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Studying Cultural Change through Music

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Music is an undeniably important element in human culture. It exists in every known human society and in every period of time for which we have knowledge. Recent suggest that even Neanderthal man made music. (1.) Although it is not yet possible to agree on the actual function of music in any society, the structure of music and the manner in which it is used can tell us much about the society itself, its social structure and stratification as well as telling us much about patterns of diffusion and assimilation.

One of the important pioneers in the analysis of music as a tool in understanding social structure was the late Alan Lomax (1915-2002). He devised a system of music analysis called cantometrics which he applied to hundreds of human societies around the world. His **Folk Song Style and Culture** 1968(2.) details the cantometrics method. Using an analysis system of 37 variables the cantometrics system analyzes a number of characteristics of individual examples of music. These consist of such elements as the relationship between soloist and accompaniment, the degree of rhythmic independence or dependence of participants, various qualities of the voice, tempo, phrased length, range, melodic shape, etc. These 37 variables create a pattern for the individual example and show strong congruence when compared with other examples from the same culture.

Lomax Cantometrics															
Code Sheet - The Musical Situation-Source															
Group or Song:	Language:														
Location															
1) Vocal Gp.	1 2 3 4 5 6 7 8 9 10 11 12 13	0	L	L	-L	L/N	N/L	L/N	N/L	L+N	N+N	L(N)	N(L)	N(N)	W
2) Orch. Relations	1 2 3 5 8 9 12 13	0	/O	/O	O/O	//o	//O	(o	(O						
3) Orch. Gp.	1 2 3 4 5 6 7 8 9 10 11 12 13	0	L	L	-L	L/N	N/L	L/N	N/L	L+N	N+N	L(N)	N(L)	N(N)	W
4) Vocal Org.	1 4 7 10 13	0		M		U		H		P					
5) Tonal Blend-V	1 4 7 10 13	0		b		b		B		B					
6) Rhy. Blend -V	1 4 7 10 13	0		r		r		R		R					
7) Orch. Org.	1 4 7 10 13	0		M		U		H		P					
8) Tonal Blend-O	1 4 7 10 13	0		b		b		B		B					
9) Rhy. Blend-O	1 4 7 10 13	0		r		r		R		R					
10) Words to Non.	1 4 7 10 13	W	O	wo	wo-no	wo-NO		NO							
11) Overall Rhy-V	1 3 6 7 11 13	0	R	l	R-v	R ^v		Ri	Rpa						
12) Grp. Rhy.-V	1 3 5 7 9 11 13	0	Ru	RH	RA	Rp		Rpm	Rc						
13) Overall Rhy-O	1 3 6 9 11 13	0	R	l	R-v	R ^v		Ri	Rpa						
14) Grp. Rhy.-O	1 3 5 7 9 11 13	0	Ru	RH	RA	Rp		Rpm	Rc						
15) Mel. Shape	1 5 9 13	A		T				U		D					
16) Mel. Form	1 2 3 4 5 6 7 8 9 10 11 12 13	t+St	^v	St ^v	St*	StV	Stv	StL	^v	L ^v	L ^v	L ^v	V	Lv	L C
17) Phrase Length	1 4 7 10 13	PP		P		P		p		p					
18) No. of Phrase	1 3 5 6 8 9 11 12 13	8+	5/7	4/A	4/S	3/A	3/5	2/A		1/25					
19) Pos. of Final	1 4 9 11 13	f		f		F		F		FF					
20) Range	1 4 7 10 13	1-2		3-5		5-8		10+		16+					
21) Int. Width	1 4 7 10 13	0		w		w		W		W					
22) Pol. Type	1 3 6 8 10 13	0		DR		lc		Pc	H	C					
23) Embell.	1 4 7 10 13	E		E		e		e		0					
24) Tempo	1 3 5 9 11 13	t-		t-		t		t		T					
25) Volume	1 4 7 10 13	PP		P		N		f		ff					
26) Rubato-V	1 5 9 13)))))		0		0					
27) Rubato-O	1 5 9 13)))))		0		0					
28) Gliss	1 5 9 13	((((((0		0					
29) Melisma	1 5 9 13	M				m		0		0					
30) Tremolo	1 7 13	TR				tr		0		0					
31) Glottel Sh.	1 7 13	GL				gl		0		0					
32) Register	1 4 7 10 13	V-Hi		Hi		Mid.		Low		V-low					
33) Vo. Width	1 3 6 8 10 13	V-NA	NA	Sp		Wi		V-Wi		Yod.					
34) Nasality	1 4 7 10 13	V-NAS	GT.	Intennit.		Slight		None							
35) Raspiness	1 4 7 10 13	Ext	GT	Intennit.		Slight		None							
36) Accent	1 4 7 10 13	V.Force	Fo	Normal		Relaxed		V-Relax							
37) Enunciation.	1 4 7 10 13	V-Prec.	Pre.	No.		Slur.		V.Slur							

Lomax: 37 Variable Fields in Cantometrics.

In an article written by S. Lee Seton and Karen Ann Watson, 1979 (3.), they chose 31 of Lomax; 37 variables and applied this to 147 of Lomax' 233 analyzed cultures. The result was demonstrated in a complex pattern (figure 1) which when viewed from another perspective (figure 2) show a distinct clumping of cultural patterns. When we examine this grouping of cultures we find that model A and model B show the following characteristics.

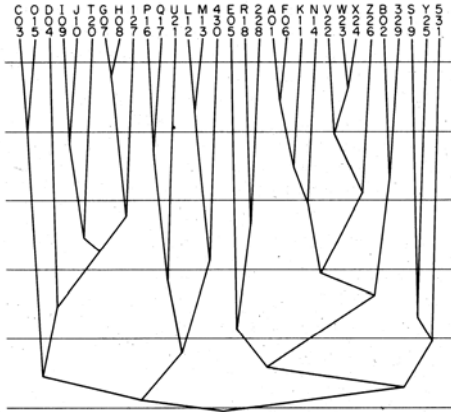


Figure one. From Seton and Watson

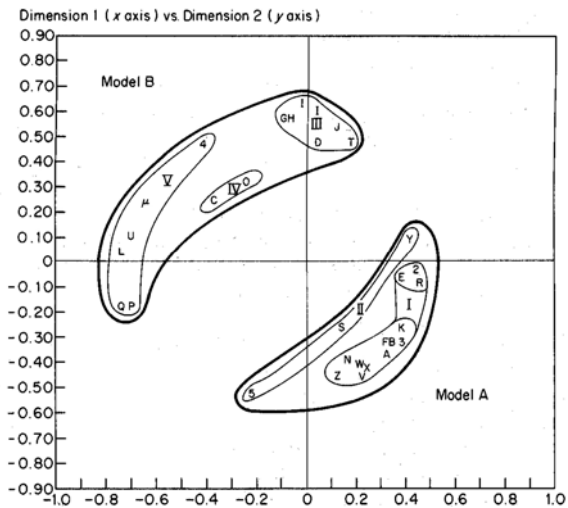


Figure 2 from Seton and Watson

These divide themselves into broad cultural groups, A corresponding to the ancient high civilizations, states, and kingdoms, while B represents the hunters and gatherers and pastoralists and nomad societies. This is something broad and very general and can be easily corroborated by hearing the music.

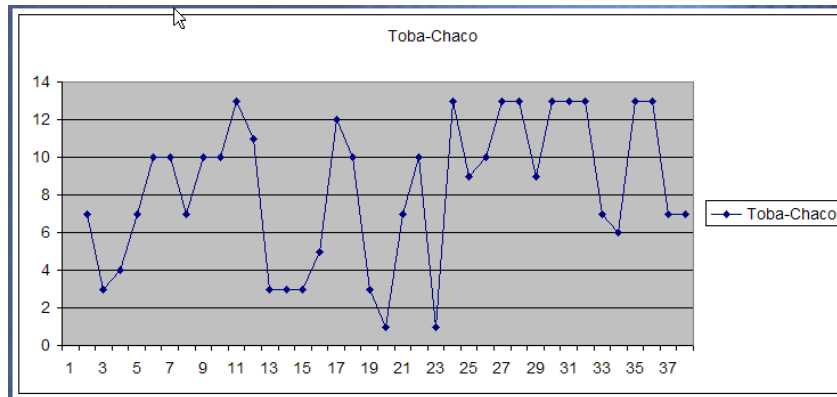
Model A

solo
textually complex
metrically complex
melodically complex
ornamented
usually noisy voice
precise enunciation

Model B

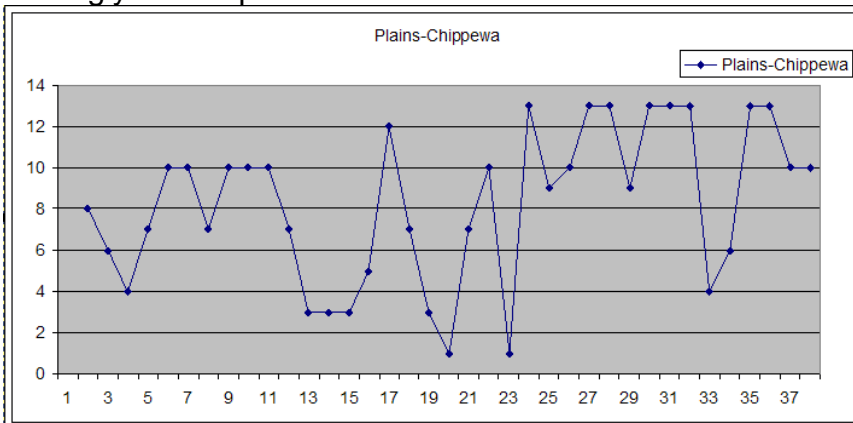
choral, multileveled cohesive
repetitious text
metrically simple
melodically simple
no ornamentation
usually clear voice
slurred enunciation

Looking at more specific detail, interesting parallels and contrasts can be identified. Among the indigenous peoples of the Grand Chaco region of Argentina we find an example of the Toba people which shows a pattern

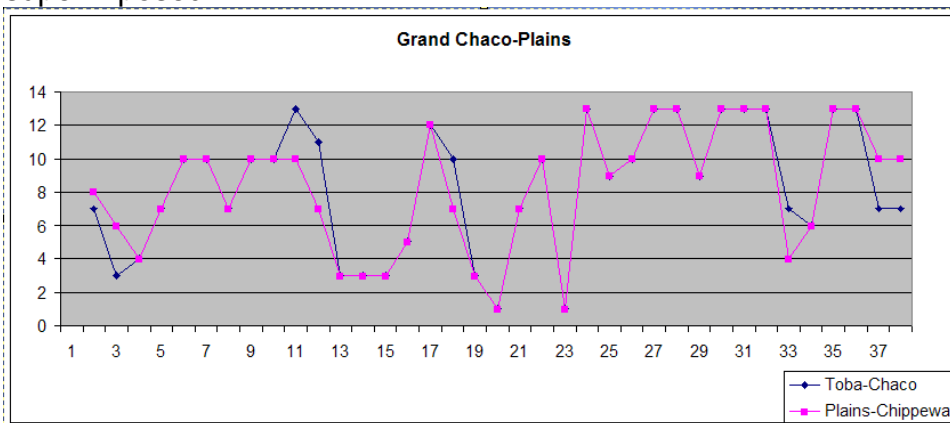


represented through Cantometric analysis as follows:

If we compare this pattern with that of another geographically isolated indigenous American group, the Chippewa people of the Central Plains of the US, we note a strikingly similar pattern.

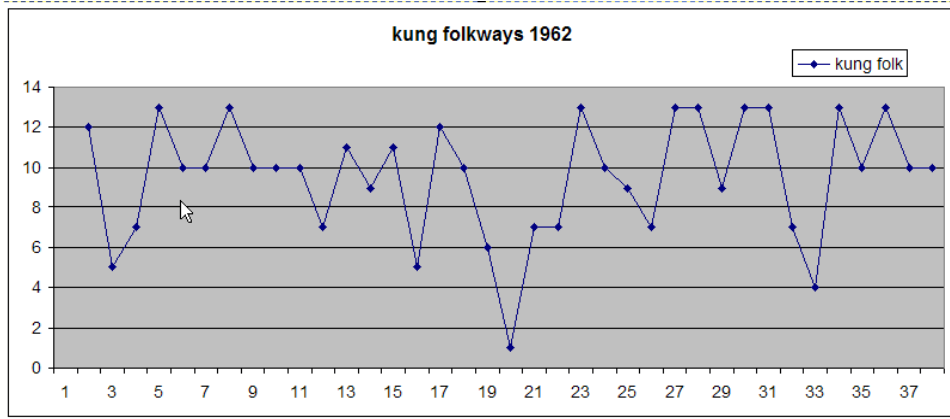


The similarity between these two patterns is evident when they are superimposed.

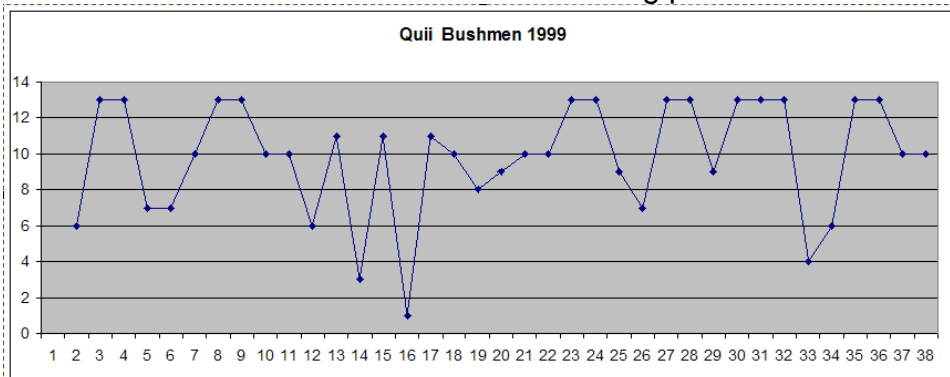


It is clear that the similarities are significant and show congruence of .78.4 in spite of considerable geographic isolation between these two cultures.

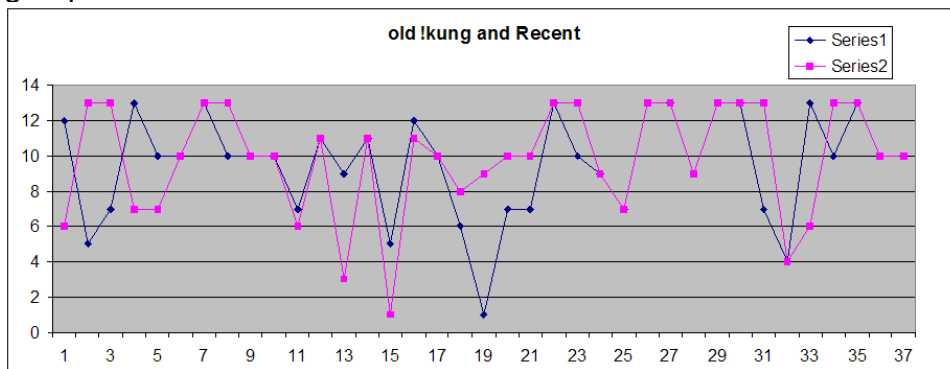
By contrast here are two examples from the same culture, the !Kung San Bushmen of the Kalahari Desert. The first example is of a Boy's Dance Song recorded in 1962.



When we compare this example to a later (1999) recording of the Quii !Kung made in South Africa we observe the following pattern.



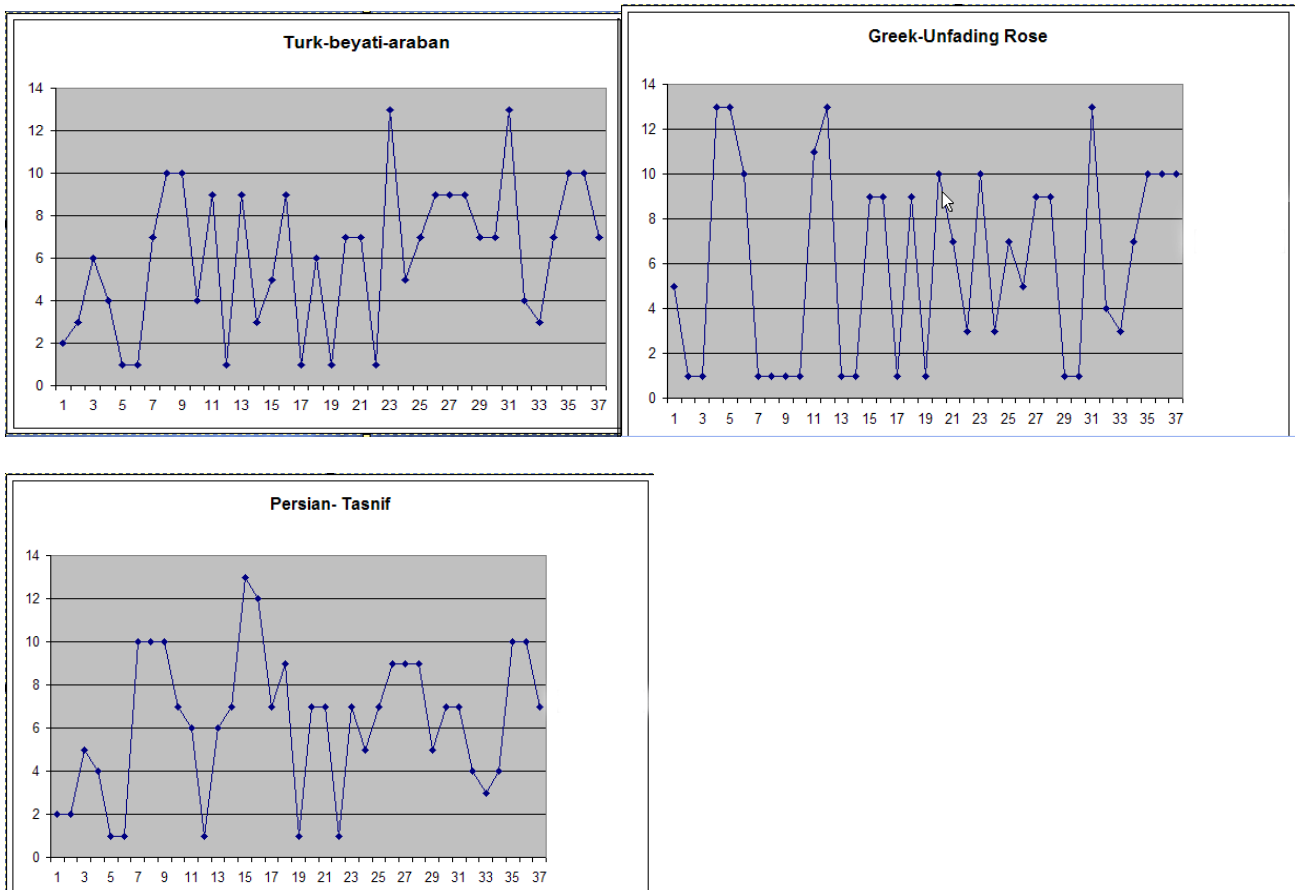
When compared with the previous !Kung example we find a congruence of only .37, a very low number for something coming from within the same ethnic group.



The reason for this great difference within the same ethnic tradition lies in the fact that the second recording was made much later and in South Africa. It is evident that the !Kung were listening to and imitating popular South Africa singing styles, such as *mbube* and incorporating them into their song.

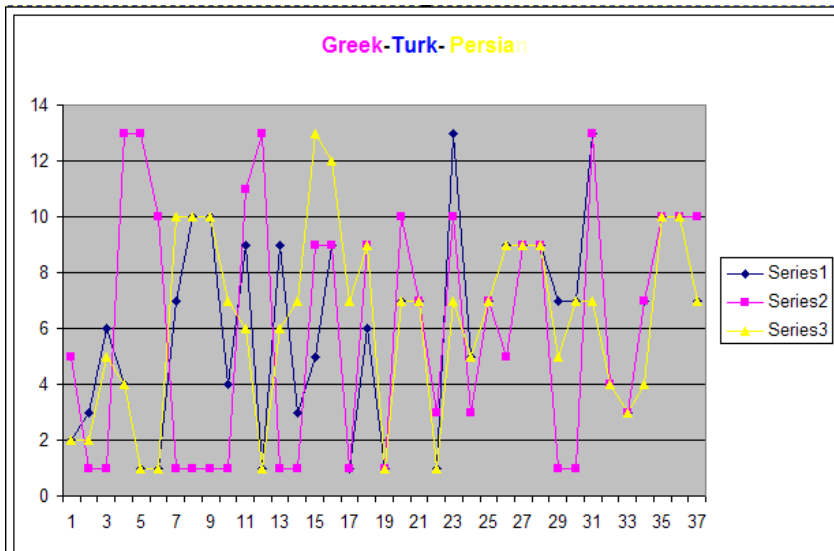
This suggests that there may be long held commonalities of tradition between the Chaco and Chippeway indigenous peoples manifest in their music in spite of the great distance separating them. In contrast the lower level of congruence between the two !Kung examples shows the result of recent and intense outside culture influence, that is pan South African popular culture.

Comparing three different but somewhat related cultures can be similarly documented. Here we compare group singing in the Classical tradition of the Turkish Ottoman Court, Sacred singing in the Greek Orthodox religious tradition and Persian classical singing.

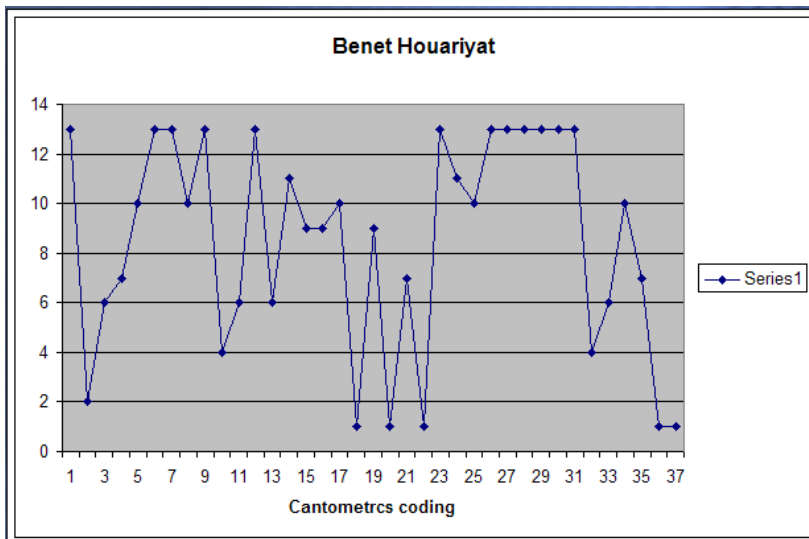


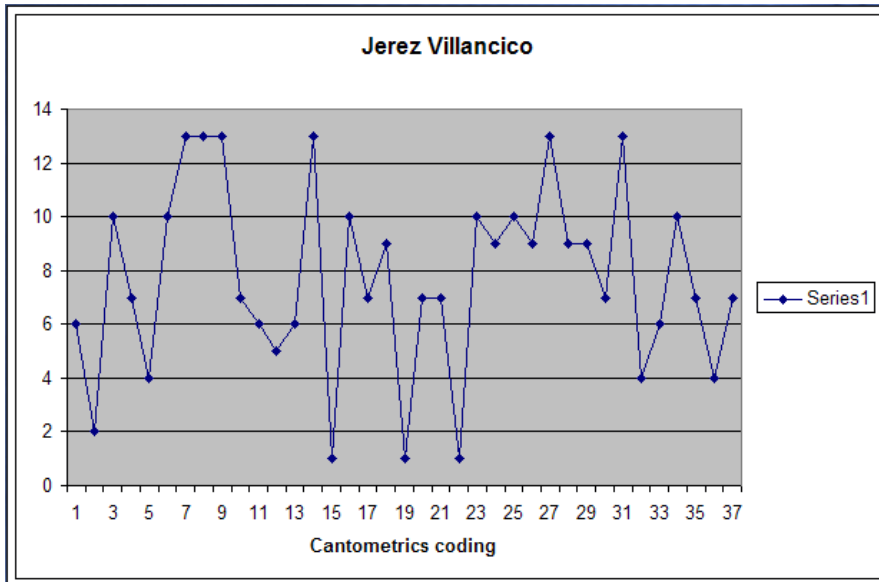
When the three examples are superimposed, the contrast between the patterns of variables can be seen. The levels of congruence also vary. Between the Greek and Turkish examples there is a congruence of .24 while between the Greek and Persian there is also a congruence of .24. The highest congruence is found between the Turkish and Persian examples. While this may at first seem logical, it is nevertheless somewhat surprising because in fact there is close influence between the Greek Orthodox and Turkish Ottoman styles of performance in these examples. Furthermore the Persian example is a solo vocal performance

with a high degree of vocal ornamentation absent in the other two examples. Clearly deeper intrinsic aspects of performance of the Turkish and Persian music forms link them closely together as evidenced in the cantometrics display.

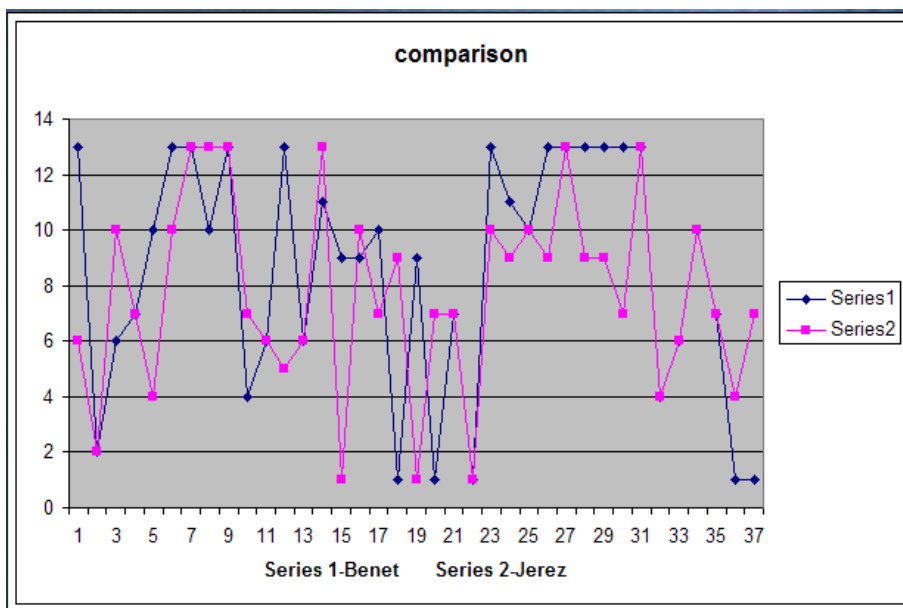


Once again we compare examples with close cultural connections and yet with clear distinctions. The first example is a Berber Women's singing group, Benet Houariyat, from Morocco. The second example is a mixed group (male and female) singing Christmas carols in Jerez, Spain.





Comparison of these two examples reveals a congruence level of .40.5.

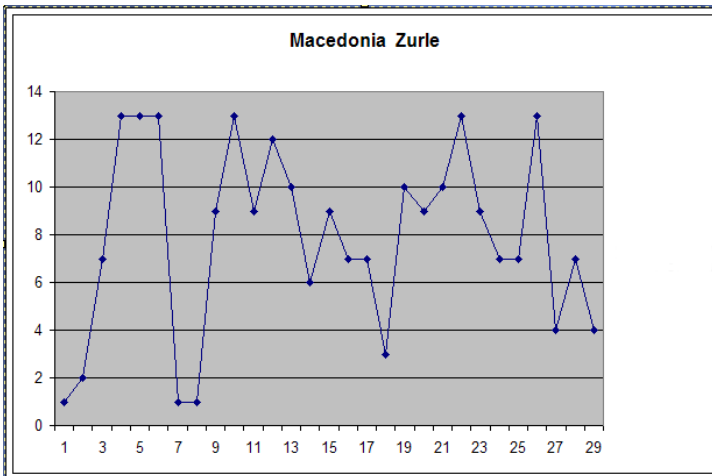
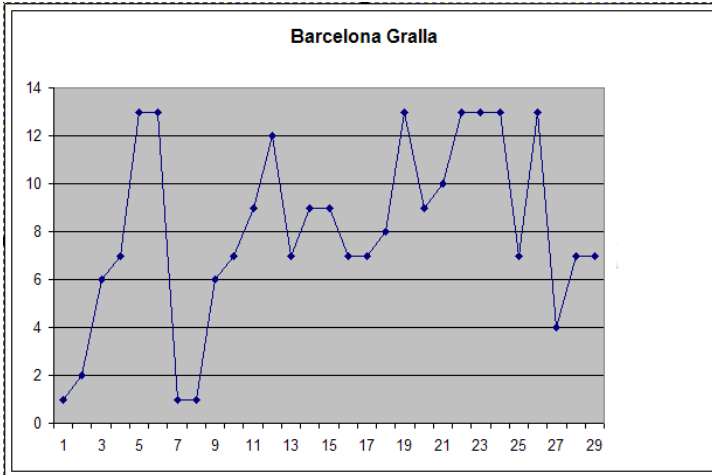


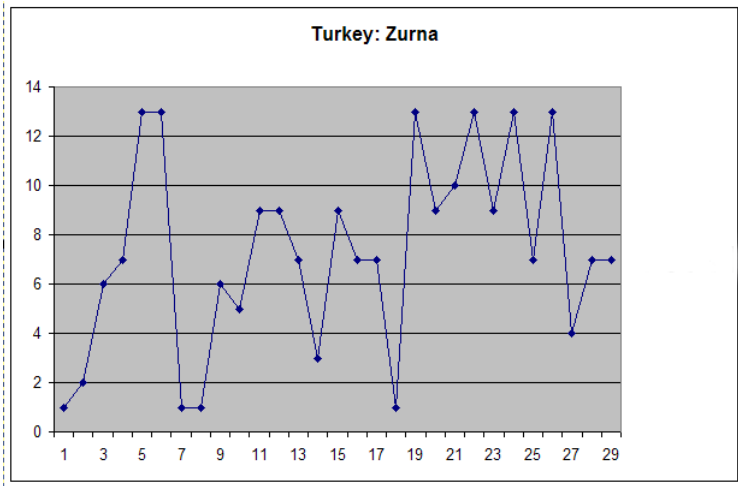
This comparison reveals that many layers of the performance beyond those obvious elements pointing to similarities, such as the handclapping, leader and chorus, etc. outweigh the contrasting differences in melodic form, formal structure of performance, rhythmic structure etc. that are revealed by the cantometric analysis.

During the process of diffusion and dissemination some characteristics are preserved and others discarded or modified in the new cultural context. As an example of this we observe the manner in which one particular instrument and its performance have spread and changed. The double reed conical pipe appears to have first appeared in Turkic Central Asia and perhaps because of its strident sound was soon adopted as a civic music. The

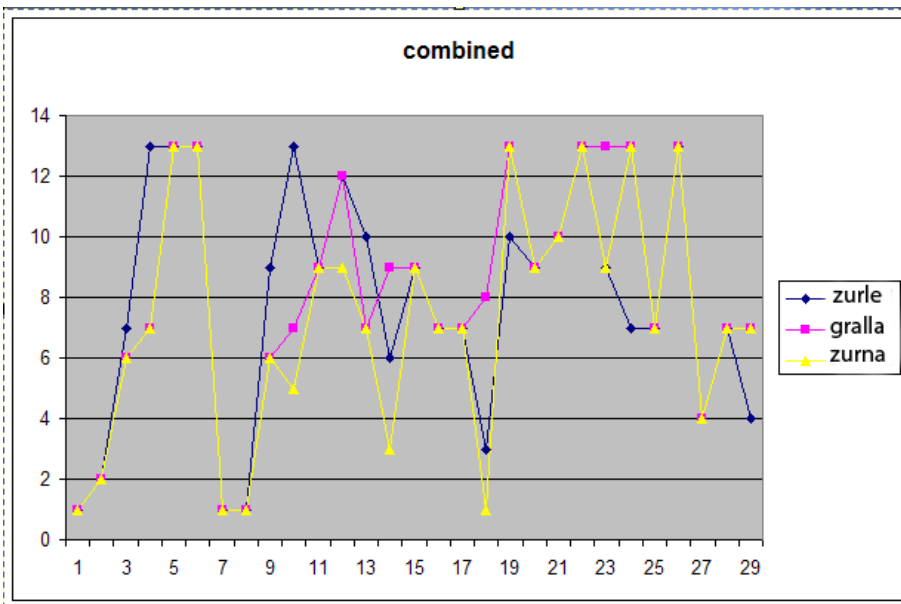
name, zurna, has in many instances been preserved and modified, becoming sona in China shahnai in India. It was used in outdoor ceremonial ensembles from Korea and China to Burma and Thailand, and on to India and the through the ancient Islamic world across North Africa even to the Muslim peoples of Northern Nigeria, and following the influence of the Islamic influence into Spain and throughout the Balkans in Eastern Europe.

I have here chosen three separate examples from isolated regions using this same double reed conical instrument, a group from Barcelona, Spain playing the gralla, A group from Turkey playing the zurna and a Roma (Gypsy) group from Macedonia playing the zurle.





When looked at together we note strongest congruence between the example from Spain and the one from Turkey.



Spain-Turkey .82.8
 Macedonia Turkey .62.1
 Macedonia-Spain .62.1

Comparing all three examples we note that the highest degree of congruence exists between the Spain and Turkey examples. The general pattern of cultural diffusion and contiguity would have suggested that the closer connection would have been found between the Turkish and Macedonian examples. In support of that it is interesting to note that many of the Macedonian zurle players continue to speak Turkish, so close do the cultural ties remain.

A closer look at the parallels between the Spain and Turkey examples reveals significant pattern similarity. The internal organization of the ensembles first reveals an important distinction. The Turkish and Spanish examples show the instrumental group playing in strict formal compliance with each other while the Macedonian group has improvisation and variation within the group. While this variation and freedom may have been part of earlier Turkish performances it was absent from the example used. Also the rhythmic improvisation going on in the Macedonian example and absent in the other two examples shows differences in the cantometric pattern. In fact it is the degree of freedom and embellishment in the rhythm as well as melody in the Macedonian example, absent in the other two that makes for greater degree of congruence between the Spanish and Turkish examples.

It would of course take deeper research into each of the cultural contexts to discover the reason for the contrasts and parallels found in these three examples. What is important however is that the cantometric analysis points out the differences and shows where further and in depth research is required. Casual listening might suggest that all three examples were very similar. The value in this case of the application of the Cantometric analysis is that it underlines important patterns that might not at first be noticed. As such the cantometric tool of Alan Lomax can serve as a useful and powerful tool in the aid of cultural research.

1. Gray, Patricia M. and Bernie Krause, Jelle Atema, Roger Payne, Carol Krumhansl, Luis Baptista, *The Music of Nature and the Nature of Music*, Science, 2001 291: 52-54.
2. Lomax, Alan. *Folk Song Style and Culture*. Washington, American Association for the Advancement of Science [1968]
3. Seaton, S. Lee, and Karen Ann Watson. "Continuity and Discontinuity in Song Styles: An Ordinal Cross-Cultural Classification." *The Performing Arts: Music and Dance*. Ed. John Blacking and Joann W. Kealiinohomoku. The Hague: Mouton, 1979, 93-107.

1979 Working with the data reported in Seaton and Watson (1972), the authors confirm Lomax's individualized and group models for folk song styles using nonmetric configuration and clustering. But beyond the discontinuity of these two models, they discover continuity among all musical performances in that the two models are configured as parabolic, forming cluster arcs; taken together, they form a circumplex, or an ellipse. The elliptical world song map is explained functionally as reflecting the "musical utility" of a given song style, and those song styles are grouped cross-culturally into six clusters (high cultures, states, old kingdoms, tribes, high folk, and villagers), which are in turn joined into two superclusters labeled provisionally "Civilizations" and "Primitives"? the former corresponding to Lomax's individualized Model A, the latter to the group Model B.

