

New perspectives on the Kalahari debate: a tale of two 'genomes'

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Abstract

While the 'Great Kalahari Debate' hinged almost exclusively on the interpretation of sparse and confusing archaeological and historical data, abundant and convincing genetic evidence from the realm of biological anthropology has been largely ignored, while equally compelling cultural evidence drawn from the musical traditions of the populations in question has been overlooked entirely. In this paper, I attempt to demonstrate how genetic and musicological research can be combined to provide a compelling case for the 'traditionalist' position in this ongoing controversy. To this end, I draw upon an important but little known musical 'genome', the *Cantometric* database, compiled under the direction of the late Alan Lomax, at the Columbia University Bureau of Applied Social Research.

1 A continuing debate

The 'Great Kalahari Debate' revolved around two basic issues:

- 1 whether or not certain Kalahari 'Bushmen' groups can be regarded as genuine foragers who remained largely isolated for most of their history and adapted to outside pressures without losing their identity
- 2 whether or not certain aspects of primordial hunter-gatherer culture could have survived into the twentieth century among such groups.

In this paper I re-examine both issues, but not from the perspective of the usual archaeological/historical methodologies, which attempt to recreate the past by examining ancient relics and timeworn documents. I turn instead to what might be called a 'genomic' approach, in which certain inherited 'markers', both genetic and cultural, representing contemporary populations, are queried for what they might be able to tell us about the past.

While the Kalahari debate seems to have peaked in the '90s, its repercussions are still very much with us, as evidenced in a recent essay by Alan Barnard, 'Kalahari revisionism, Vienna and the 'indigenous peoples' debate' (2006). As Barnard points out, the dispute was part of a broader controversy involving

certain supposedly 'romantic' notions too easily taken-for-granted, apparently, by too many anthropologists for too long a time. He refers especially to the views of the former editor of *Current Anthropology*, Adam Kuper, who, as recently as 2003, challenged

the idea of an "indigenous people" as being "essentialist" and relying "on obsolete anthropological notions and on a romantic and false ethnographic vision" (ibid: 2).

Kuper's argument echoes that of Kalahari 'revisionist' Edwin Wilmsen regarding the alleged indigeneity of the various 'Bushmen' groups:

Their appearance as foragers is a function of their relegation to an underclass in the playing out of historical processes that began before the current millennium and culminated in the early decades of this century. The isolation in which they are said to be found is a creation of our view of them, not of their history as they lived it (Wilmsen 1989:3).

The various arguments focused, ostensibly, on archaeological and historical evidence. In an independent review of the many disputes stemming from very different interpretations of this evidence, archaeologist Karim Sadr stated his conclusions at the outset: first, 'it will be shown that Wilmsen and Denbow's reconstruction of Bushman-Bantu relations is based

on insufficient evidence'; second, 'it is concluded that much basic archaeological work remains to be done' (1997:105). As becomes clear from Sadr's detailed analysis, the archaeological evidence is often scant and always difficult, if not impossible, to interpret:

What emerges most clearly from this review is that Late Stone Age and Early Iron Age archaeology in Botswana are still in their infancy. . . Perhaps all the energy that has gone into debating the Kalahari's past would have been better spent in gathering evidence" (ibid:111).

From reading Sadr, one might conclude that the Great Kalahari Debate would end either in defeat for the revisionists or, at best, a stalemate. As now seems clear, however, the debate was never really about evidence at all, as should have been apparent at the outset from so much of the language in which the revisionist position was couched. Terms like 'reification', 'essentialist' and 'romantic' belong to the realm of ideological, not archaeological, debate – at least not in the traditional sense of archaeology, which has now, like so much else in the academic world, been transformed by the extraordinary triumph of 'postmodern' revisionism-in-general.

2 *Kulturkreis*, *Urkultur* and 'indigenous peoples'

Barnard's review of the ideological issues takes us all the way back to the 'Vienna School' of the early twentieth century and the *Kulturkreis* (culture-circle) theorising associated with it. A key concept for this group was the notion of *Urkultur*, variously translatable as 'primal culture', 'primordial culture', or 'original culture'. For Wilhelm Schmidt (1868-1954), one of the leaders of the *Kulturkreis* school,

the mechanism of cultural transmission was more migration than diffusion, and through migration, he believed, the various forms of *Urkultur* had spread throughout the world (Barnard 2006:6).

Such notions were rejected some time ago by literally all archaeologists, ethnologists, etc, as hopelessly romantic and naive. For Barnard, however, the notion of *Urkultur* *remains with us implicitly*, 'in our present-day discourse in the idea of "indigenous peoples". The "native" has indeed returned' (ibid:6).

There follows a long and sometimes confusing discussion, where Barnard appears to vacillate among different construals of the term 'indigenous', depending on whether one is speaking anthropologically or legally – from the standpoint of a 'western'

academic or the standpoint of an 'indigenous' person. He has trouble deciding whether the notion should be rejected outright, since it has, after all, proven useful as a strategic device, 'a useful tool for political persuasion' on the part of people who might want to claim indigenous status in order to gain certain legal advantages to which they might be rightfully entitled. Nevertheless, he insists that 'indigenous people' is 'not really an anthropological concept', but rather a 'social construct', useful as a legal ploy but with no deeper significance. Returning to the apparent source of this mystification, he characterises *Urkultur* as 'a legitimate, if problematic, anthropological concept . . . [whose] usefulness in anthropological theory has long since passed' and 'indigenous peoples' as 'simply a postmodern way of saying *Urkultur*' (ibid:9-10).

3 *Urrasse* and *Urkultur*

Barnard begins the last section of his essay, labelled 'Conclusions', with a review of some of the most important historical issues he has covered and soon appears ready to wrap things up. Suddenly, however, out of nowhere, he introduces new, completely unexpected, and indeed astonishing material, as follows:

Recent interdisciplinary work among Darwinian anthropologists, evolutionary psychologists, archaeologists, linguists and geneticists hints that there really was an *Urrasse*, and there really was an *Urkultur* . . . Both are represented in the 'anatomically modern' *Homo sapiens* population that gave rise to the 'Out of Africa' migration about 80,000 years ago. This migration spread early symbolic culture; let us call it *Urkultur*. However, the relation between this *Urkultur* and the cultures of today's so-called 'indigenous peoples' is no greater that that between this *Urkultur* and the cultures of all peoples (ibid:13).

Barnard's sudden and totally unexpected resurrection of the universally denigrated terms, *Urrasse* and *Urkultur*, is especially surprising, the latter having already been dismissed by him, as (if I may repeat the quotation) 'a legitimate, if problematic, anthropological concept [whose] usefulness in anthropological theory has long since passed'. The archaeological and historical evidence was supposedly what the great Kalahari debate hinged on from the start. Nevertheless, Sadr's conclusion regarding the insufficiency of such evidence really did not seem to matter. It certainly did not prevent the revisionists from persisting with their attack, on the same ideological grounds that had no doubt prompted it in the first place.

Now, suddenly, evidence of a completely different sort presents itself, extensive evidence, hard evidence — above all, scientific evidence, straight from, of all places, the biology lab. And what this evidence, reinforced and enriched by archaeology, ethnology, linguistics, etc, tells Barnard is that there really might have been an *Urrasse* after all. And if there was an *Urrasse*, then that *Urrasse* must have had some sort of *Kultur* — which would have made it an *Urkultur* — in less forbidding, terms: 'original lifestyle'.

4 *Urrasse* and Bushmen genealogy

But what bearing does all this have on the Kalahari debate, and the status of the Bushmen? Aren't we all descended from the same group of 'first people', assuming there *actually was such a group*? Yes, we are all descended from the same ancestors, assuming the correctness of the Out of Africa theory. But that hasn't prevented geneticists from singling out certain populations as genealogically special. And certain Bushmen groups (as well as Pygmy groups — see below) are in the forefront of this remarkable development (see, for example, among many others, Cavalli-Sforza et al 1996; Chen et al 2000; Semino et al 2002; Zhivotovsky et al 2003).

An especially clear and succinct explanation has been offered by James Watson (2003), co-discoverer of the double helix:

Another interesting finding confirmed by the mtDNA and Y chromosome data is the position on the human family tree of the San of southern Africa. Theirs is the longest, and therefore the oldest branch on the tree (ibid:243).

Watson is, of course, aware that we are all descended from the same deep ancestry:

If we trace lineages back to the last common ancestor of both chimpanzees and humans, my lineage is about 5 million years old, and so is a San's. In fact our two lineages are about the same for most of those eons; only 150,000 years ago did the San lineage separate from other human lines. (ibid 244)

Why did it separate, what does that mean?

It appears, from the genetic evidence, that after an initial migration into southern and eastern Africa, the San remained relatively isolated throughout history... The Bantu expansion displaced the San to marginal environments like the Kalahari Desert' (ibid:244).

If the San are linked so closely to our earliest fully human ancestors, it is due, therefore, to their isolation, which has severely limited interbreeding with

other groups for tens of thousands of years. To put it crudely: they have a 'pedigree' — we do not.

While the archaeological evidence remains sparse and inconclusive, the biological results are abundant and clear. The claim by revisionists Wilmsen and Denbow (1990:489) that

"Bushmen" and "San" are invented categories and "Kalahari foragers" an ethnographic reification drawn from one of several subsistence strategies engaged in by all of Botswana's rural poor

is, very simply, inconsistent with the preponderance of genetic evidence. Not all Bushmen can be characterised as a motley group of poor folk who happened to be living in the Kalahari just like everyone else in that region, to fall back on hunting and gathering after losing their day jobs. According to the genetic evidence, at least some Bushmen groups 'remained relatively isolated throughout history', including their long period of marginalisation in the Kalahari. But this is exactly what the revisionists claimed not to be the case, that they were not isolated, but an indistinguishable part of the greater historical processes roiling around them, that their identity as indigenous hunter/gatherers is an essentialist illusion. If that were the case, it would be reflected in the genetic evidence. It is not.

So much for one great chunk of the Great Kalahari Debate, the question of whether or not certain Bushmen groups represent, to borrow Barnard's terminology, an *Urrasse*. Surprisingly enough, we have good reason to believe they do. We must now turn to the other side of the coin, the question of culture, which for Barnard is a completely different matter. An *Urrasse* must have had some sort of *Urkultur*,

[h]owever, the relation between this *Urkultur* and the cultures of today's so-called "indigenous peoples" is no greater than that between this *Urkultur* and the cultures of all peoples (as quoted above).

The assumption implicit in this sentence is widely held today by almost all anthropologists. From the standpoint of modern ethnography, there is simply not enough evidence to link any current practice with the distant past. The mantra goes something like this: since we cannot go back in time to observe how people were living 100,000 years ago, we cannot do more than speculate regarding any aspect of their culture. I disagree. There is a body of evidence, rarely if ever considered by anthropologists, that could shed some

badly needed light on some of the most obscure corners of both culture and history.

5 A Musical 'Genome'

A genetic marker is considered neutral if it is not affected by natural selection, ie, not affected by changes in the environment or any other outside influence, but continues unaltered until, suddenly, a mutation occurs. Then, after the mutation, the altered marker continues, generation after generation, unchanged, until the next sudden mutation. In my view there is good evidence that certain aspects of traditional music, or more accurately, musical style, could also be considered neutral markers in roughly the same sense. Systematic research in comparative musicology has revealed the existence of musical 'families' whose overall stylistic features have, indeed, remained essentially unchanged over extremely long periods of time, large geographical areas, and very different types of environment.

In recent years, many genetic anthropologists have looked to certain aspects of language as the cultural equivalent of genetic markers and have consequently paid a great deal of attention to the distribution of language families worldwide. Comparing language with music, however, we find some rather important and instructive differences. For one thing, language is much more complex than music, with a far more rigidly defined syntax, and an important dimension either lacking or undeveloped in music: explicit reference, the semantic dimension, the realm of words, which music completely lacks. It is also far more common than music, as the basis for all sorts of everyday interactions, of a great many different kinds, and is consequently, unlike music, a totally indispensable, ubiquitous and 'visible' aspect of ordinary life. All these factors make language

- 1 much more difficult to study, as many more elements and aspects must be taken into consideration
- 2 much more susceptible to change, as there are so many more elements subject to change and so many more opportunities for changes to occur.

Music, on the other hand, seems to exist in a realm of its own, a highly ritualised realm, filled far more with redundancies than explicit messages. Unlike language, in which original utterances are continually being produced, music tends to repeat the same utterances over and over – on the micro level, as the

repetition of motives, phrases and melodies; and, at the macro level, in the form of set pieces performed over and over again, then handed down through literally countless generations. The primary function of language would seem to be communication, in the form of a series of continually fresh and original utterances. The primary function of music, on the other hand, would seem to be the affirmation of group identity, based in tradition. Language may be seen as, in many ways, a force for change, while music seems to operate as a conservative force, continually reaffirming the individual's connection to the group, their common ancestors, and their collective origins in a mythic past.

When we look at the relationships between musical styles and languages in various parts of the world, we see many instances where a language has changed, but a musical style persists, suggesting that music may indeed be far more conservative than language. The African Pygmies seem to have lost their original language, usually speaking the language of their Bantu neighbours. They will often use western articles of clothing, western tools, utensils, ornaments, etc. But all the evidence points to their retaining their original musical style more or less unchanged, as it may have been sung tens of thousands of years ago (see below). A similar pattern is evident in a great many cases where social forces have caused certain societies to change a great many aspects of their culture, from language to lifestyle to religion, yet their basic musical style, or at least significant aspects of it, will persist. An obvious case in point is the persistence of African elements in the music composed, performed and enjoyed by so many African Americans today.

One striking example of musical conservatism, out of many that could be cited, is the remarkably homogenous vocal style of the great majority of native North American tribal groups, regardless of language, subsistence type, environment, etc. Focusing on very general aspects of performance style, the most important characteristics would appear to be: unison singing, 'one-beat' percussion accompaniment, a preponderance of 'nonsense' vocables, wide melodic intervals, moderately tense, raspy voices, and a highly idiosyncratic manner of forming melodies, where most notes tend to be squarely on the beat and the iteration of the same pitch over different vocables is common, especially at phrase

endings. Since native Americans are thought to have diverged shortly after entering the continent at least 10,000 years ago (very likely much longer), we can conservatively estimate that this style must be, at the very least, 10,000 years old.

A growing awareness of the potential of the very general, yet often highly diagnostic, approach to the comparative study of music exemplified above, led the noted folklorist/musicologist Alan Lomax to envision the methodology he was ultimately to call 'Cantometrics' (Lomax 1959). I collaborated with Lomax on the creation of the Cantometrics coding system in 1961, and subsequently worked as his assistant on the Cantometrics Project from 1963 through 1966. While the coding methodology is, of necessity, relatively imprecise and subjective,¹ it has proven to be a powerful heuristic tool for broad-based comparative research (see, for example, Lomax 1962; Lomax et al 1968:75-110; Grauer 1965, 2006a). Lomax's research team ultimately produced, among other things, a systematic worldwide classification, by means of factor analysis, of several broadly defined musical 'families', and subfamilies, along lines consistent with well known and generally accepted culturally and geographically defined areas (Lomax 1976:29-34). The Cantometrics dataset, currently representing roughly 5500 recorded performances, drawn from 857 culture groups worldwide, encoded along 37 musical parameters, or 'markers', could be loosely characterised as a kind of musical 'genome'.²

6 A revealing comparison

Let us now proceed to a consideration of musical evidence pertaining specifically to the Kalahari debate. A remarkable affinity between the music and dance of two geographically distant groups of African Pygmies and Bushmen was first noted in 1956, by the leading ethnomusicologist and Africanist, Gilbert Rouget, for whom the two traditions seemed 'too complex and too coherent' to allow for an explanation based on convergence. On the other hand, the great distance separating the two made any sort of mutual influence unlikely. 'Is it necessary to believe, then,' he wondered, 'that the Pygmies and Bushmen are of common stock, and that their dance and music represent the remainder of a common cultural heritage?' (Rouget & Grimaux 1956:3).

The striking affinities were noted also by Alan Lomax, for whom the Pygmy-Bushmen connection

became especially important. Some of the earliest statistical analyses based on the Cantometric dataset tended to support the relationship quite strongly (Lomax 1962; Grauer 1965; Lomax et al 1968). All the available literature and recordings pertaining to this question were thoroughly reviewed in an independent study conducted by ethnologist/ethnomusicologist Charlotte Frisbie. Noting that her results 'are practically identical with those achieved by the Cantometrics system for the same area' (Frisbie 1971:285), Frisbie concludes as follows:

The comparative analysis of Bushmen and Pygmy music shows overwhelming similarities . . . [I]n view of the attributes of music which make it a valid tool in reconstructing culture history, these findings would present a serious problem to anyone who tried to deny an earlier historical connection between the two groups' (ibid:287).

Here we have two populations consisting of nomadic hunter-gatherers with the simplest of material cultures, no permanent residence, no iron or steel tools (until very recently), without domesticated animals, moving about exclusively on foot, and located in at least three very widely separated parts of the African continent; the Pygmies in the tropical forests of both west and central Africa; the Bushmen in the desert of southern Africa. Yet both have intricate, highly idiosyncratic musical traditions that, for most who have studied them, are so close as to be almost indistinguishable.³

In an often quoted study of African genetics, Yu-Sheng Chen et al revealed equally striking genetic affinities between representatives of the two groups, reporting not only that their data

showed that the Biaka Pygmies have one of the most ancient RFLP sublineages observed in African mtDNA and, thus, that they could represent one of the oldest human populations

but also that

the Kung exhibited a set of related haplotypes that were positioned closest to the root of the human mtDNA phylogeny, suggesting that they, too, represent one of the most ancient African populations (Chen et al 2000:1362).

This pioneering study was among the earliest of many to propose a 'pedigree', not only for Bushmen, but Pygmies as well. Especially noteworthy with respect to the Kalahari debate is the *distinction* they go on to draw between two groups of Bushmen:

Comparison of *Kung* and *Khwe* CR sequences with those from other African populations confirmed the genetic association of the *Kung*

with other Khoisan-speaking peoples, whereas the *Khwe* were more closely linked to non-Khoisan speaking (Bantu) populations (ibid).

In their essay 'Foragers, Genuine or Spurious', 'traditionalists' Solway and Lee make a point of distinguishing between the !Kung speakers (*Ju/'hoansi*) of Dobe, who appear to have maintained a traditional foraging lifestyle in relative isolation, and another 'Bushmen' group, the San of Western Kweneng, whose history reveals long association with neighbouring Bantu tribes. It is the Kweneng San, not the !Kung, whose history they see as in accordance with the 'revisionist' scenario, an interpretation of the past that, as they argue, ought not be applied wholesale to all Bushmen groups (Solway & Lee 1990). A similar distinction would appear to apply with respect to the musical evidence, as will be discussed in the following section.

Since the genetic evidence so strongly suggests that both the *Biaka* Pygmies and !Kung (*Ju/'hoansi*) Bushmen stem from the same ancient 'founder' population, it is not difficult to infer that the almost indistinguishable musical practices of the two groups may

well date to at least the time of their divergence from that same population – a period that could, according to the aforementioned genetic research, date to at least 76,000, but possibly as much as 102,000, years ago (Chen et al 2000:1371). Such a conclusion, if corroborated, would totally transform our notion of cultural evolution and the role of tradition in its history.⁴

7 Similarities and differences

Not everyone is convinced of this remote and seemingly unlikely connection, however, and indeed, there is room for scepticism. The classic studies of Pygmy and Bushmen music cited above were based on the recognition of a significant number of striking similarities. Strictly speaking, however, it is not enough to simply identify similarities between one group and another. To establish that such similarities are meaningful, one must also identify significant *differences* between these groups and all others, and then look for patterns based on *both* similarity *and* difference. I recently conducted such a search, based on a newly revived and expanded version of the Cantometric da-

Table 1 Areal Distribution of Interlock

Name	Sample Size	Interlock
ANDES	40	7.50%
INNERAMAZONIA	84	15.48%
EAST BRAZIL	76	6.58%
ORINOCAN	68	13.24%
CARIBBEAN	17	5.88%
CENTRALAMERICA	44	9.09%
CALIFORNIA	36	30.56%
N. WEST COAST	40	2.50%
ARCTICAMERICA	87	12.64%
ARCTICASIA	106	6.60%
SOUTH CHINA	93	9.68%
N.E. ASIA	119	1.68%
S.E. ASIA	126	1.59%
WEST INDONESIA	197	2.54%
NEGRITO	14	7.14%
EAST INDONESIA	20	10.00%
NEW GUINEA	308	10.06%
MELANESIA	212	10.85%
EAST POLYNESIA	61	3.28%
WEST SUDAN	100	5.00%
EAST SUDAN	67	11.94%
NILOTIC	115	5.22%
AFRICAN GATHERERS	90	57.78%
S.AFRICAN BANTU	78	5.13%
CENTRAL BANTU	93	7.53%
N.E. BANTU	110	0.91%
MADAGASCAR	68	10.29%
EQUATORIAL BANTU	105	15.24%
GUINEA COAST	66	7.58%
AFRO-AMERICAN	460	1.74%
OLD EUROPE	425	5.88%
WEST EUROPE	153	1.31%
W. EUR. OVERSEAS N.	54	1.85%
SAHARA	82	17.07%
THE HORN	108	27.78%
VIL. INDIA NORTH	108	0.93%

tabase, focusing on two traits widely recognised as especially distinctive and characteristic features of both traditions: *interlock* and *yodel*.

The Cantometric definition for *interlock* is as follows:

The [singing] group is divided into two or more parts which are rhythmically distinct and melodically complementary. Often there is no perceptible leadership – each individual is equally important; but, as distinct from L//N [point 7 on the same line], *there is a high degree of coordination between the parts*. Although some singers may be duplicating another part at the octave or unison, the general impression is one of a group of individuals, each with his own part, interacting in such a way as to create a homogeneous texture (Lomax & Grauer 1968:40).

Yodel is defined as:

A distinctively liquid, wide-open, extremely relaxed way of singing, often, but not necessarily, characterized by quick, wide, and apparently

effortless leaps in pitch which pass from chesty tone to falsetto (or head tone) and back again (ibid:72).

The result of a search for the presence of interlocked vocalising throughout the worldwide sample are presented in Table 1, broken down according to the standard areal groupings adopted for the Cantometrics project. Those areas where no interlocked performances were found are not listed. (A complete listing of all areas represented in the Cantometric sample is presented in Appendix 2.)

The leftmost column lists area names, the middle column total sample size for each area, and the rightmost column the percentage of interlocked performances from each sample. 'African Gatherers', a little more than halfway down the list, has by far the highest percentage: 57.78%.⁵ Table 2 displays the world distribution of yodel. Again, the African Gatherer sample stands out, at 52.22%. No other area is represented by more than 14.29%.

Table 2 Areal Distribution of Yodel

Name	Sample size	Yodel
ARG. CHACO	29	3.45%
INNER AMAZONIA	84	2.38%
EAST BRAZIL	76	1.32%
ORINOCAN	68	1.47%
CENTRAL AMERICA	44	2.27%
CALIFORNIA	36	2.78%
N. WEST COAST	40	2.50%
ARCTIC ASIA	106	13.21%
CENTRAL ASIA	107	2.80%
SOUTH CHINA	93	10.75%
N.E. ASIA	119	5.88%
HIMALAYAS	43	9.30%
TRIBAL INDIA	165	1.21%
S.E. ASIA	126	4.76%
WEST INDONESIA	197	2.54%
NEGRITO	14	14.29%
EAST INDONESIA	20	10.00%
NEW GUINEA	308	5.84%
MELANESIA	212	10.38%
EAST POLYNESIA	61	9.84%
WEST POLYNESIA	76	3.95%
WEST SUDAN	100	4.00%
EAST SUDAN	67	5.97%
NILOTIC	115	2.61%
AFRICAN GATHERERS	90	52.22%
S.AFRICAN BANTU	78	12.82%
CENTRAL BANTU	93	1.08%
N.E. BANTU	110	3.64%
MADAGASCAR	68	1.47%
EQUATORIAL BANTU	105	7.62%
GUINEA COAST	66	6.06%
AFRO-AMERICAN	460	1.52%
OLDEUROPE	425	4.71%
WEST EUROPE	153	1.96%
W. EUR. OVERSEAS S.	47	4.26%
WEST MEDTRN. EUROPE	95	2.11%
LATIN AMERICA	90	4.44%
SAHARA	82	2.44%
THE HORN	108	8.33%
NEAR EAST	103	2.91%

Table 3 Distribution of interlock and yodel in sub-Saharan Africa

	Sample Size	No. Interlock	% Interlock	No. Yodel	% Yodel
1 Pygmies (Aka, Baka, Bedzan, Binga, Mbuti)	47	32	68%	27	57%
2 "Twa" Pygmies	4	0	0	0	0
3 Ju/hoansi Bushmen	21	15	71%	15	71%
4 "Khwe" Bushmen	6	0	0	0	0
5 Mikea (Madagascar)	8	4	50%	4	50%
6 Wayto (NW Ethiopia)	2	1	50%	0	0
7 All other hunter-gatherers (El Molo, Hadza, Sandawe)	10	0	0	0	0
8 All other groups in Sub-Saharan Africa	873	88	10%	44	5%
9 All other groups coded as interlocked	257	88	34%	24	9%

Now that we have some idea where interlock and yodel fit in our worldwide sample, let's return our attention to Sub-Saharan Africa. Table 3 summarises the distribution of both interlock and yodel within our sample for this region. Note that the Pygmy groups have been divided in two, with the great majority on the first row and only a small 4-song sample from the so-called 'Twa' Pygmies in the second. Actually the word 'Twa' is misleading as various Pygmy groups have been given that name by various people at various times. What I refer to here are the 'Twa' of Rwanda, who, in the relatively small sample I have been able to find for them, show no signs of either interlock or yodel. They are the only Pygmy group whose music I have heard who (apparently) do not vocalise in this manner. Not only do all the other Pygmy groups employ interlock, but, as should be evident from row one, this mode of group vocalisation would seem to predominate (68%). The *Ju/hoansi* (aka *!Kung*) Bushmen are also coded with interlock in the great majority of cases (71%). As with the Pygmies, however, not all Bushmen groups vocalise in this manner.

The group labelled *Khwe* in our sample employs neither interlock nor yodel, but tends to sing in typically Bantu 'call and response' style, a difference that could be significant with respect to both the genetic and archaeological evidence. Recall the last sentence quoted from Chen et al, above, during our discussion of the genetic affinities between certain Pygmy and Bushmen groups:

Comparison of *Kung* and *Khwe* CR sequences with those from other African populations

confirmed the genetic association of the *Kung* with other Khoisan-speaking peoples, whereas the *Khwe* were more closely linked to non-Khoisan speaking (Bantu) populations.

Recall also, the distinction drawn by Denbow and Lee between the cultural history of the *!Kung* and the San of Kweneng.

Our *Khwe* sample is drawn from a CD containing the music of two *Khwe* speaking Bushman groups, the *Bugakhwe* and *!Anikhwe*, from the Okavango Panhandle of Botswana. Ethnographic evidence suggests that, like the Kweneng San studied by Lee, these are also 'assimilated' groups.⁶ While it is not clear from the notes accompanying the CD which of the two *Khwe* groups is represented on which track, all the Okavango recordings are quite close in style to what could be called 'mainstream' Bantu. As our '*Khwe*' sample is relatively small and the ethnographic, ethnological and archaeological issues so complex, no firm conclusions can be drawn. But the possibility of a correlation between genetic and musical evidence from these two apparently very different Bushmen groups is of the greatest interest and certainly deserves further investigation.

Continuing with our analysis of Table 3, the *Mikea* (considered by some to be the 'aborigines' of Madagascar) and *Wayto* (or *Weyto*) of Ethiopia each have a row of their own, as it is not clear to me where they belong. Both are hunter-gatherers, but neither is classed with either Pygmies or Bushmen. As you can see, both groups have been coded with interlock (50%), though the *Wayto* sample is too small to properly assess. Interlock has not been coded for any of

the other hunter-gatherer groups in our sample (*E! Molo*, *Hadza* and *Sandawe*), though only the *Hadza* sample is currently adequate.

The first seven rows represent hunter-gatherers exclusively. The last two enable us to assess the degree to which interlocked vocalising and yodel is found among all other sub-Saharan groups sampled. As can be seen in row eight, from a total of 873 performances representing these groups, only 88, or 10%, employ interlock. Row nine represents a subset of the above, all songs from all such groups with at least one instance of interlock coded for each. While the great majority of performances in our Pygmy and Bushmen samples are interlocked, this type of vocal interaction is found only 34% of the time among those farmers and/or pastoralists where any instances of interlock have been coded. Interestingly, most such groups are located in areas adjacent to or in the vicinity of, Pygmy or Bushmen populations.⁷

Let us now turn to a consideration of the results in the same table for yodel, another highly distinctive and also rare, mode of vocalising. Yodel is found among (mainstream) Pygmies 57%, and *Ju/'hoansi* Bushmen 71% of the time, just about as common as interlock in both groups, and 50% among the *Mikea* — but not at all among the *Wayto*, *Twa* or *Khwe* groups, nor any of the other hunter-gatherers.⁸ From rows eight and nine we see that yodel is found in only 5% of our non-hunter/gatherer groups and not much more, 9%, among all such groups using interlock. Clearly, the use of *both* interlock *and* yodel is characteristic of most Pygmy and Bushmen vocalising, yet rare in either Africa or anywhere else.

8 Conclusions

The above analysis illustrates the power of Cantometrics in comparing stylistic features from the musical traditions of many different populations. This methodology enables us to search for differences as well as similarities, seeking out patterns of all sorts, from the strictly local to the most wide-ranging, encompassing vocal styles from all over the world. We can learn only so much from even the most concentrated listening, as we have no way of knowing about

all the many examples we have not heard, and whether they would be similar to or different from the ones we have. Working ones way through the literature is not much better, because it's all too easy to get lost in all the details and too difficult to keep track of what goes with what and what doesn't. By operating methodically, using various types of relatively simple, easily understandable statistics, drawn from the Cantometrics database, to assess *both* similarities *and* differences, it is possible to more objectively support the claim implied by Gilbert Rouget's conjecture, 'that the Pygmies and Bushmen are of common stock, and that their dance and music represent the remainder of a common cultural heritage'.⁹

To summarise, the musical evidence establishes a powerful behavioural/semiotic link between certain Bushmen and Pygmy groups, strongly suggesting a common cultural ancestry, possibly as remote in time as the genetic one, at the very least dating back tens of thousands of years. Moreover, it distinguishes between groups like the *Ju/'hoansi*, regarded by 'traditionalist' anthropologists and geneticists as representing an extremely old, isolated population, and at least one *Khwe* group, apparently more closely aligned, culturally, genetically — and musically — with Bantu speakers. The musical evidence would therefore seem to support the cultural indigeneity of certain Bushmen groups as firmly as the genetic evidence supports their biological indigeneity, thus tilting the preponderance of evidence in the Kalahari debate firmly in the direction of the 'traditionalist' position.

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Endnotes

1 Since Cantometrics was designed as a tool for broad-based comparative research on a worldwide scale, most of the parameters had to be defined in very general terms. For example,

instead of providing a detailed analysis of melodic structure, the coder rates it as either through-composed, complex strophe, simple strophe, complex litany, or simple litany, with

three possible degrees of variation. Additional lines code for number of phrases, phrase length, melodic contour, etc. Other parameters, such as degree of embellishment, loudness, tempo, tremolo, etc. are rated along three to six-point scales. Because so many of the ratings tend to be general and to some degree subjective, Cantometrics is most reliable as a heuristic tool for searching and sorting along very general lines.

2 Partly because most musicologists were unfamiliar with such a broad-based, statistically oriented approach, partly due to sampling issues, but also because of certain questionable claims made by Lomax regarding some of his results, Cantometrics was never able to gain a secure footing among ethnomusicologists during his lifetime. Interestingly, many of the criticisms currently being levelled at the methodologies of the genetic anthropologists resemble those once directed at Cantometrics. I have provided a detailed response to several of the most typical criticisms in Grauer & McCormick 2005.

3 As might have been expected, a 'revisionist' position has emerged on this matter as well, from ethnomusicologists Susanne Fürniss and Emmanuelle Olivier (Fürniss 2006; Olivier 1998; Olivier & Fürniss 1997, 1999), for whom 'the conception that the Ju/'hoansi [Bushmen] have of their music is radically opposite to the Aka's [Pygmies]' (Fürniss 2006:201). Their view is based on a conviction that Pygmy music is conceived polyphonically, while 'for the Ju/'hoansi, on the other hand, the basis of counterpoint is a monodic idea, which is manifested in a plurivocal manner' (Olivier & Fürniss 1999:131), an approach to multipart performance technically termed 'heterophony'. This highly debatable, simplistic interpretation, irresponsibly presented as proven fact, is now being widely disseminated in ethno-musicological and anthropological circles in support of the revisionist view generally.

Much in Olivier's writings on Bushman music echoes ideas first presented by Nicholas England (1967), whose recognition that many Ju/'hoansi songs do indeed employ 'a kind of elaborated heterophony' (ibid:61), did not prevent him from concluding that 'Bushman music . . . is polyphonic at its very basis' (ibid:65). In addition to some largely heterophonic examples, which might seem to support Olivier's view, England presents a transcription of an unequivocally polyphonic performance (ibid:63, Example 6), the sort of thing that would be impossible if the "revisionist" interpretation of Ju/'hoansi musical thinking is valid. As can be easily demonstrated, even in certain examples provided by Olivier and Fürniss themselves, heterophony *and* polyphony are commonly *conflated* in the music of *both*

groups, in a complex, highly idiosyncratic manner common to both, strongly suggesting an even closer bond than had previously been suspected.

The views of Olivier and Fürniss were addressed in a footnote of my recently published essay, 'Echoes of our forgotten ancestors' (Grauer 2006a:46-47). A more extensive treatment appears in my 'Author's Reply' in the same volume (Grauer 2006b:114-116). I am currently preparing a comprehensive essay reflecting some of the very real insights gained through careful study of their undoubtedly valuable work, while at the same time demonstrating that the conclusion they have drawn from it is erroneous.

4 While not all geneticists would accept such an early period for Pygmy-Bushman divergence, most would probably agree to a time depth well within the late Palaeolithic. Grauer 2006a (6-15) presents an extensive argument supporting the logic behind the notion that Pygmy/Bushman style could have survived for such a long period of time.

5 Interestingly, the next highest area is among native Americans in California, where 30.56% percent of the sample is coded as interlocked, thanks largely to a very unusual tradition of interlocked vocalising among a single California native American group, the Hupa. Such a practice is not at all typical for native Americans north of Mexico, but not uncommon among the Inuit, far to the north, certain native peoples of Siberia, and the Ainu of Japan. The relatively large percentage is due to an artefact of sampling, since the Hupa are the only group in this area represented by an adequate sample.

6 According to Matthias Brenzinger, '||Anikxoe [sic] are never included when Kxoe [sic] talk about Kxoe 'proper'. Even the Kxoe in Botswana, where the ||Anikxoe live, exclude the latter when referring to Kxoe as an ethno-linguistic entity' (Brenzinger 1998:324).

7 More specifically, among non-forager groups coded with at least one instance of interlock, the Mamvu, Lese, Bira and Budu are known to have had close associations with the Mbuti pygmies; the Ngundi with the Aka pygmies; the Himba, Pondo, and Lozi with Bushmen groups.

8 Yodelling has not been found among the *Bedzan*, however.

9 Cantometrics, as an essentially heuristic method, cannot, of course, be expected to produce definitive conclusions in itself. Nevertheless, when the cumulative results of several different Cantometric searches, old and new, correlate strongly with results from other sources (in this case, 'classical' ethnomusicology, ethnology and genetics) to produce a clear and compelling pattern, such a pattern must be taken very seriously indeed.

Appendix 1 Some musical examples

(The audio clips referred to below are Internet links. For complete references, see Discography.)

Like the 'purloined letter' of Poe's edifying detective story, the musical evidence had been sitting in full view of the Kalahari debaters all along, so readily available as to be effectively invisible. While music is not really a 'universal language' as once claimed, many different kinds of music are enthusiastically appreciated and even cultivated in our society, to the point that recordings of some of the most esoteric musical practices from the most remote corners of the world have been widely available for many years. Because of its unique properties and extraordinarily important social role, music has been widely documented in a manner that is special, totally unlike just about any other type of human behaviour one could name.

The Cantometric method was designed to take advantage of this cultural treasure trove. But you needn't be a Cantometrics expert to listen and judge for yourself. Indeed, Cantometrics was designed to reflect the sort of judgments untrained listeners make when listening to music, along parameters such as: the social interaction of the performers, the roles they play, how smoothly and precisely they blend, how fast the music is going, how repetitive it is, the degree of loudness, ornamentation, vocal tension, vocal rasp, accent, etc. Such judgments are usually made unconsciously, but they can readily be brought into consciousness and put to use when comparing different performers, compositions, styles, genres, etc, something most music lovers often find themselves doing when discussing their favourites with friends.

Naturally, there is a difference between comparing styles with which one is familiar, and evaluating recordings of music from other cultures, with traditions very different from one's own. While there is no substitute for the sort of systematic comparative study afforded by a methodology such as Cantometrics, the characteristics of Pygmy and Bushmen music are so distinctive and striking that even the most inexperienced and untrained listener ought to be able to recognise what is essential.

Some of the most important things to listen for: the use of yodel; the interlocking of voices, to produce a sometimes highly intricate counterpoint; a frequent

tendency for one part to be completed by another part, with the effect of a melody tossed back and forth between two or more voices, a practice similar to what, in Medieval Europe, was called 'hocket'; an extraordinarily well matched and fluent blending of the voices; intricate, precisely executed, polyrhythms; the predominance of meaningless vocables, usually open vowels, such as 'oh' or 'ah'; highly repetitive, but also varied, melodic structures, based on short motives; wide melodic leaps; almost complete lack of embellishment; a continuous flow of interwoven sound with neither pauses nor clearly articulated phrase endings (an underlying melodic phrase structure does usually exist, but is very difficult to hear); an intricate, often polyrhythmic percussion accompaniment, usually produced by handclaps (ethnographic evidence strongly suggests that neither Pygmies nor Bushmen used drums prior to contact with Bantu peoples).

Now for some examples. Let's begin with an *Aka* Pygmy [Divining Song](#), as recorded in the Central African Republic by Simha Arom. The opening affords a good opportunity to hear the characteristically open throated, relaxed and fluid sound of a typical Pygmy voice. Note the unusually wide melodic intervals between each note and the next, produced largely through alternation between mid-range 'chest' tones and high, hooted 'head tones', so characteristic of Pygmy yodelling. Listen carefully as a second voice enters, interlocking quite elegantly with the first.

For comparison sake, the next example is from the *Ju/'hoansi* Bushmen, as recorded by Emannelle Olivier: [The Eland](#). This time the voices are female, but the basic effect sounds, to me at least, remarkably similar, with wide intervals, prominent use of yodel, open-throated, fluid voices and equally elegant interlocking 'counterpoint'.

Next, an [Elephant Hunting Song](#), by *Mbuti* Pygmies, living hundreds of miles away from the *Aka*, in the Republic of Congo, recorded by anthropologist Colin Turnbull. Next, from another *Ju/'hoansi* Bushmen group, in the village of Dobe, in northern Botswana: [//Kaa](#) (from the CD *Mongongo*, recorded by John Bready). Hocketing is particularly apparent here, with each singer contributing only one or two notes to produce an intricately interlocked resultant. Here's yet another Bushmen group, the *Qwii*, also from Botswana, but considerably farther south: [Mantshwe](#) (from *Bushmen: Qwii – The First People*, EUCD 1553). Compare with this, from yet another Pygmy group, the

BaBenzele, [Song After Returning from a Hunt](#) (from the *Anthology Of World Music: Africa – The Ba-Benzele Pygmies*) — note the hocketing between voice and two one-note pipes at the beginning.

I'll conclude with an example of a very different vocal style, also from Brearly's Mongongo CD, but from the *Khwe* Bushmen discussed in the body of

this essay, from Okavango, a group that has, apparently, assimilated with neighbouring Bantu peoples: [Taa khwena li ye te](#). Note the completely different, relatively harsh, vocal timbre and typically Bantu 'call and response' interplay between solo voice and chorus. There is no trace of interlock, yodel or polyphony, unison singing being the rule on all the Okavango tracks.

Appendix 2 A Complete Listing of All Areas in the Cantometric Sample

PATAGONIA	MICRONESIA
ARG. CHACO	MELANESIA
ANDES	EAST POLYNESIA
INNER AMAZONIA	WEST POLYNESIA
MATO GROSSO	WEST SUDAN
EAST BRAZIL	EAST SUDAN
ORINOCAN	NILOTIC
CARIBBEAN	AFRICAN GATHERERS
CENTRALAMERICA	S.AFRICAN BANTU
MEXICO	CENTRAL BANTU
S.WST AMERICA	N.E. BANTU
PUEBLO	MADAGASCAR
EAST WOODLANDS	EQUATORIAL BANTU
PRAIRIE	GUINEA COAST
PLAINS	AFRO-AMERICAN
GREAT BASIN	OLD EUROPE
CALIFORNIA	WEST EUROPE
N. WEST COAST	W. EUR. OVERSEAS N.
ARCTIC AMERICA	W. EUR. OVERSEAS S.
ARCTIC ASIA	EAST MEDTRN. EUROPE
CENTRAL ASIA	MEDITERRANEAN
SOUTH CHINA	WEST MEDTRN. EUROPE
N.E. ASIA	LATIN AMERICA
HIMALAYAS	NORTH AFRICA
TRIBAL INDIA	SAHARA
S.E. ASIA	THE HORN
WEST INDONESIA	NEAR EAST
NEGRITO	MIDDLE EAST
EAST INDONESIA	VIL. INDIA NORTH
AUSTRALIA	VIL. INDIA CENTRAL
NEW GUINEA	VIL. INDIA SOUTH

Discography

(The CDs listed below, unless otherwise noted, may be ordered through Internet sources such as Amazon.com, CD Universe, Tower.com, etc)

"Aka Divining Song": Musical Anthology of the Aka Pygmies, recorded by Simha Arom, Ocora, C 560171, published 2002.

"The Eland": Songs of the Ju'hoansi Bushmen, recorded by Emmanuelle Olivier, Ocora, C 560117, 1997.

"Elephant Hunting Song": Mbuti Pygmies of the Ituri Forest, recorded by Colin Turnbull, published by Smithsonian Folkways, ASIN: B000001DK2, 1992. (May be ordered via S/F website, at <http://www.folkways.si.edu/index.html>)

"//kaa": Mongongo, recorded by John Brearly, published by Khumo Ya Ngwao kyngatsi@it.bw, P.O. box 284, Gantsi, Botswana, undated. (May be ordered via their website, at san.org.za/kuru/home.htm)

"Mantshwe": Bushmen: Qwii – The First People, recorded at Decibel Studios, Johannesburg, South Africa, "licensed by Clear Music," EUCD 1553.

"Song After Returning from a Hunt": Anthology Of World Music: Africa – The Ba-Benzele Pygmies, Rounder ASIN: B0000003AO, 1998.

"Taa khwena li ye te": Mongongo (see above).

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