from the highest pitch in the line (indicated by the space above the top line in the voice part). The B phrase-type complements this by moving up from the lowest pitch of the voice part to the next to lowest. The two tones of the B phrase correspond to the two fundamental pitches of the bow, and the voice generally moves from one pitch to the other simultaneously with the bow. This heightens the contrast between the two phrases. The A phrase is independent of the accompaniment and carries the text. During the B phrase the voice sings with the instrument. The appearance of the A and B phrase-types is indicated below.

<table>
<thead>
<tr>
<th>A Phrase-type</th>
<th>B Phrase-type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measures 9-12</td>
<td>Measures 13-15</td>
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<tr>
<td>17-20</td>
<td>21-22</td>
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<td>47-50</td>
<td>51-65</td>
</tr>
<tr>
<td>55-59</td>
<td>62-65</td>
</tr>
</tbody>
</table>

The rhythm of the example deserves special consideration. The first few listenings suggested a rhythm of six even beats to each accent. (The term hemiola used in the theory of Western art music to describe a proportional relationship in the ratio of 3:2 seems especially inappropriate for the description of most African music, which might be better described as simultaneous accent-patterns superimposed on an implied common denominator of constant beats.) In listening to the example one may note that there is a tendency for the last two beats of each group of six bow beats to be heard with greater prominence. This last factor, along with a gradual awareness of a slightly unsteady lilt in the seemingly even rhythm of the bow pattern, became increasingly disturbing. Further investigation produced some interesting results. In order to concentrate on the rhythm alone, the example was run through a high-low pass filter which excluded all but the rhythmic stroke of the bow fundamental. This was then fed into a Mark II Brush Recorder which transcribed these beats on graph paper traveling at a speed of 50 micrometers per second. The distance between the bow strokes was measured with the aid of an abstract ruler with 50 sub-divisions to the inch.
Many minute differences in spacing between these bow strokes appeared, but in general the differences were so small that they averaged out to a pattern of even beats with no discernable pattern of deviation. However, one distinct pattern emerged, isolating the last two beats of each group of six beats. The average distance between beats 4 and 5 in fifteenths of an inch was 17.9, whereas the average distance between beats 5 and 6 was 22.8. The difference 4.9 when equated with the speed of the paper corresponds to a variation of approximately 1/20 of a second. A twentieth of a second is generally agreed to be the limit of human perception of change, difference or error, the so-called "Just Noticeable Difference" factor. Any event occurring with a smaller degree of variation would not be perceived by normal humans. This means that the performer in this example is regularly emphasizing the last two beats of each group of six by shortening the distance between 4 and 5 and by lengthening the distance between 5 and 6 to a degree that just hovers around the threshold of human perception.

The question arises as to whether the use of mechanical devices is really an aid to the ethnomusicologist. Unless one knows clearly what one is seeking, both mechanical transcription and computer analysis will give too much information and the results may be, like any analysis which is too detailed, meaningless. On the other hand, this example shows that mechanical aids can be a valuable extension of one's native perception. Clearly, as regards the use of "Just Noticeable Difference" perception described above, it might have been possible to observe some irregularity with the unaided ear, but no definitive statement concerning it could have been made without the aid of special equipment. Although it seems certain that musical sensitivity and accurate perception will remain the most important tools for the ethnomusicologist, is it not time that we consider expanding the limits of our natural endowments?

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superfluous. In a previous article (Kolinski 1962) I contended that, contrary to the generally accepted concept, not the ratios of the so-called "natural" or "pure" intervals but those of the "quintal" or "Pythagorean" ones are the physical equivalent of tint relations. The strongest argument in favor of this theory seems to me the fact that the grading of "basic" consonance follows the quintal order which places the major second before the thirds and the minor third before the major one. Since the Pythagorean ratios are symbolized by the cycle of fifths, the different placement, within the cycle, of tint complexes reflects the various types of tonal construction. Therefore, it seemed to me most appropriate to choose the cycle of fifths as the main framework for a classification of tonal structures (Kolinski 1961; it is obvious that instrumentally derived tonal constructions which consistently comprise tone relations incompatible with those symbolized by the cycle of fifths are not fit to be included in the proposed classification).

Depending on the size of the section needed within the cycle of fifths to place the tints of a piece under analysis, 12 tonal types have been distinguished: the Mono-, Di-, Tri-, Tetra-, Penta-, Hexa-, Hepta-, Octo-Type and so forth. The tetra-type, for example, requires the 3rd degree tint relation CA, while the penta-type is characterized by the 4th degree tint relation CE. This type includes the 2-tint complex CE, the 3-tint complexes CGE, CDE, and CAE, the 4-tint complexes CGDE, CGAE and CDAE, and the 5-tint complex CGDAE. In order to assure adequate comparison, tonal structures belonging in a similar type have been represented within a similar section of the cycle of fifths. In my classification I chose for the penta-type the section CGDAE. Since the vocal part of the Kwango song uses the penta-typic 3-tint complex CGE, I transcribed it in the necessary transposition, indicating, of course, the original pitch.

Fig. 1. Scale Formula
The scale formula (Fig. 1; see Kolinski 1961: 43) symbolizes the main features of the tonal structure of the vocal part, namely: (1) pentatonic 3-tint complex CGE (as mentioned before); (2) Penta-G-E Mode; (3) structural prominence of the minor third EG, the lower third EG forming the tonal center; (4) relatively minor structural importance of the lowest tone C; (5) use of the higher third step EG and the sixth step GE only in upward direction, the latter being always interrupted by a rest and its components having a low degree of adhesion (Kolinski 1964); (6) wide jumps, such as the octaves EE and GG and the tenth EG, occurring in both directions; (7) range of 19 semitones.

The minor third is the most frequent tone step (40%), followed by the major third (23%), the octave (19%), the major tenth (15%) and the major sixth (9%). About one-third of adjacent tones are reiterations; they occur only on the three lowest tones C, E and G. They usually are 2-tone reiterations; 3-tone reiterations are much less frequent, while 4-tone reiterations are exceptional.

The level formula, which expresses the mutual relation between the initial, final, highest and lowest tone, is 37°26'. An application of the level formula approach shows that Hornbostel's thesis of a basic opposition between the general direction of melodic movement of Western and non-Western music is untenable (Kolinski 1957b:3-4). Therefore, there seems to be no reason for a continuation of Hornbostel's method to note non-Western scale formulas in a downward direction. Moreover, a uniform representation of scale formulas would considerably facilitate comparative research.

For the method employed in the following analysis of the melodic structure of the Hukwe song, see Kolinski 1964.) Continuous sudden changes between the highest and lowest register convey the impression of a rather erratic melodic line; however, an analysis of the melodic structure of the song shows a high degree of organic coherence (see Fig. 2). 89% of the tone steps employed belong to "recurrent movements." These comprise pendulums and flexures; a pendulum requires at least three members of alternating direction and of equal size; a corresponding pattern consisting of two members constitutes a flexible.

The following types of recurrent movements are represented in the Hukwe song (compare the identical numbers in Fig. 2 and in the transcription):

A. Two pitches (step movements)
1. Up-flexure in the minor third e-g (16, 21) and in the octave e-e (2)
2. Three member down-pendulum in the minor third e-g (7, 12, 26) and in the major third e-e (9, 18)
3. Four-member up-pendulum in the minor third e-g (3)
4. Six-member down-pendulum in the major third e-e (23)

B. Three pitches (mixed movements)
5. Up-flexure (step + line) in the minor tenth area e-g-g (4, 8, 13, 17, 22, 27)
6. Three-member down-pendulum (one up-line) in the octave area g-g-g (5)
7. Four-member up-pendulum (one up-line) in the octave area g-g-g (6)

C. Four pitches
8. Mixed up-flexure (line + step) in the tenth area e-g-e-g (15)
9. Homogeneous down-line flexure in the twelfth area g-e-g (5)

D. Five pitches (line movements)
10. Heterogeneous down-flexure in the twelfth area g-e-g (14)

A most characteristic feature of melodic movement is the way two or more recurrent movements are linked to larger complexes. As far as the Hukwe song is concerned, it might suffice to consider only sections K and L. An initial non-recurrent step (1) leads into a linear nexus to a complex of eight recurrent movements (2-9); they are connected with one another in direct nexus: 2-4 and 6-9 in 1st degree nexus (one common tone); 5-6 in a 2nd degree nexus (one common step), and 4-5 in a 3rd degree nexus (two common steps).

Depending on the mutual level relation of two or more successive directly connected recurrent movements, we may discern four categories of movement complexes: the standing, hanging, tangential and overlapping. In a standing complex the lower level, in a hanging complex the upper level of the recurrent movements is the same; in a tangential complex the opposite pitch levels of two adjacent recurrent movements are the same; in an overlapping complex the ranges of two adjacent recurrent movements overlap. Depending on the range relation between the recurrent movements we may distinguish: with regard to standing and hanging complexes, between widening and narrowing configurations, and with regard to tangential and overlapping complexes between rising and falling configurations. In the Hukwe song the recurrent movements 7-8 form a widening standing complex, 2-4 a low-centered standing complex, 4-6 a low-centered hanging complex, 6-7 and 8-9 each a falling tangential complex.
The instrumental accompaniment on the braced musical bow has a twopart texture. The lower line employs two fundamentals, 
noted as small e
and small c; the tone material of the higher line consists almost exclusively
of three pitches (g, b, and c) produced as overtones of the two fundamentals.
g is the 3rd partial, c the 4th partial of the fundamental e, b the 3rd partial
of the fundamental e. The perhaps unintentional overtone e in measure 4 is
the 2nd partial of the fundamental e. The tone material of the vocal part is
well integrated within that of the instrumental parts (see Fig. 3). The lower
instrumental part forms a continuous step pendulum in the major third e-c.
Fig. 4 represents the melodic structure of the overtone part. The only non-
recurrent movements are the fourth steps 7 and 11.

**Fig. 3. Total Tone Material (Original Pitch)**

**Fig. 4. Melodic Structure of the Overtone Part**

The following types of recurrent movements occur in the overtone part:

**A. Two pitches**
1. Up-flexure in the major third g-b (6)
2. Three-member up-pendulum in the fourth g-c (1)
3. Three-member down-pendulums in the minor second b-c (2, 4, 8,
2) and in the major third g-b (10).

**B. Three pitches (mixed movements starting with the down-line c-b-g
and avoiding the up-line g-b-c**
4. Three-member pendulums (5, 9)
5. Six-member pendulum with alternating down-lines and up-steps
(3, similar to 9)
6. Eight-member pendulum (13)

Section K consists of a combination of an extended hanging complex (1-5)
and a standing complex (6-8). In section L the hanging complex 8-9 merges
with the standing complex 9-10, while the hanging complex 12-13 is similar
to 2-3, except for the extension in 13 of the pendulum 3 by two members.

Before proceeding to an analysis of the metrorhythmic and formal structure
of the piece, I would like to suggest the following definition of rhythm
and meter: Rhythm is organized duration, meter is organized pulsation
functioning as a background for the rhythmic design. Contrary to the
generally accepted concept which identifies meter with a more or less regular
distribution of accents, it seems to me that neither accent nor stress
represents a constituent element of meter. In fact, the accentual approach has
caused a great amount of misinterpretations of metrorhythmic structures
(Kolinski 1960).

The song consists of nine sections (marked by capital letters) and is
provided with an instrumental introduction and coda. The sections represent
performances of the same phrase with more or, less significant variation.
Vocal and instrumental part form an organic whole, although tone and ac-
companiment have contrasting structures. Except for the rests in the intro-
duction and coda, the bow produces an uninterrupted succession of virtually
equal durational values, noted as eighth notes. Against this background the
vocal part employs a variety of values which may be expressed by the dur-
tional formula 8:3:2:1.

The meter of the vocal part is an unmistakable 3/4. The rhythm is
preponderantly cometric. Half notes occur only on the lowest two pitches
and cover the first two beats. Quarter notes function as upbeat and fall
usually on the third beat. Characteristic is the inverted dotted pattern
eight-dotted sixteenth, which frequently opens the measures. The phrases
K-N comprise 6 measures each. An extension of phrase O to 9 measures
is balanced by a shortening of the final phrase P to 3 measures. There are
other instances of balanced organization: In the phrases L-N the high g is
reached on the 1st beat of the 1st measure and on the 3rd beat of the 2nd
measure. At the beginning of phrase K the high g is replaced by the low e;
however, another high g appears instead towards the otherwise low end of
the phrase. As a result, the high g occurs again twice within one 6-measure
phrase. On the other hand, the 9-measure phrase O employs the high g three
times. Each three measures constitute a formal unit; phrases K-N consist
of two, phrase O consists of three such units, while the final phrase P is
limited to one single unit.

This formal organization is correlated and emphasized by the structure
of the instrumental part. Let us first analyze the line composed of the two
fundamentals C and E. If we examine the order in which tone reiterations
and simple tones follow each other, we arrive at the following self-explana-
tory picture (numeral 1 represents a single tone, numerals 2-6 express the
extent of tone reiterations):

- **K (=M-N)**
  - a) 6 411 42
  - b) 213 411 42
- **L**
  - a) 6 411 42
  - b) 123 411 51
- **O**
  - a) 6 411 42
  - b) 213 411 42
  - c) 213 411 42
- **P**
  - a) 6 411 42
It may be added that the transitions from one measure to the next one are always accomplished by a step and not by a tone retention. The scheme consistently used throughout the piece is [EC EC EC EC EC EC EC].

An analysis of the overtone line gives us a further insight into the metric and formal structure of the piece. Particularly indicative is the function of the tone G. Except for the coda, the G appears exclusively either as the 1st and 4th or as the 1st or 6th eighth notes comprised in one measure. This distribution of G clearly points to an intramusical organization into 12 times 3 eighth notes; in other words, each 3 eighth notes form a motive, except for the third measure of the introduction and the last measure of the coda (in the transcription the motives are marked by the letters h-s). The following chart shows how those motives are integrated within the formal structure of the song:

\[
\begin{array}{l}
K (-S) \quad a) \quad m m \quad o p \quad m q \\
b) \quad j m \quad o p \quad m n \\
L \quad a) \quad m h \quad o p \quad m q \\
b) \quad m m \quad o p \quad m j \\
M \quad a) \quad m m \quad o p \quad m q \\
b) \quad j m \quad o p \quad m m \\
O \quad a) \quad m m \quad o p \quad m n \\
b) \quad j m \quad o p \quad m n \\
c) \quad j m \quad o p \quad m n \\
P \quad a) \quad m m \quad o p \quad m n 
\end{array}
\]

The persistent placement of measure op in the middle of each subphrase, contrasting with all other measures by the lack of the structural G, emphasizes the strict formal organization of the song into a continuous series of three-measure groups.

At first sight it would seem that the song represents a striking instance of polyrhythmic construction: a 3/4 meter of the vocal part standing against a 6/8 meter of the instrumental part. However, there is a problem of general importance involved which challenges an unconditional polyrhythmic interpretation of the piece. Gestalt psychology has made us aware of the fact that perceptions cannot but differentiate between figure and background. In regard to a metrorhythmic complex like the present one this phenomenon means the following: Although we are quite capable of perceiving simultaneously two patterns organized in 2 times 3 and 3 times 2, our mind automatically establishes a hierarchy of the two patterns.

Often an identical performance of such a piece of music may be interpreted in two metrorhythmically different ways. Let us take a well known example with a metrorhythmic structure somewhat reminiscent of that of the Chopin waltz (Op. 42 in A flat major) with the nickname "Waltz in 2/4." If we interpret the 32 measure phrase which follows the introduction in the correct 3/4 meter, the accentuated 4th eighth note of each measure of the right hand pattern functions contrametrically against the metric left hand pattern; if we interpret it as being 2/4, the accentuated 4th eighth note of the right hand pattern functions cometrically and the 2nd and 3rd quarter notes of the left hand pattern contrametrically. But it is inconceivable to perceive one and the same note at the same time cometrically and contrametrically. The seemingly paradoxical conclusion is that strictly speaking simultaneous polyrhythmic structures do not exist from the standpoint of the listener. The same situation arises for a single performer. Therefore, the Hukwe singer, who accompanies himself, probably interprets the organization of the instrumental measures into 2 times 3 eighth notes in a contrametrical sense, that is, as 3/4, unless he subordinates the vocal meter to an instrumental 6/8. Yet if singer and acappanist were two persons, they could quite well perform polyrhythmically. In the course of the piece the metric pulse accelerates from quarter to 1/4, to 1/2, to 1/4, to 1/8, to 1/16. The tempo figure which indicates the average amount of consecutive mental part. Tempo figures (Tt) can be calculated by means of the following formula:

\[
Tt = \frac{No \times Mf}{Mu}
\]

No meaning the total number of consecutive notes, Mf the metronome figure, and Mu the total number of metronomic units (Kolinski 1959).

Finally, the great excitement with which the singer seems to perform his piece ought to be mentioned.

New York City

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TRANSCRIPTION III: GEORGE LIST

Introduction

In a paper previously published in this journal I wrote as follows:

...transcription is a prerequisite to certain types of ethnomusicological studies, but not necessarily to all types. It is a prerequisite when it is desired to make detailed comparisons of certain aspects of musical events. Among these are...mode, melody, form, etc.1

The materials presented in this colloquium represent a demonstration of the means by which four scholars individually approach the transcription and analysis of a single musical performance. As such they are necessarily limited in scope. Transcriptions of one musical event only, no matter if made by a dozen scholars, are insufficient in themselves to produce valid data concerning a particular musical style and are certainly an insufficient basis for comparative studies. Any discussion of the relation of the music to the culture or of language-music relationships has also of necessity been omitted. The omission of consideration of the text of the song is particularly unfortunate since musical accent is often determined by vocal accent. Considering the limitations imposed, I assume our endeavors are directed towards throwing some light upon the validity and utility of various transcription and analytic techniques as applied specifically to the music at hand and to traditional music in general.

I am not qualified to offer a judgment as to whether or not the performance under discussion is typical of African music in general or of Bushman music in particular. The rhythmic complexity and independence of the two parts, I should think, is a reasonably common characteristic of African music. Since this rhythmic complexity seems a major aspect of the performance, I have utilized a special type of score of three staves. The more complex vocal part is notated on two different staves, the lower indicating the internal phrasing of the vocal part and the upper its rhythmic relationships to the simpler bow part.

The transcription presented here was made playing back the recording on an Ampex 350 tape recorder. Playback at half the original speed was not found to be very advantageous since the vocal part seemed distorted at the slower speed. The lower pitches were particularly difficult to identify. On the other hand, it is extremely difficult to transcribe the bow part, and to some extent the vocal part, at the original speed. I therefore reduced the speed by changing the electric supply to 53 cycles rather than 60 through the use of the electronic drive in the laboratory of the Archives of Folk and Primitive Music. This facilitated transcription considerably. Before settling upon this speed as the most efficacious for the purpose, I had listened to the recording at the following speeds of playback: 15 ips as originally recorded, 15 ips at 53 cycles, 7 1/2 ips at 60 cycles, and 7 1/2 ips at 53 cycles. It is interesting to note that the pitches heard by the transcriber for the same phrase varied considerably during playback at the different speeds.

After noting at the slower speed I checked the transcription while listening at the original speed. I then elided all details which I could not hear at the original speed and, in some cases, changed rhythmic patterns to conform with my impressions of them as now heard at the original speed. The
pitch and rhythm, the second was relatively simple. In each case the ten stanzas were then combined into a reconstructed or archetypal stanza by eliding all phenomena which did not occur in at least 75 percent of the ten stanzas. The two archetypal stanzas produced by this means were exactly the same. The details offered in the more complex first transcription set but not in the second were all elided in the process of reduction.

It will be noted that in the present transcription I have used various signs and symbols as needed to indicate pitches differing from those of equal temperament, indefinite pitches, etc. The selection of one symbol rather than another for this purpose was based upon the following guiding principle. Signs or symbols already in common use in musical notation in Western civilization have not been assigned any meaning past that already generally understood. When no sign in common use in our Western music is adequate to represent the phenomenon being notated, I have utilized a sign that has been invented by an ethnomusicologist or I have invented one. Following this principle I have expressed sharp and flat pitches by the use of Bartók's upward and downward pointing arrows rather than Hornbostel's plus and minus signs. The minus sign is similar to the tenuto mark and can easily be mistaken for it. I have used a simple slant line to indicate portamento or glissando rather than the double slur used by Hornbostel and others or the jagged lightning-like line used by Bartók. In my opinion, the slur sign, whether single or double, should represent a slur, not a portamento or a glissando. I have used the simple slant line to indicate the latter since it is already in use to express a glissando on the violin or the harp. Again, in representing an indefinite pitch I have preferred to use an x with stem and flag rather than one of the other signs in use by ethnomusicologists. This sign is already in fairly common use in our music to indicate the indefinite pitch of speech sections occurring in vocal music.

The tonal aspects of the analysis are based upon theories advanced by Paul Hindemith. The differential tones utilized in determining the roots of harmonic and melodic intervals are a type of combination tones. However, the differential tones are physiological rather than acoustical phenomena. They do not exist as sound waves in the atmosphere but are produced by the internal ear under the stimulus of sound waves. The cps of a differential tone of the first order is the difference between the lower and higher pitches of an interval. For example, the cps of a differential tone of the first order is produced let us consider the interval of an octave, e3 - e4 found in Ex. 4 in the following Notes. If e3 is 640, e1 is 320. By subtraction we secure the difference, 320. The differential tone thus reinforces the lower pitch of the interval. A differential tone of the second order represents the difference between an acoustical pitch and a differential tone of the first order. In the octave only one differential tone of the second order is produced since the relation of the differential tone of the first order to the lower acoustical pitch of the octave is a unison. Subtracting the cps of the differential tone of the first order, 320, from the upper acoustical tone, 640 — again the difference between e3 and e1 we secure the same cps for the differential tone of the second order as that of the first order, viz., 320.

Differential tones produced by intervals sound on certain orchestral instruments are more audible than those produced by other means. Orchestral instruments are aware of the effects produced by differential tones. When the tuba is secured a perfect fifth below the bass trombone, an audible differential tone an octave lower than the pitch sounded by the tuba is produced. This pitch may be lower than any the tuba itself is capable of sounding.
Changes in accessional patterns in the bow part from groups of three pulses to groups of two pulses are indicated by the organization of the beams and by placing the stems and beams below rather than above the notes. (See, for example, pulse measures 14-15.) Since there is little dynamic accentuation in the bow part, the phrasing has been developed primarily from tonic accentuation (the occurrence of the highest pitches) and from repetitive patterning.

In the middle stave the vocal part is notated in pulse measures to coordinate with the bow part. In the lowest stave the vocal part is phrased individually. Dynamic accentuation is strong in the vocal part. However, the phrasing reflects tonic accentuation and dynamic accentuation (the occurrence of the sustained pitches) as well as dynamic accentuation.

The pulse measure numbers beginning with 101 are given for convenience only. These numbers do not represent actual chronological numbers of the pulse measures in the entire performance.

Roman numbers represent statements of the melodic material which are simultaneously the strophes of the song. Other textual factors were not taken into consideration in making the transcription. Pitches or glides on nasal or glottalized phones were notated when they seemed melodically significant. The accidentals in the signatures apply to all octaves.

A. General formal organization: in the following analysis, is based upon the entire performance. The remaining analysis is based upon the material transcribed only.

Analysis

Formal Aspects

The performance is a song with instrumental accompaniment. The vocal part is strophic. The ostinato-like instrumental part is continuous during the vocal performance, providing an introduction, a closing section or coda, and interludes between the strophes.

A. General formal organization

1. Introduction
   a. The two initial bow groups seem to be a rest of the instrument.
   b. Beginning with pulse measure 1 the performer establishes the ostinato-like bow accompaniment and a proper tempo for performance.
   c. During pulse measures 10-15 performer hams melodic material not clearly related to the following melodic statements. This section possibly serves as a "warm-up" for his voice.

2. Strophic statements
   a. The strophes contain three melodic patterns of differing lengths as follows:
      A = Pattern beginning on pitch C or E, dropping to E and cadencing on C.
      B = Octave drop from E with or without following pitches.
      C = A close of the statement containing one, two, or three pitches ending on C.

b. The strophes are organized internally as follows:
   I. A B C
   II. A B C
   III. A B C B
   IV. A B C
   V. A B C
   VI. A B C
   VII. A B C C B
   VIII. A B (possibly incomplete)

3. Close
   a. The ostinato is cut off abruptly, pulse measures 128-129.
   b. After a pause, a coda is added utilizing different melodic material, pulse measures 129-132.

B. Formal organization of the bow part

1. The bow part exhibits a generally free combination of a number of pitch patterns of which the following are the most common groups of three pitches:
   \[ X = A, G, E (pulsmeasures 1-15) \]
   \[ Y = G, G, E (pulsmeasures 23-34) \]
   \[ Z = A, A, E (pulsmeasures 26-29) \]

2. There is also fairly frequent use of groups of six pitches divided into three duplets which form a hemiola-like contrast to X Y Z. The two following are the most frequent in the sections of the performance transcribed:
   \[ P = AA, GG, GE (pulsmeasures 17-21, 29-33) \]
   \[ Q = AA, GG, GG (pulsmeasures 42-45, 106-107, 124-125) \]

3. The three-pitch or six-pitch patterns rarely appear in succession. The exceptions are listed below.
   a. Z appears in succession in pulse measures 7-8, 25-26, and 31-33.
   b. Two differing six-pitch patterns appear successively in pulse measures 122-125.

C. Relations of the bow and vocal parts

1. There seems to be no melodic relationship between the two parts as far as the utilization of the same melodic material is concerned.

2. More frequently than not, the six-pitch patterns of the bow part are associated with the last or cadential elements of A, B, and C. Examples follow.
   a. Statement I
      \[ A \text{ is associated with } P \text{ (pulsmeasures 20-21)} \]
      \[ B \text{ is associated with } P \text{ (pulsmeasures 23-24)} \]
      \[ C \text{ is associated with the pattern } GG, GG, AE \text{ (pulsmeasures 28-29)} \]
   b. Statement II
      \[ A \text{ is associated with } X - Y \text{ (pulsmeasures 35-36)} \]
      \[ B \text{ is associated with } P \text{ (pulsmeasures 38-39)} \]
      \[ C \text{ is associated with } Q \text{ (pulsmeasures 42-45)} \]
Rhythm and Meter

A. Durational values
   1. The bow part exhibits only one durational value, the eighth note.
   2. In contrast, the vocal part shows many duration values, half note, dotted quarter, quarter, quarter note triplet, eighth and sixteenth notes.

B. Meter or accentual patterns
   1. The bow part exhibits duplet and triplet groups only, 2/8 and 3/8.
   2. In contrast, the vocal part shows a variety of accentual patterns.

C. Succession of accentual patterns
   1. In the bow part, a change in accentual pattern occurs in approximately 10 percent of pattern successions.
   2. In contrast, a change in accentual pattern occurs in approximately 50 percent of pattern successions in the vocal part.

D. Accential relation of the parts
   1. Metrical accent, the initial accent of accentual patterns, coincides in the two parts in somewhat over 60 percent of the performance analyzed. Thus slightly less than 40 percent of the initial accents of the accentual patterns in the vocal part produce an effect of syncopation. (In making this last analysis a 2/4 measure was conceived as containing two accentual patterns of 2/8 each.)

Scale

A. The scale of the bow part is tetraisiomatic. The G is slightly superior to the A in sum of duration values (less than 10 percent) and is the final. On the other hand, the A occupies a greater number of accented pulses. The sum of durational values of the E is considerably less than that of G or A. The C occurs only twice.

Example 1

B. The scale of the vocal part is tritonic. The sum of the durational values of C is somewhat over 20 percent greater than that of E. The lower C occupies the final position in all but three of the total phrases analyzed. The sum of durational values of A is small.

Example 2

C. The combined scale is given below.

Example 3

Harmony and Tonality

A. Theoretical basis of the analysis
   In his Craft of Musical Composition, Vol. I (1945), Paul Hindemith offers a method of determining the roots of intervals. These are derived from the differential tones produced when the two tones of an interval are sounded simultaneously. By extension these roots may be applied to melodic intervals as well.
   
   The chart below gives the first and second order of differential tones produced by the intervals heard in the sections transcribed of the performance and the derived roots.

   - = differential tone of first order
   o = differential tone of second order

   Interval

   Differential Tones

   Root

Example 4

The differential tones of the second order are weaker than those of the first order. It will be noted that inversions of intervals have the same roots as non-inverted intervals. The interval of the major seventh and its inversion have been omitted from consideration due to their harmonic ambiguity.

B. Harmonic roots
   1. Of melodic intervals
      a. The harmonic roots of the melodic intervals in all pulse measures of the bow part with the exception of 130-131 are A; and E
      b. The roots of the intervals heard in pulse measures 130-131 are C; and E. (Note: C = E sharp.)
   2. Of harmonic intervals
      a. Discounting the major seventh and its inversion, the harmonic intervals heard between the two parts produce the harmonic roots A; E; and C.
C. Tonal implications

1. Of the individual melodic parts

   Judged by the frequency of the occurrence of the roots of the melodic intervals, the tonal center of both the bow and vocal parts is A:.

2. Of the harmonic texture

   Judged by the frequency of occurrence of the roots of harmonic intervals, the tonal center is A. The roots E: and C: appear with almost equal frequency. Their combined frequency is slightly larger than that of A: alone.

3. Formal considerations

   a. The entrances of A are associated with all three roots, those of B with the roots A: and E:, those of C with the root A:.
   b. The close or cadences of A are associated with the root C:; those of B with all three roots, those of C with C:.
   c. In the sections transcribed the root progression A:: C: is invariably associated with the close or cadence of A and with that of C which is, itself, the closing phrase of the statements or strophes.

4. Summation

   a. Combined, the harmonic and melodic roots produce the tonal center A: which constantly shifts to the tonal center C: at important cadential points. When, in addition, the importance of C as a melodic tone is considered (see Scale above) it would seem that the tonal centers A: and C: are of equal importance.
   b. It should be noted that the codetta, pulse measures 130-132, after an initial C: root, exhibits only E: roots.

Summation of style characteristics

The performance exhibits a rhythmically and metrically free tertian vocal melody of a large range associated with a continuous instrumental part utilizing only one rhythmic value and only two metric patterns. The bow melody is of a restricted range.

The bow and vocal parts are individually integrated by repetitive use of melodic patterns. In the bow part the integration is accomplished by the use of a limited number of short patterns and by the use of only two differing accentual patterns. In the vocal part a variety of melodic patterns is integrated by means of a strophic formal organization.

However, the two parts are completely independent melodically. They also exhibit great rhythmic and metric independence although somewhat more than half of the accents of accentual groups in one part coincide with accents of accentual groups in the other part. This coincidence may or may not be with like accentual groups.

Formal aspects of the performance act primarily to integrate the individual parts. The melodic, rhythmic, and metric aspects of the two parts in combined performance are generally contrastive in nature. The principal element binding together the two parts is a bi-tonality in which two different roots act as organizing forces, a bi-tonality which is more chronological than simultaneous in nature. In the complex texture A: is the dominant but not invariable tonal center during the bulk of the performance while C: is invariably the tonal center at all important cadential points. The cadential character of this shift in tonality is further defined by the frequent association with it of 3 x 2 rather than 3 x 3 accentual patterns in the bow part.
minor revision of the manuscript shown at the 1963 symposium. The principal changes consist in 1) the addition of the melody of harmonics which was not audible to me until I was able to play the original copy of the tape at 15 i.p.s. with adequate amplification, 2) the deletion of one measure of music near the end of the piece which does not exist, but somehow found its way into my original transcription, and 3) the designation of an introduction and a coda, and the numbering of measures to make easier the comparison of my transcription with that of Garfias, with which it is in closer agreement than with those of List and Kolinski.

The A of the pitch pipe sounded at the end of the tape has determined the tonality in which I have notated the piece. The constant repetition of the F of the struck bow string in alternation with the A of the shorter segment of the string clearly establishes F as the tonal center of the piece. Though I have used the G clef for both the voice and the bow, they are heard one octave lower than indicated, except the melody of the harmonics which sounds in loco as notated.

I have regarded the fundamental tones of the bow, F and A, as the basic accomplishment of the vocal melody. The counter-melody of harmonic tones is undoubtedly of considerable importance to the musician since he controls the pattern by his manipulation of the calabash resonator against his diaphragm, but this line is so delicate and faint on the tape that it was with difficulty and some misgivings that I was able to notate it. The absence of notes in the harmonic line signify that at those places I heard no overtones. The notes in the vocal line in parentheses were not audible to me when the tape was played at the speed at which it was recorded, but were heard as tonal grunts when the speed was reduced to 7.5 i.p.s. Following the two measures of introduction the rhythmic pattern of the fundamentals of the bow is so regular that I have indicated a meter of 3/8, two measures of which could well be regarded as a unit of six pulsations as Garfias has done.

The transcription is a broad one as opposed to a narrow one, and I have attempted to notate only those features which I considered essential to an understanding of the form and style of the piece. I was keenly conscious of the minute variations of pitch, dynamics, and rhythm of both the bow and the voice, but I found them so small as to elude accurate notation with our present means. I am inclined to think of these details as minutiae of the performance and not of the piece itself. Only by comparing this piece with others performed by the same musician and by other musicians in the tribal group would one be able to ascertain whether these features are basic to the tribal style or the idiosyncrasy of this particular musician.

The relation of the text of the song to the vocal melody is important and a knowledge of the language would probably have aided in the transcription.
and explained certain features. No attempt was made at analysis although a cursory reading of the score provoked questions and problems that demand study, the hemiola, the variation of the vocal line, the patterning of the fundamentals of the bow and the harmonic melody.

The experience of transcribing this piece has been another reminder of the inadequacy of our means of accurate and objective notation and the problems that confront the ethnomusicologist in his work. The human ear has its limitations. I do not know at what vibration and dynamic level my hearing stops, but I know that it has its limits as does the hearing of everyone. This variation of aural limits is a factor that must be recognized. The melograph in its present state of development is unable to transcribe music beyond the monophonic stage. The capriciousness of the play-back of tape recorders with their various controls, the differences of fidelity between machines, and the lack of adequate equipment and technical engineering assistance have plagued this transcriber. It is apparent that if the ethnomusicologist is to avail himself of electronic equipment in his work, he must either prepare himself in the theory and use of this material or enlist a body of scientists whose musical interests are sufficient to involve them in a collaboration that can prove rewarding to them as well as to the ethnomusicologist.

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REPORT OF THE CHAIRMAN-MODERATOR
Charles Seeger

Unfortunately, there was no rapporteur for the Symposium on the notation of the Hukue song. As Chairman, I should have appointed one but did not—or did anyone else, as far as I know—realize at the time how significant the project would turn out to be. In lieu, then, if a proper report I offer here only a brief comparison of the duplicated papers presented at the meeting. It will be strictly objective and factual. I assume no valuable function whatever toward the goals performed by the four transcribers. I do not feel it incumbent upon me to provide another transcription and analysis against whom the others might be checked.

The four notations at my disposal, with the exception of Rhodes’s, of which I have received a slightly revised version, are without alteration. Messrs. Koelnitz and List have amplified but not altered their already ample analyses.

As was expected, the four participants, whom I shall designate from here on as G, R, L, K, varied in their understanding or interpretation of their assignment. G and R presented notations of the whole song such as are conventionally published, along with many other similar items, in any paper or monograph, “On the Music of the...” Neither has felt that the assignment called for the musicological analysis and documentation that would normally frame their notation in any such publication. L and K, on the other hand, seem to have felt that the assignment required or at least invited an analysis worthy of the complex organization of the piece. Both studied the whole song and its accompaniment; but neither felt that he was called upon to present a notation of the whole. Unfortunately for this rapporteur, K made a substantial cut at the beginning and L, a slightly more substantial one at almost the exact point where K’s ended. This has left a vacant section just before the end for which alone we have notations from all four transcribers. Of these, I have aligned ten of measures each of G and K and twenty of R and L in such a way that agreement and disagreement in detail can readily be shown. (See accompanying synoptic view of the four notations).

Rhythmic Materials, Bow-Part. All four transcribers perceived the tempo giusto of the bow strokes and laid out their work accordingly. G uses quarter-notes, the rest, eighteens. MM. figures by the latter three are given variously for quarters and dotted quarters. Thus we have very close agreement upon a tonus protos:

<table>
<thead>
<tr>
<th>Measure</th>
<th>G</th>
<th>R</th>
<th>L</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>394-395 at his measure 4 2 3 4</td>
<td>394-395 at his measure 4 2 3 4</td>
<td>394-395 at his measure 4 2 3 4</td>
<td>394-395 at his measure 4 2 3 4</td>
</tr>
<tr>
<td>3</td>
<td>394-395 at the beginning, quickly accelerating to eighth note 318</td>
<td>394-395 at the beginning, quickly accelerating to eighth note 318</td>
<td>394-395 at the beginning, quickly accelerating to eighth note 318</td>
<td>394-395 at the beginning, quickly accelerating to eighth note 318</td>
</tr>
<tr>
<td>2</td>
<td>394-395 over all, but for the last part eighth note 304</td>
<td>394-395 over all, but for the last part eighth note 304</td>
<td>394-395 over all, but for the last part eighth note 304</td>
<td>394-395 over all, but for the last part eighth note 304</td>
</tr>
</tbody>
</table>

G and K distinguish measures of six to and mark them with conventional bar-lines. The former uses no signature; the latter, one of eight and explains placement of the bar-lines as enclosing two eighth-note patterns that are merely pulsations and rejecting accent as, by definition, not a determinant of meter.

R and L distinguish measures of three to and mark them with conventional bar-lines. The former uses conventional bar-lines and a metrical signature of eight; the latter, dotted bar-lines "for convenience in reading only" and no metrical signature. "Since there is little dynamic accentuation in the bow part," he writes, "the phrasing has been developed from tonic accentuation (the occurrence of highest pitches) and from repetitive patterning." This results in the placement of his dotted bar-lines one to later than are the solid bar-lines used by the other three transcribers, giving the bow-part an anaesthetic instead of a thematic beginning and a masculine rather than feminine close, though this seems to be of no particular importance in the case, owing to the improvisational nature of both beginning and ending.

Voice-part. L does find, however, strong dynamic accent in the voice-part; and on an extra (lowest) staff writes it with conventional bar-lines and metrical signatures, thus implying that both tonic and dynamic accentuation may be determinants of meter. K finds the voice-part in ternary meter and gives it a metrical signature of eight. Thus he finds a hemiola relationship between its three groups of two and the bow’s two groups of three. Furthermore, he finds the voice part masculine as over against the feminine bow part.

Tonal Materials. None of the four transcribers distinguish between the tonal materials of the voice and bow parts. All are agreed that there is a pitch base, tonal center, axis, most important pitch, most commonly sounded pitch level, or whatever, which is nearest to the standard equal-tempered F. G, L and K give this as a fifth below R, as a fourth above, middle C. G and R write the song, "as it sounds": L transposes the F up to an A, read 8va bassa, for convenience; K, up to C, to conform to the presentation he has made of the classification of possible modes in the equal-tempered diacopeptic octave scale.

All transcribers heard complexes of pitches from the strokes of the bow. G speaks of "higher and lower partials," but notates only a low part. R writes a low part throughout but gives some higher pitches. L speaks of "differential tones" of first and second orders, but notates only a high...
bow-part. K writes throughout both a high part, agreeing 60% with L’s high part, and a low part, agreeing 100%, in our “synoptic view” with G’s low part. Its notation varies slightly from these.

As anyone who listens to the record must perceive, the voice part is the more difficult to notate. The variance among the four notations is evidence of this. See, especially, the low notes in K’s measures 53-56, which were not notated in the other three transcriptions.

Since K alone deals with tonal modality, it need not concern us here, for his published papers on the subject are readily available.

Form. Both L and K have dwelt at some length upon the form of the song. If both had made available to us their notations of the whole length this report could have been more complete. For these transcribers show, both in their analysis and in the brief passage in which we can align the two notations, perception of an elaborate melodic pattern in the bow-part. Without such complete notations, however, it is not clear how L’s eight "strophes" and K’s nine "sections" do or do not correspond. See, for example, in the synoptic view, that L’s strophe VII and K’s section O (in his original notation, VIII) exactly coincide. As it is, L notates and analyses only his "statements" I and II, and K, only his sections K - P (originally, IV - IX). Both of these transcribers perceived also recurring motives of triolots in the bow part. K’s analysis, indeed, displays the performance as a veritable rincancar of an intricacy that would have pleased Geheem. See, for example, the twin tabulations of his sections K - P, one in terms of single tones and reiterations, the other of pairs of triolots.

L’envoi. Having withheld all critical judgment of transcribers and their contributions, I now turn—but not until I tender the former expressions of most sincere appreciation and admiration for their ingenuity, industry, and courage—toward consideration of the project of holding such a Symposium. Thus, at last, elicits a critical judgment, namely, it was, me personally, the best session the Society has held at an annual meeting and my hope is that there will be more like it. It has taught us some lessons.

First, I must say that one very important element was missing: the words of the song. According to instructions from the Program Chairman the four transcribers omitted the text of “Du: from their considerations. However, the words were available even if only in primitive and inadequate form (see England’s remarks on the matter, p. 224). The question is: would their integration in the transcriptions have made any difference? Frankly, I do not know. But we cannot assume it would not. From a practical viewpoint, only a linguist expert in the particular language could fit the words to any of the four transcriptions. And in this, he would probably need the help of the transcriber. Lesson No. 1, then, is: if we schedule another such symposium, the item chosen, if a song, should be one in a language likely to be commonly enough known in university linguistic circles to permit the transcribers to find help without travelling too far from home.

Second, we should specify complete transcription of the whole item chosen.

Third, all the transcriptions should be accompanied by detailed explanation of the meaning of the symbols used.

Fourth, the transcriptions and any accompanying analyses should be made available a month before the meeting to a discussant who will do what I have tried to do here, i.e., prepare a comparative summary to stimulate and guide general discussion and keep it relevant to the purpose of the project. Perhaps two sessions should be devoted to the symposium: morning, presentation by the transcribers; afternoon, summary, followed by general discussion.

Fifth, if possible, one transcriber should be expert in the tradition represented by the item chosen for the occasion.

Sixth, a rapporteur should be appointed. This could be the discussant or, perhaps, someone not previously involved in the project.

We have, I believe, reached a point in the development of ethnomusicology where there can be no excuse for a continuing inadequacy in techniques of documentation. Thanks to anthropology, contextual documentation has reached a high level of technical proficiency with respect to tribal music. It is somewhat less strong in the realm of Western folk musics. It is still very weak in dealing with the idioms of “high,” “professional,” “fine” arts of music. (Strange, that we still lack a name for this idiom!) It is deplorably weak in dealing with the context of the “popular” idiom—another, with no proper name.

Textual documentation, i.e., description and notation of music itself, is comparatively undeveloped in comparison with the best techniques of contextual study. Aural documentation by sound-recording has, of course, revolutionized musicology. But visual documentation of sound-recording is just as necessary; for without it, (speech-) reference to the musical event is merely gross and clumsy, and classification and archiving, impossible. We still can note little else in textual data than what, in it, is identical with or closely analogous to the fine art of Western music, exclusively for which our present conventional notation was devised. Mr. Garfias’s excursion into graphic representation of the voice part in the Hucœ song is commendable. But still, the graph contains, on the whole, less information—even when done with the best electronic devices—than the conventional notation. True, it shows many things that conventional notation cannot show. But for the present and for the foreseeable future must be, I think, a combination of the two techniques.

Future sessions such as the one at Wesleyan last November will very well be planned with such considerations in view.

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