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INTERNATIONAL SOCIETY FOR TRADITIONAL ARTS RESEARCH — New Delhi

IN THIS ISSUE:

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ISTAR Newsletter

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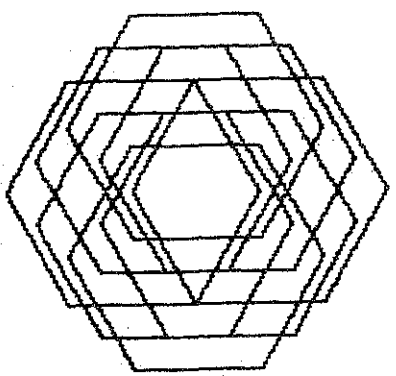

SOCIETY NEWS

In May 1983, ISTAR has become a corporate member of the International Council or Traditional Music, New York, and an affiliated body of the National Centre for Performing Arts, Bombay.

A scheme of collaboration with the National Centre for Performing Arts, based on a share of expenses on seven projects, has been initiated in July 1983 with the support of the two projects directed by Messers James Arnold and Bernard Bel respectively.

All research projects have been started between June and November 1983. A Project Screening Committee has been nominated to examine the progress of the current projects, and evaluate new project proposals.

A new Governing Body has been elected by the General Body of ISTAR on 29 October, 1983. The Office Bearers newly elected are Mr Srivatsa Goswami, President, Mr Joep Bor, Vice-President, Mr Peter F. Mueller, General Secretary, Mr Bernard Bel, Treasurer, Mr Amarjit Singh, Mr R.P. Sinha and Mr James Kippen.

We welcome:

Sri Srivatsa Goswami, member of an eminent familiy of religious leaders and scholars of Sri Radha Ramana Mandir, Vrindaban, studied philosophy at Banaras Hindu University, and was a visiting scholar at the Centre for the Study of World Religions, Harward University, USA, in 1977-78. He toured extensively to participate in conferences and lectured in the major universities of the USA, Japan and Europe. He co-authored (with J.S. Hawley) 'At Play with Krishna' (Princeton University Press, 1981) and is the editor of forthcoming volumes on Vaisnava philosophic traditions for the Encyclopedia of Indian Philosophy (American Institute of Indian Studies / Princeton University Press). He is the director of the Sri Caitanya Prema Sansthana, where he has organised a number of Dhrupad festivals, including a European tour of Dhrupad and Raslila in April-May 1983 (in cooperation with the Extra-European Arts Council and the Indian Council for Cultural Relations).

Joep Bor, a Dutch musician and musicologist, grew up in a family of classical violinists. He graduated both as a botanist in the University of Amsterdam and as a musicologist in the Universities of Utrecht and Benares. He has studied sarangi since 1971 under Pt Ram Narayan, Ustad Abdul Majid Khan, and Pt Dilip Chandra Vedi. He has published a number of articles and books both in Botany and musicology, and given radio lectures on Indian music. He is at present appointed as a research scholar at the University of Utrecht and writing a large and illustrated book on the history and performance practise of Hindustani music.

Peter Friedrich Mueller, a German composer, musician and scholar, studied Sinology, Indology, comparative religions and musicology in Germany and India. He was a co-founder of the Free Music Centre, Munich, and conducted workshops and seminars on music education in Europe and India. He contributed to international music journals and is the author of radio broadcasts on traditional music. His musical works have been performed in international festivals. At present, together with Anello Capuano and Louis Soret, he is preparing 'Fools, Death and Love', a revue of traditional music, including dances and acrobatics.

Sardar Amarjit Singh, Vice-President and Founder of Delhi Music Society (1952). He established Delhi School of Music in 1966. He served Government of India (1944-46) and United Nations in Washington and New Delhi (1946-47). He attended Top Level Management Course at MIT (USA). He was Deputy President of Associated Chambers of Commerce & Industry and President of Delhi Management Association (1967-68), President of Oxford & Cambridge Society of Delhi (1973-77), Chairman of Commonwealth Society of India (1978-82), and Trustee of United World Colleges India Foundation.He retired as Resident Director, Associated Cement Companies in 1976.

A JOURNEY TO SHRUTILAND

by Peter F. Mueller

(Reminiscences of a Western student of Indian Music)

It is not much more than fifteen years now since a somewhat bigger number of Western musicians and scholars started to trickle into India in order to get involved in a practical study of Indian music, following the footsteps of pioneers like Alain Danielou and Manfred Michael Junius. Each beginning is difficult, as the proverb says, and I believe there is hardly any Westerner who did not receive quite a few blows in the process of getting acquainted with the traditional music culture of this country so rich in all kinds of contrasts...

We were struggling our way through a milieu of very alien socio-economic conditions, and values attached to different styles and traditions which evolved during a period of court-musicians - very difficult to grasp for people who were transported to India simply by the fascination of those unusual and enchanting sounds which are summed up as 'Classical Indian music'.

In many cases, fascination gave way to disillusionment; and even for those who were stubborn enough to stay on, it took years to find a direction and to separate the chaff from the grain... Many young Westerners, instead of working on the valuable principles of the tradition they followed, at first adopted a complete set of prejudices nurtured by their respective teachers against other styles, traditions and musicians. One should not forget that the task of a young student coming from the West is not simply to get acquainted with a very elaborated system of music, not even just to master a different language, but also to understand a whole structure of values, behaving, and relating to various situations reflecting the contradictions and intricacies of the Indian society. To this, add the notion that 'to go to India to study music', usually, is not too enthusiastically applauded by our Western countrymen, but rather suspiciously regarded as an escapist activity of romantic natures trying to flee from the very demanding problems societies are facing in the West. Consequently, funds provided by Western institutions for such activities trickle slowly and scarcely. Few are the lucky ones who come in scholarly guise equipped with academic fellowships. And even then, to convince a Western academic board that to do something really worthwhile in Indian music means not writing a hasty thesis after a year, but could be the a story of a dozen years or more, is an almost impossible feat.

What a relief in this turmoil to be told that surrender to a guru will be the only way to cross the ocean of confusion - and what a harsh discovery that this principle, adopted prematurily by naive and idealistic freshmen, will just encourage financial exploitation. And what a bitter disappointment for the novice to realise that he has been accepted as a student, not so much for his promising talents, but for the promising international concert tours he is going to organise for his guru !

If we are through with that, other discoveries can follow. One of these is that the intimate relationship of guru and shishya (disciple), if adopted in mutual consent, respect and understanding, can really be a wonderfull way of learning, and is, in some cases, indeed functioning. Another one is that India is still so rich in music that even after ten years of continuous listening one can still come across joyfull discoveries. It seems strange enough that the Indian public is hardly aware of these riches at all... Just beneath the firmament of the glittering stars who repeat their performances on the stages of the big cities, there is a layer of musicians, more or less unknown to the larger public, who guard veritable treasure-houses of traditional knowledge. Especially some masters of the older generation, not much en vogue as performers, but wonderful as teachers, belong to this category.

The closer one looks, the more one realises that Indian classical music is changing very rapidly, indeed. And it seems no exageration that the death of one of these old masters, in many cases, actually means the irreversible disappearance of a whole library of musical knowledge. This applies, in fact, to any style, but probably most of all to Dhrupad, as far as Hindustani music is concerned. It has been a hopeful sign that Dhrupad, during the recent years - at least in circles of connoisseurs - has gained a bit more of attention through the combined efforts of all the Dhrupad festivals and Dhrupad teaching institutions which have come up lately.

Still, the question which always remains is to critically evaluate and re-evaluate one's own position. To be a Westerner doing a study of Indian music, certainly, should not imply forgetting everything about one's own heritage. If we look at our own roots, it becomes more and more evident how closely the musical systems have been related to each other. It is no coincidence, for sure, that the interest in early European music - which is based on Oriental sources to an extent seldom realised in Europe - is growing considerably amongst music students coming to India from the West. To develop the awareness of how these musical traditions relate to each other could become one of the main contributions of Western musicians and musicologists working in India.

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A GENERAL VIEW ON THE INFLUENCES OF ORIENTAL MUSIC ON THE WEST IN THE MIDDLE AGES

by Anello Capuano and Louis Soret

ISTAR Project N 3

Introduction: A historical survey

The purpose of this article is to point out the different influences and interactions that were at work in the Middle Ages (8th C. to 15th C.) among three distinct cultures which, at that time, had reached the peak of artistic creativity and refinement: Arabic culture, the center of which was Baghdad (Dar-es-Salam), Arabic-Andalusian culture, which flourished mainly around the towns of Sevilla, Cordoba and Granada in Southern Spain, and Mediterranean European culture, mainly in Occitania (southern France), northern Spain and Italy.

In the Middle-East, the dynasty of the Abassides had ruled a huge empire since the middle of the 8th Century. The Arabic conquerors took control of Persia and Asia Minor, where they were confronted with highly civilised populations. Persian art and customs were soon adopted by the "warriors of Islam" and around 1000 A.D. Asia Minor (especially Syria) was then under the influence of Byzantium, which was the heir of the ancient Greek civilisation.

It is interesting to note that various elements of Indian culture had been assimilated through the frequent travels of ambassadors and traders since the 8th Century. The so-called "Arabic numbers", which Europe adopted, are in fact of Indian origin. In the field of literature we have the example of the famous Arabic book of tales "Kalila and Dimna", reconstructed from the Indian Panchatantra by a Persian physician, whose life story is told in the 10th Century Persian "Book of Kings" (Shahname). Towards the west, the Arabic conquerors held the whole of North Africa (Libya, Tunisia, Algeria, and Morocco) since the 8th Century, undertaking the "islamisation" of the autochthonous Berber population. From there they found their way to southern Spain (Andalusia), where they firmly established themselves for seven centuries, up to 1492 when the Moors had to yield their last possession (Granada) to the Spanish "Reconquista".

The Omeyyades (of Meccan origin) reigned independently over miscellaneous populations including Jews, Moors, Berbers, Ibers, Wisigoths and other tribes from central and eastern Europe, in a climate of tolerance and mutual respect. By the 9th Century, the Arabic-Andalusian courts attained a high degree of refinement, matching the standard of artistic development at Baghdad and other European courts. At that time, Europe, still healing from the havoc brought by the successive invasions of the various barbarian tribes from Central Asia, was struggling to find its own identity and was still divided into a multitude of small, competitive feudal Kingdoms, among whom the Francs stood somehow prominent. Cultural or commercial contacts between Europe (unified in the fold of the Roman Empire) and the Eastern civilisations goes back to Antiquity. One important factor of this has been the slave trade which spread throughout the Empire. With Carolus Magnus, the Roman Christian Church became one of the leading powers in Europe and was the initiator of the "Crusades" towards Jerusalem and the East (from the 12th to 14th Centuries). The highly civilised Eastern way of life dazzled the rough crusaders and they could bring back many novelties and commodities which became part of the European way of life. These things included certain vegetables, fruits, spices, drugs, fabrics, handicrafts, tools etc. Many scholars and learned churchmen travelled to Andalusia, attracted by the renowned Arabic univeristies there, where Arabic scholars distinguished themselves in many scientific fields including physics, mathematics, astronomy, chemistry, and medicine. Their knowledge was mainly based on translations into Arabic of Aristoteles, Plato, Pythagoras, Ptolemeus, Hippocrates, Gallian, and on their own discoveries. Especially in medicine the name of Ibn Saina (Avicenna) and of Ibn Roshd (Averroes) must be mentioned.

European music before the Middle Ages

Very little of the musical life of Europe before the Middle Ages is known. The instruments which were used in imperial Rome were mostly of Eastern origin, mainly inherited from the Greek and Syrian civilisations. In Rome one could hear the Harp and the Lyre (both of Sumerian origin), the Pandora (a long-necked lute, also of Sumerian origin), the Organ (invented at Alexandria in Egypt), and various wind and percussion instruments like the Shawm (Oboe), the Flute, horns and trumpets, tambourines, cymbals, rattles, clappers, etc.

Musical forms included religious and ritual music, as well as popular and entertainment music. Popular music was divided into many kinds of songs (work songs, corporative songs, lullabies, satirical and festival songs) and dances. Entertainment music included also stage music, either as solo instrumental music, or as accompaniment to poetry or drama, parade music or street-performance music.

After the disintegration of the Roman empire in the 4th Century, it took two centuries for the Christian chruch to develop a definitive form of ritual music, which was named after the pope Gregorious the great. This style of music is known as "Gregorian chant" (or "plain chant" in French). In fact this modal system was based on oriental models, especially from Syria and Byzantium. On its part, the Gregorian repertory provided a great amount of melodic and metric patterns to later forms of profane music during the Middle Ages up to its development into polyphony.

Music in the Middle East

In pre-islamic times, it seems that among Arabic tribes, music was mainly a support for poetry, which was regarded as the highest form of artistic expression. Following the conquest of Arabia, Islam made possible a synthesis of several other cultures which were assimilated by all the populations coexisting under its banner. In music, the strongest influences came from Persia and from Byzantium. A theoretical system was also developed by Al-Farabi, Al-Kindi, Shuarizmi and others, according to translations of ancient Greek treatises. This led to the elaboration of the system of Maqam-s or musical modes, musical scales of fixed intervals, a conventional melodic development with a hierarchy of degrees, as in the Indian raga system. Although the rhythmic system was developed on poetical meters, it expanded into a complex independent system, using some 150 rhythmic cycles containing from 2 to 176 beats. By the 9th and 10th Centuries, quite sophistocated musical instruments were built and improved: the Lute (from the Arabic word: al-ud) the Qanum (from the Greek word, canon) the Ney (from the Persian "Ney"- meaning "reed") the Tambur or Tumbur (a long necked lute) and the Naqqara (a pair of kettle drums).

Arabic-Andalusian music

During the 9th Century one remarkable event took place in Andalusia, which lead to the creation of the Arabic-Andalusian musical system as it has been partly retained to this day in the whole of North Africa (Maghreb). From Baghdad, a young musician named Ziryab reached the court of Cordoba and by his many talents he soon established himself as the foremost creative musician of his time. He was the originator of the Arabic-Andalusian system: an ensemble of 24 "suites" (24 Nuba), each one based on a particular mode and articulated on five defined rhythmic patterns. The Nuba is performed following an alternance of songs and instrumental passages. The traditional themes of the poems sung are either praises of God and the Prophet, or exaltations of human emotions like love, passion, pleasure, and ecstasy, which can be understood on the spiritual level as metaphores for divine love, as in the Persian poetical tradition.

The Arabs who settled in Andalusia had brought with them several Eastern musical instruments: The Lute, the Qanum, and the Naqqara. They also used and probably invented the Rbab, a two stringed fiddle.

Eastern influence on European music

We can see that Europe received much influence from the East in music. Poetical structures were adopted from original Andalusian forms, the "Mushshah" and the "Zazal" which also carried a new feeling, behaviour and life style, which is called in French "le sentiment courtois" and which was felt in music and literature till the 14th Century. The most significant musicians of the time were the "troubadours". Most of them were landlords, who gathered small courts of poets, intellectuals and musicians around them. They were themselves composers and poets who wrote their texts in the "Oc" language. For musical accompaniment, they often employed the "minstrels", professional musicians of low status who were, sometimes, the composers of the tunes. These wandering musicians travelled widely through Europe and eventually to the Near East. The 14th Century german "minnesanger", Oswald van Wolkenstein, declares to have learned in his travels the languages of the French, Moors, Castilians, Latins, Lombards, Russians and Romans. These musicians borrowed tunes from different countries including those from the Moors and the Jews who carried into their exile their own oriental traditions. One more common point, and not the least, is that European Medieval music was based on a modal system similar to those still used in the oriental cultures and shared, in fact, basic modal scales such as the Dorian mode on D (naghma Busalik, taab Ramal Imaya, Kafi thata) or the Phrygian mode on E (naghma Kurdi, taab Sika, Bhairavi thata). One may also think that, as it is practiced in all modal systems, the European musician of the Middle Ages employed many kinds of ornamentation and techniques of improvisation.

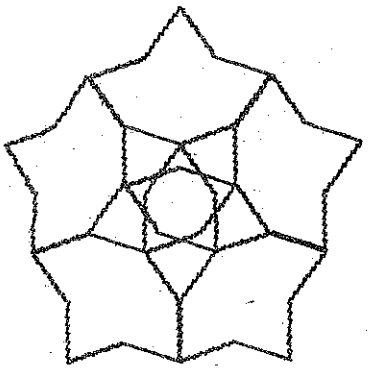
A very important document about the musical life of this period is the book of the "Cantigas de Santa Maria", a 14th Century collection of hymns of praise to the Holy Virgin, collected by the Castillian king Alfonso el Sabio. This volume contains words and scores of the hymns and an ensemble of miniature paintings depicting musicians with their instruments. On some of those miniatures, Moorish and Christian musicians are shown playing together. One can also

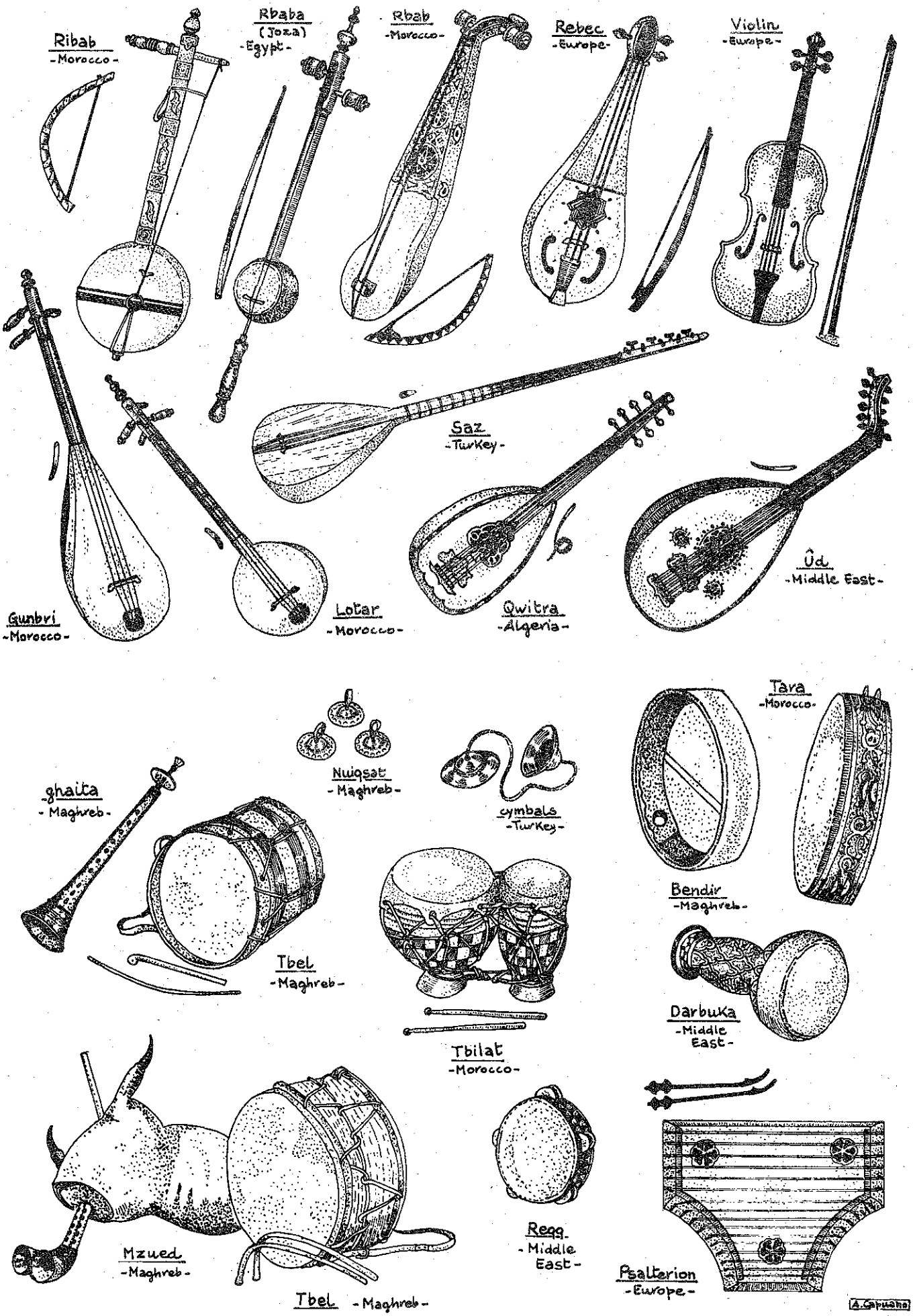
see all the instruments that were imported from the Orient: the Lute, the Psalterion, the Micanon, the long-neck lute which was actually called "guitara moresca" or "sarrazina", the Andalusian Rbab, which became the Rubab, and ultimately the Rebec, the Organ, brass horns and percussion instruments like the Tabor and the Nacaires (from the Arabic "naqqara"). Shawms and bag-pipes were also used. We saw that shawms existed in Rome and in ancient Greece (Aulos) and they were known since antiquity through out the oriental world. In Medieval Europe, as in the East, this type of instrument was played mainly outdoors on festive occasions and in processional music, as a support to trance. It is worthy to note that the oblique Arabic flute, the "Ney", was never adopted in Europe, where the ancient Duct-flute, the Transverse Flute and the Pan Flute were commonly used.

Many other examples could be given of parallel practices among these distinct and only apparently antithetical cultures, but a complete survey of interactions between these musical systems is beyond the scope of this article. Nevertheless we trust that it will be clear that Europe and the Oriental world did not develop completely apart from each other, as it was believed until recently, but that they did, especially during the Middle-Ages, share a common aesthetic taste and modes of artistic expression.

Louis Soret, a French national, studied piano and saxophone in Lyon till 1956. He stayed in Morroco from 1962 to 1979, studying oriental music (Lute, Saz, Rebaba, Ghaita, Ribab...), and became a teacher of Nay in the Conservatory of Marrakesh. In 1976 he participated, along with A. Capuano, in the creation of a research group on traditional and improvised music. In 1979 he was awarded a research grant from the French Ministry of Culture. From 1980 to 1982 he stayed in Algeria. He has given a number of concerts as a soloist, and is working as a producer of Radio-France.

Anello Capuano, born in Italy, has been a drummer in Jazz sessions till 1970. He first was initiated to Indian music during a stay in India from 1971 to 1974. He then studied Arabic lute (Ud) in Morroco and graduated in the Conservatory of Marrakesh. He also studied a few other traditional instruments such as the Nay, Derbuka, Reqq, Guenbri, Lotar, etc... In 1976 he participated, along with Louis Soret, in the creation of a research group on traditional and improvised music. From 1980 to 1982 he stayed in Benares, studying musicology in B.H.U. and sarod, vocal music, Kashmiri rabab and tabla. At present he is accomplishing a series of concerts with Louis Soret for the 'Jeunesses Musicales de France'.

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A.Capuano

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RĀGA RŪPA:

A PRELIMINARY STUDY IN RAGA GRAMMAR

© Wasiuddin Arnold
New Delhi, Dec. 1983
(ISTAR-NCPA Project No. 2)

1. Summary

Sangitashastra (संगीतशास्त्र) the traditional Indian science of music, has several key ideas defining the problem of raga analysis. We have used several of them that are commonly used by musicians who are familiar with sangitashastra to form the base for a conceptual model of a grammar of raga. This model is both descriptive and generative. It is realized in the form of a computer program 'RAGANAL'. The results of a computer analysis of several items of data is discussed in relation to the guiding principle in sangitashastra which underlies the algorithm employed for the analysis. Discussion begins by looking at 'global qualities' of the overall use patterns of the various notes. Then follows a discussion of the the use of notes in seriatum, first in the consideration of creating a 'Dictionary of Allowed Moves'. Following this attention is focused on the problem of isolating and studying the contextual use of certain minimally sized kernals of musico-linguistic meaning. This problem is studied in terms of Chomsky's idea of trees of possibility, and steps towards developing an algorithm which is an (at first) minimally acceptible generative grammar are discussed.

We have available various tables summarizing the results of the analysis of a limited sample of material in ragas Kalyan and Bihag. Since we are limited in space, the only melodic material (constituting original data) which we give is for Bihag. There are, however, several summaries for other materials in raga Kalyan (from Pt D.C. Vedi, and from the Raga Vignan of Pt V.R. Patwardhan). Then are included to show the range of possibilities experienced over a larger, but still small, data sample.

2. The melodic data for the analysis in raga Bihag

Below is an example of an alap outline in raga Bihag, composed by Dilip Chandra Vedi in 1979, that has been entered as data into the computer. Note that the notation is quite skeletal in order to not introduce redundancies created by excessive ornamentation. The music was composed in dhrupad anga (ध्रुपद अंग) which is the more severe and less ornamented style.

BIHAG (D.C. VEDI)

MELODIC DATA ON WHICH ANALYSIS IS BASED:

1. S---RNS--N----DP----; 2. PN-S-G---RS----; 3. SRSN----DP-Ṁ-GM---G----; 4. GMPN----DP-Ṁ-GM-G----; 5. PDMP -ṀGM-G----RS---; 6. GMPN-S---PNSG----RS---; 7. SSSS-NS-G---RS----;
8. PN----DP-Ṁ-G--MPN----; 9. SG-MPN----; 10. S-MGPMDPN--G-MPN---; 11. PNSG----RS----; 12. PNSRNSN---; 13. PN SG---RNSN----; 14. G--MPN-S-; 15. PN-S-G--RNSN--; 16. G--RNSN---; 17. PNSGM---G----; 18. SG-M---G----; 19. NSM---G-----; 20. PNSM---G----RS-; 21. SSSSNS-G----RS----; 22. PNSG----SG----RSN----PNSG----; 23. G--MPNSG- ---RSN---DP-Ṁ-GM--G----; 24. G-MPNSGM--G---RSN----SGM-SG----; 25. G-MP-MG----; 26. SMGPD-GM-G----RS-; 27. S SSSNS-G----;
28. PDP----M-G-MPN----; 29. G--MPN----; 30. N-SGMPN----; 31. P-NSGMPN-; 32. NN-DP----MGM--G----; 33. S-MGPMDPN ----DP----; 34. DM-MP-MGM--G----; 35. S-GMDP-MGM---G----; 36. SMGP-MG-M---G----; 37. G---MP-M-G----RS----; 38. SSSSNS-G----;
39. N----DP--M-G-MPN----; 40. G----MPN----; 41. G-MPD-G-MPN----; 42. N-SGMPN----; 43. PN--Ṡ------; 44. N-S-GMP N----Ṡ----; 45. PNSRNSN----DP----; 46. MPNSRNSN----DP----; 47. G-MPNṠ--RS---RNSN----DP----; 48. G-MPN-Ṡ-G- --; 49. GG----RS----; 50. SRNS-N----DP----; 51. G-MPN----DP----; 52. DM----MP---MG-M---G----; 53. S-MGPMDP ----MG-M---G----; 54. S-P--MG-M---G----; 55. G----MP-M-G----RS----; 56. SSSS-NS-G----RS----;
57. G-MPNṠG----; 58. N-SGMPNṠG----RṠ----; 59. G-MPNṠRNSN----DP----; 60. PNṠRNSN----DP-----; 61. NSRNSN----DP- --; 62. N-SGMPN----DP----; 63. DM----MP----MG-M---G----; 64. SGMDP----M-G-M---G----; 65. SMGPD-GM---G----; 66. P-MG-M-G----RS-SSSSSNS-G-;

Note: RAGANAL does not see the difference in the two Ma-s.

3. Crude summaries of the global use of the notes

The tables below which are situated to the left of the bar graph 'Distribution Frequency', summarize how the notes (Sa, Re, GA, Ma; Pa, Dha, Ni) were used in the above alap. There are also similar summaries for two alaps in Kalyan (whose melodic material is not given) for comparison. The tables have six columns going across. The first lists the notes themselves. The second, 'Beg' indicates the percentage of times each note has begun a phrase. Likewise, 'Held' shows the percentage of times a note was sustained (followed by a '-' in the above notation of the piece). The column 'Accent' shows a similar percentage tally of notes which have fallen on rhythmically strong beats. In the case of alap, this column is empty since no attempt to determine the exact rhythm has been made. The last column, 'Total' shows the percentage density of how many times a note was sounded or held. The Distribution Frequency Graph, printed to the right of the tables graphically displays the information in the 'Total' column.

BIHAG (D.C. VEDI)

NOTE	BEG	END	HELD	ACCENT	TOTAL
1. S	28.8	24.2	14.5	0	17.5
2. R	0	0	0	0	2.7
3. G	27.3	36.4	35.1	0	27.6
4. M	1.5	0	11.7	0	14.1
5. P	24.2	16.7	14.5	0	14.9
6. D	4.5	0	.5	0	2.9
7. N	13.6	22.7	23.7	0	20.2

[TOTAL (+/- 1%) = 100%]

DISTRIBUTION FREQUENCY GRAPH

```
N: XXXXXXXXXXXXXXX          20%
D: XX                        3%
P: XXXXXXXXXX               15%
M: XXXXXXXXXX               14%
G: XXXXXXXXXXXXXXXXXXXXX    28%
R: XX                        3%
S: XXXXXXXXXXXXX            18%
                       TOT= 101%
```

(VEDI) KALYAN

NOTE	BEG	END	HELD	ACCENT	TOTAL
1. S	10	25.7	15.1	0	13.4
2. R	14.3	0	5.9	0	10.7
3. G	12.9	34.3	30.6	0	23.3
4. M	22.9	1.4	9.2	0	12.9
5. P	5.7	22.9	18.3	0	12.7
6. D	12.9	0	2.2	0	8.5
7. N	21.4	15.7	18.7	0	18.6

[TOTAL (+/- 1%) = 100%]

DISTRIBUTION FREQUENCY GRAPH

```
N: XXXXXXXXXXXXX            19%
D: XXXXXX                    9%
P: XXXXXXXXX                13%
M: XXXXXXXXX                13%
G: XXXXXXXXXXXXXXXX         23%
R: XXXXXXX                  11%
S: XXXXXXXXX                13%
                       TOT= 101%
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Table 1

(PATWARDHAN) KALYAN

NOTE	BEG	END	HELD	ACCENT	TOTAL
1. S	12.2	27.5	20.1	0	13.8
2. R	0	5	8.9	0	14.1
3. G	26.8	35	28.1	0	22.6
4. M	12.2	0	12.1	0	13.8
5. P	9.8	12.5	13.4	0	10.8
6. D	12.2	0	2.7	0	7.9
7. N	26.8	20	14.7	0	16.9

[TOTAL (+/- 1%) = 100%]

DISTRIBUTION FREQUENCY GRAPH

```
N: XXXXXXXXXXXX             17%
D: XXXXXX                    8%
P: XXXXXXXX                 11%
M: XXXXXXXXXX               14%
G: XXXXXXXXXXXXXXXX         23%
R: XXXXXXXXXX               14%
S: XXXXXXXXXX               14%
                       TOT= 101%
```

(Numbers are expressed in percentages.)

BIHAG (D.C. VEDI)

GRIHA	AMSHA	NYASA	BAHUTVA	ALPATVA
1. S 28.8	1. G 27.6	1. G 36.4	1. G 35.1	1. R 0
2. G 27.3	2. N 20.2	2. S 24.2	2. N 23.7	2. D .5
3. P 24.2	---	3. N 22.7	---	---
---	3. S 17.5	---	3. S 14.5	3. M 11.7
4. N 13.6	4. P 14.9	4. P 16.7	4. P 14.5	4. P 14.5
---	5. M 14.1	---	5. M 11.7	5. S 14.5
5. D 4.5	---	5. R 0	---	---
6. M 1.5	6. D 2.9	6. M 0	6. D .5	6. N 23.7
7. R 0	7. R 2.7	7. D 0	7. R 0	7. G 35.1

(VEDI) KALYAN

GRIHA	AMSHA	NYASA	BAHUTVA	ALPATVA
1. M 22.9	1. G 23.3	1. G 34.3	1. G 30.6	1. D 2.2
2. N 21.4	2. N 18.6	2. S 25.7	---	2. R 5.9
---	---	3. P 22.9	2. N 18.7	3. M 9.2
3. R 14.3	3. S 13.4	---	3. P 18.3	---
4. G 12.9	4. M 12.9	4. N 15.7	4. S 15.1	4. S 15.1
5. D 12.9	5. P 12.7	---	---	5. P 18.3
---	---	5. M 1.4	5. M 9.2	6. N 18.7
6. S 10	6. R 10.7	6. R 0	6. R 5.9	---
7. P 5.7	7. D 8.5	7. D 0	7. D 2.2	7. G 30.6

(PATWARDHAN) KALYAN

GRIHA	AMSHA	NYASA	BAHUTVA	ALPATVA
1. G 26.8	1. G 22.6	1. G 35	1. G 28.1	1. D 2.7
2. N 26.8	2. N 16.9	2. S 27.5	2. S 20.1	2. R 8.9
---	---	---	---	---
3. S 12.2	3. R 14.1	3. N 20	3. N 14.7	3. M 12.1
4. M 12.2	4. S 13.8	4. P 12.5	4. P 13.4	4. P 13.4
5. D 12.2	5. M 13.8	---	5. M 12.1	5. N 14.7
---	---	5. R 5	---	---
6. P 9.8	6. P 10.8	6. M 0	6. R 8.9	6. S 20.1
7. R 0	7. D 7.9	7. D 0	7. D 2.7	7. G 28.1

[KEY: DOTTED LINES MARK LIMITS OF STANDARD DEVIATION]

Table II

GRIHA = HI / LO ORDER OF NOTES WHICH BEGIN PHRASES
AMSHA = AVERAGE IN HI / LO ORDER OF THE SUM OF NOTES USED, NOTES HELD, AND ACCENTED NOTES
NYASA = HI / LO ORDER OF NOTES WHICH END PHRASES
BAHUTVA = HI/LO ORDER OF THE AVERAGE OF NOTES HELD PLUS NOTES ACCENTED
ALPATVA = BAHUTVA IN REVERSE ORDER

4. Shastra lakshanas: griha, ansha, nyasa, apanyasa, vinyasa, alpatva, bahutva

Some of the tallys summarized in the above tables apply directly to features (lakshanas) marked out by sangita shastra (संगीतशास्त्र). The term griha (ग्रह) means the tendency of a note to be used to begin phrases. Similarly, nyasa (न्यास) means the tendency for a note to be used as a place of rest, generally at the conclusion of a phrase.

(See table II)

a. Griha: The entries in the table 'griha' below are first of all an ordering of the notes which began phrases by ranking them according to the order of their occurance. The computer then calculates the statistical mean and the standard deviation of the entries in the column, which are given in percentage figures. Those entries which are above the mean plus half of the standard deviation (except for the case of alpatva, where the opposite is true) may be considered the most significant. While printing the column, the computer draws a dotted line separating these notes from the rest. Another line is drawn to show the cutoff at the mean less half of the standard deviation.

b. Ansha: For a note to be ansha in a raga means that it is placed in a position of prominance. (All of these terms, by the way, are first found in the description of the jatis (जाति) given by Bharata in the Twenty-eighth chapter of the Natyashastra.) A note achieves prominence either by being repeated often, being held, or by being accented. The conclusions presented in the ansha column, therefore are based on ordering by rank the average percentages of the sums of the notes used, the notes held, and the notes accented. Since here no rhythmic pulses have been indicated, the figures of the ansha and the 'Total' columns are identical. In compositions or in tanas (तान), this factor can be significant in deciding whether a note should be considered 'ansha' or not.

c. Nyasa: Nyasa refers to those notes on which one may 'sit'. It is our hypothesis that ansha refers to notes of intrinsically higher aesthetic tension (ie higher dissonance), while nyasa points to notes of tension release. According to Bharata, notes may have more than one function. It may be the case that a raga has both its ansha and its nyasa on the same note. When there is a difference between the two, however, if our hypothesis is true, we should expect that nyasa will, more often than not, tend to occur on notes of intrinsically higher consonance (for example, on Sa, Pa, Ga, and Ma in certain ragas) while ansha will occur more often on other neighboring tones.

V.N. Bhatkande and V.R. Patwardhan favour the idea of defining ragas in terms of vadi (वादी) and samvadi (संवादी) , where the vadi is said to be the 'most important note in the raga, like the 'King'. Samvadi is usually situated in the other tetrachord a perfect fourth or fifth away from the vadi and is likened to the 'Chief Minister'. It is curious that neither seem to have clearly perceived the importance of nyasa as an additional factor in raga description. By incorporating into our analysis the ideas of nyasa and apanyasa (अपन्यास) which refers to 'sitting notes' of lesser importance, or vinyas (विन्यास), notes on which one doesn't sit at all, we may be able in many instances to mark out effectively the notes of tension and relaxation in the two tetrachords of a raga, and in this way begin to have an idea of the directions in which melodies will move.

d. Bahutva: The term bahutva (बहुत्व) literally means 'muchness' and alpatva has the opposite meaning. I am indebted to Ustad Asad Ali Khan for the suggestion that bahutva means the property of a note's being held, otherwise I probably would have equated bahutva with the figures in the TOTAL columns of table I.

e. Statistical summaries of the above lakshanas

Table III below summarizes each of these above characteristics for 8 data samples in raga Kalyan (Yaman). You can see from studying these tables the amount of latitude which the raga allows in being expressed. Note that the two alaps are not nearly so different from each other (in spite of being by two different musicians representing different schools) as the compositions do. Compare also the differences in the expression of the raga in alap versus tanas...

(To be continued...)

KALYAN

---------- nyasa ----------

Genre: / Item : / Author: (note:)	alap 1 V	alap 2 P	--tanas-- 3 V	4 V	5 P	----songs---- 6 V	7 V	8 P	9 P	avg	std dev	limits hi	lo
N	16	20	0	0	0	0	0	0	0	4			
D	0	0	0	0	0	0	0	0	0	0			
P	23	12	0	0	0	0	20	25	22	11	11	17	6
M	1	0	0	0	0	0	0	0	0	0			
G	34	35	0	6	0	0	0	38	0	13	16	21	4
R	0	0	0	0	0	0	0	12	33	4			
S	26	28	100	94	100	67	60	25	44	60	30	75	45

Nyasa: S /(G P R N / M D)

--------- bahutva/alpatva --------

Genre: / Item : / Author: (note:)	alap 1 V	alap 2 P	--tanas-- 3 V	4 V	5 P	----songs---- 6 V	7 V	8 P	9 P	avg	std dev	limits hi	lo
N	19	15	24	17	17	52	30	12	8	22	12	28	15
D	2	3	5	10	19	0	4	19	11	8	7	11	5
P	18	13	14	15	7	14	15	16	20	15	3	16	13
M	9	12	3	6	10	10	15	4	6	8	4	10	6
G	31	28	24	21	23	5	22	18	17	22	6	25	19
R	6	9	5	14	20	5	0	10	22	10	7	14	7
S	15	20	15	17	4	14	15	21	17	14	6	17	11

Bahutva: G N /(P S / R M D)
Alpatva: D M R /(S P / N G)

KALYAN

---------- griha ----------

Genre: / Item : / Author: (note:)	alap 1 V	alap 2 P	--tanas-- 3 V	4 V	5 P	----songs---- 6 V	7 V	8 P	9 P	avg	std dev	limits hi	lo
N	21	27	69	22	100	83	60	25	22	48	29	62	33
D	13	12	0	17	0	0	0	0	11	6	7	9	3
P	6	10	0	22	0	0	0	12	33	9	11	15	4
M	23	12	0	0	0	0	0	25	11	8	8	13	3
G	13	27	19	17	0	0	0	12	11	11	9	15	7
R	14	0	0	6	0	0	0	0	0	2			
S	10	12	12	17	0	0	0	25	11	10	8	14	6

Griha: N /(G S P M / D R) [Hi/Lo order]

----------amsha----------

Genre: / Item : / Author: (note:)	alap 1 V	alap 2 P	--tanas-- 3 V	4 V	5 P	----songs---- 6 V	7 V	8 P	9 P	avg	std dev	limits hi	lo
N	19	17	23	16	17	33	23	13	10	19	6	22	16
D	8	8	12	14	14	7	13	16	11	11	3	13	10
P	13	11	12	12	6	10	9	12	15	11	2	12	10
M	13	14	12	12	13	10	16	11	9	12	2	13	11
G	23	23	17	17	22	9	15	19	17	18	4	20	16
R	11	14	13	15	21	16	11	10	22	15	4	17	13
S	13	14	12	13	7	15	13	19	16	14	3	15	12

Amsha: N G /(R S / M D P) [Hi/Lo order]

Table III

LISTEN OUT FOR THE TABLA !

by Jim Kippen

ISTAR project #5

I wonder how many people reading this will have even thought that when they listen to the music of the tabla they are listening to a language of drum sounds ? It's a large subject, one with a very complex terminology that would quickly baffle most of us. Our knowledge of the subject will increase the more we are exposed to the music, and there's little I can do in this short article to speed up the process... You need time and a good pair of ears. I therefore confine myself to some observations about tabla playing which are designed simply to provoke thought... thoughts which you may have when next you listen to the tabla.

I have been studying tabla from Ustad Afaq Husain Khan in Lucknow for three years. I have always been encouraged to compose pieces myself, it being considered an essential part of talim or one's education. The process of learning has often seemed to me to be like that of learning a second language. A student begins with the simplest of compositional structures and with the most elementary of strokes, learning to speak the phrases he plays using words (bols) which represent the strokes. New and more complex structures are added gradually as one progresses. One's vocabulary of strokes increases and eventually one acquires the necessary technique to try out one's own ideas in simple compositional forms. By trial and error one's mistakes are rooted out by the teacher and proficiency increases.

Although, for me, this is like learning a second language, for hereditary musicians, or for those who are exposed to the music at an early age, tabla is a mother tongue. This I realised when I witnessed my teacher's son (who was then four years old) reciting strings of bols as he played with his toys, though at that time he hadn't yet had his first lesson on the tabla.

When I speak English, my mother tongue, I am not aware of the rules I am using to formulate grammatically correct sentences. If, on the other hand, I speak in Hindustani, a language I have learnt, I am always conscious of making decisions concerning conjugation, the subject and object of the sentence, and the agreement of adjectives. The process is the same for tabla, and I have been learning how to make similar decisions in order to produce phrases which are correct. English and Hindustani both have grammars which have been clearly formulated. As yet, tabla doesn't. It's there, but we've yet to establish its theory.

I am currently involved in research for the ISTAR in which, with the help of my partner, Bernard Bel, I am trying to formulate a grammar for the tabla which will help us to understand the processes used in the creation of pieces, and the logic behind improvisation on those pieces.

Any musician has a certain scope within which he is free too express himself. If he performs a raga, he will have a fixed set of notes and many patterns in which to present those notes. It will not be acceptable for him to violate the raga by producing notes or melodic patterns which should not be there, or which belong to a different raga. The same is true of a tabla player who sets out to play a certain kind of piece but fails to keep within the strict limits dictated by the form. In my limited experience of tabla, I have found, more and more, the tendency to disregard the confines of a piece; to break the rules of the grammar of tabla, thereby creating a meaningless assortment of words and mumbo-jumbo disconnected phrases. Yet, I have often noticed that, far from rejecting this kind of playing, audiences are more and more stimulated by things which I may regard as non-sensical, and they are much less interested in the more traditional pieces... I would never outrightly condemn this kind of tabla music. I believe it is, or can be a new and interesting development - in other words, a new dimension in tabla. But it is also very important that this dimension be understood in the context of the traditional repertoire of the instrument.

So what is this new dimension in tabla ? In most cases, it is essentially a repertoire of gimmicks, of sound effects, of tricks to show off apparently incredible virtuosity at apparently staggering velocity. It has its roots in the tabla-train journeys on which every player, at some time or other, has taken his audience. The choo-choo, chugga-chugga, speeding-up and slowing down of the steam engine leads itself very easily to imitation. But it doesn't stop there. Now, too many pieces turn into brrrrrrr brrrrrrr motor-bike engines or rattling machine-gun-fire as endless strings of tirikitetaketirikitetake tear into your body through rather badly adjusted microphones... The bayan (bass drum) is vocalised to the point where it whoop-whoops continuously up and down as if suspended on the end of elastic, and now even tones are being beaten out on this drum. Every piece, no matter what the form, must necessarily end spectacularly. (How will you know when to clap otherwise ?) The tirekits and dherekits build up in intensity to an incredible pitch and everyone cheers as the helicopter comes in to land.

I said earlier all this was "apparently incredible virtuosity" and "apparently staggering velocity". Yes, it certainly seems fast and looks difficult - that's partly what makes us enjoy it and applaud furiously, just as we do when a trapeze artiste successfully completes a triple back somersault with a double twist. It's all part and parcel of the spectacle, but we must remember that though the visual aspect of a performance has a certain value, music is to be listened to and not watched. In reality, these gimmicks are very rarely, if ever, technically difficult... I can think of many combinations of bols in slow speeds which demand far greater technical control, although to the untrained ear they may go unnoticed.

I don't want to make this sound like bitter grapes. I too enjoy a little of this new development in tabla and I know that there are some musicians who present these kinds of gimmicks very well indeed. But I do despair when, as so often happens, a player turns out a series of dazzling sound effects at break-neck speed and forgets the rich traditional repertoire of pieces available to him. Forgotten are the Kaidas with their myriad of permutated phrases; forgotten are the rangs and relas which maintain a firm skeletal structure while faster combinations of strokes fill in the gaps; forgotten are the tukras and gats of grand design with their wide variety of bols and internal symmetries.

If you get the chance to listen to recordings of the old masters, you will notice in their playing none of the gimmicks of which I have made mention. You will find all the aspects of the traditional repertoire are present, and they are performed in a way rarely heard nowadays. The pieces are paced so that the sound quality never suffers; in other words the diction is clear and the voice beautiful. And when next you listen to the new masters, you may have a new perspective from which to appreciate and understand the new language they are speaking. Change is inevitable, though not all change is necessarily good...

James R. Kippen, a British national, is an accomplished western musician (piano, orchestral percussion and conducting). In 1979 he passed his Ph.D in Social Anthropology / Ethnomusicology at the Queen's University of Belfast. For two years he has been studying in depth the socio-economic conditions of musicians in Lucknow, and their musical training, teaching and performance. He has studied sitar for two years and tabla since 1977 from Esmail Sheikh, Pt Manikrao Popatkar, and Ustad Afaq Husain.

THATS AND MURCCHANAS; AN ANALYSIS OF TONE MATERIALS

by Wim van der Meer

ISTAR project #6

To classify ragas on the basis of their tone materials is both practical and simple. The most current classification is the one of Bhatkhande, consisting of ten thats or scales. Many authors, especially in medieval Southern India have tried to discover a system in the scales. Such systems explore the possibilities of scale-formation by altering one, two or more notes according to a previously established pattern. The result of these permutations is a scheme like the South Indian melakarta system consisting of 72 scales or Jairazbhoy's scheme of 32 thats. Most of those scales do not serve any purpose for practical music as they do not obey the law of consonance, i.e. in them one or more notes have no samvadi. A more viable approach is the ancient murcchana system of scale formation, in which scales are looked upon as modes originating from a parent mode. If the parent mode has a well-conceived set of consonant intervals each of the plagal modes will possess the same intervals. The drawback of the murcchana system is however that it cannot account for all the scales which are used in actual practice. In the present article I shall try to demonstrate that a system of thats is not incompatible with an interpretation through murcchanas.

First of all we must formulate a method of creating thats that is related to the realities of Hindustani music. Essentially the method used by Jairazbhoy is quite satisfactory. It starts from the idea that we have seven notes of which five are alterable, i.e. they can take two basic positions. This results in a total of 32 possibilities. Jairazbhoy has also indicated that in a sense pancam can be considered alterable, when a raga uses a tone material including both shuddh and tivra madhyam while pancam is dropped. This theoretically gives another 16 thats. One of the fundamental criticisms on such a system of thats is that it can never account for the svarasthana, i.e. the exact intonation as expressed in shrutis or in frequency ratios. If however we can reduce the system to one of murcchanas then the subsequent task of defining tuning schemes (gramas) will be much simpler.

The common way of deriving murcchanas from a parent scale is to shift the tonic by one note to each next scale:

s r g m p d n s
s r g m p d n s
s r g m p d n s etc.

If however we follow the same method but start every next scale from the pancam of the former then the scheme resembles the that system in the sense that only one note will change:

s r g m p d n s
m p d n s r g m
n s r g m p d n etc.

At a certain point two madhyams will apear and pancam will disappear. Obviously to be able to start the next murcchana again from pancam we must transform the scale by reintroducing pancam and barring the shuddh madhyam, as will be evident if we look at the following tables:

First series

0	s	r	g	m̄	p	d	n	s	Kalyan
1	m	p	d	n	s	r	g	m	nat
2	n	s	r	g	m	p	d	n	Khammaj
3	g	m	p	d	n	(s)	r	g	sindhura (Kafi)
4	d	n	s	r	g	m	p	d	asavari (Kanada)
5	r	g	m	p	d	n	s	r	bhairavi
	m̄	d	n	s	r	g	m	m̄	meladalam *
6	m̄	p	d	n	s	r	g	m̄	(marg todi)
	n	s	r	g	m	m̄	d	n	
7	n	s	r	g	m̄	p	d	n	todi
	g	m	m̄	d	n	s	r	g	lalit
8	g	m̄	p	d	n	s	r	g	sri
	d	n	s	r	g	m	m̄	d	(pancam)
9	d	n	s	r	g	m̄	p	d	marva
	r	g	m	m̄	d	n	s	r	dipavali *
0	r	g	m̄	p	d	n	s	r	Kalyan

Second series

8(51)	s	r	g	m	p	d	n	s	bhairav
	m	m̄	d	n	s	r	g	m	ahir lalit *
9(62)	m̄	p	d	n	s	r	g	m̄	ramapriya *
	n	s	r	g	m	m̄	d	n	jayakauns *
0(73)	n	s	r	g	m̄	p	d	n	madhuvanti
1(84)	g	m	p	d	n	s	r	g	nat bhairav
2(95)	d	n	s	r	g	m	p	d	ahir bhairav
	r	g	m	m̄	d	n	s	r	lalita *
3(06)	r	g	m̄	p	d	n	s		madhukant *
4(17)	p	d	n	s	r	g	m		dhanasri *
5(28)	s	r	g	m	p	d	n		vasant mukhari *
	m	m̄	d	n	s	r	g		
6(39)	m̄	p	d	n	s	r	g		vasant bahar *
	n	s	r	g	m	m̄	d		
7(40)	n	s	r	g	m̄	p	d		pilu *
8(51)	g	m	p	d	n	s	r		bhairav

Third series

13	s	r	g	m	p	d	n	s	patdip	x	s	r	g	m̄	p	d	n	s
24	m	p	d	n	s	r	g	m	carukesi *	y	m	p	d	n	s	r	g	m
35	n	s	r	g	m	p	d	n	anand bhairavi *		n	s	r	g	m	m̄	d	n
	g	m	m̄	d	n	s	r	g		x	n	s	r	g	m̄	p	d	n
46	g		m̄	p	d	n	s	r	g	madhukauns *								
57	d		n	s	r	g	m	p	d	(auttara gujari)								
	r		g	m	m̄	d	n	s	r	lalitakali								
68	r		g		m̄	p	d	n	s	r	ramkali *							
	m̄		d		n	s	r	g		m	m̄	jayakauns *						
79	m̄	p		d		n	s	r	g		m̄	malati *						
	n	s		r		g	m	m̄	d		n							
80	n	s		r		g		m̄	p	d		n	latika *					
91	g	m		p		d		n	s	r		g	anand bhairav					
	d	n		s		r		g	m	m̄		d	lalita *					
02	d	n		s		r		g		m̄	p	d	sarasvati *					
13	r	g		m		p		d		n	s		r	patdip				

Since the scales which have tivra madhyam in stead of pancam are really a transitional phase between the preceding scale and the subsequent one they have not been given a separate number. The numbers 0 through 9 represent basic scales, all the other scales have been given numbers which show a relation to these basic scales. In the second series the first number indicates the basic scale from which the new scale differs in only one note. The numbers between brackets indicate two basic scales from which the new scale differs by two notes. Thus, bhairav 8(51) differs from sri (8) in one note, from nat (1) and bhairavi (5) in two notes. In the third series each of the numbers indicate a one note difference to the basic scale. Thus patdip(13) differs from both nat (1) and sindhura (3) in one note. The scales x and y, which form a separate series can be rejected forthwith as there is only one pair of notes in them with a fifth relationship. The names given behind the scales should not be considered of great importance; they only give an indication of a raga which uses such tone material. Many of the scales in the second and third series are rarely used. Names marked with an asterisk are rare, new, south Indian, pentatonic or mixed. Names between brackets are obsolete.

The three series of murcchanas can be presented in a diagram showing all their interrelations. In this diagram the first and second series are repeated on either side of the third series. Each line connecting two scales indicates a one note difference. The scheme enables us to see for any give scale to which scales it is close (as that) as well as the general scale type (murcchana) to which it belongs. (Scheme on following page)

(cont. p.18)

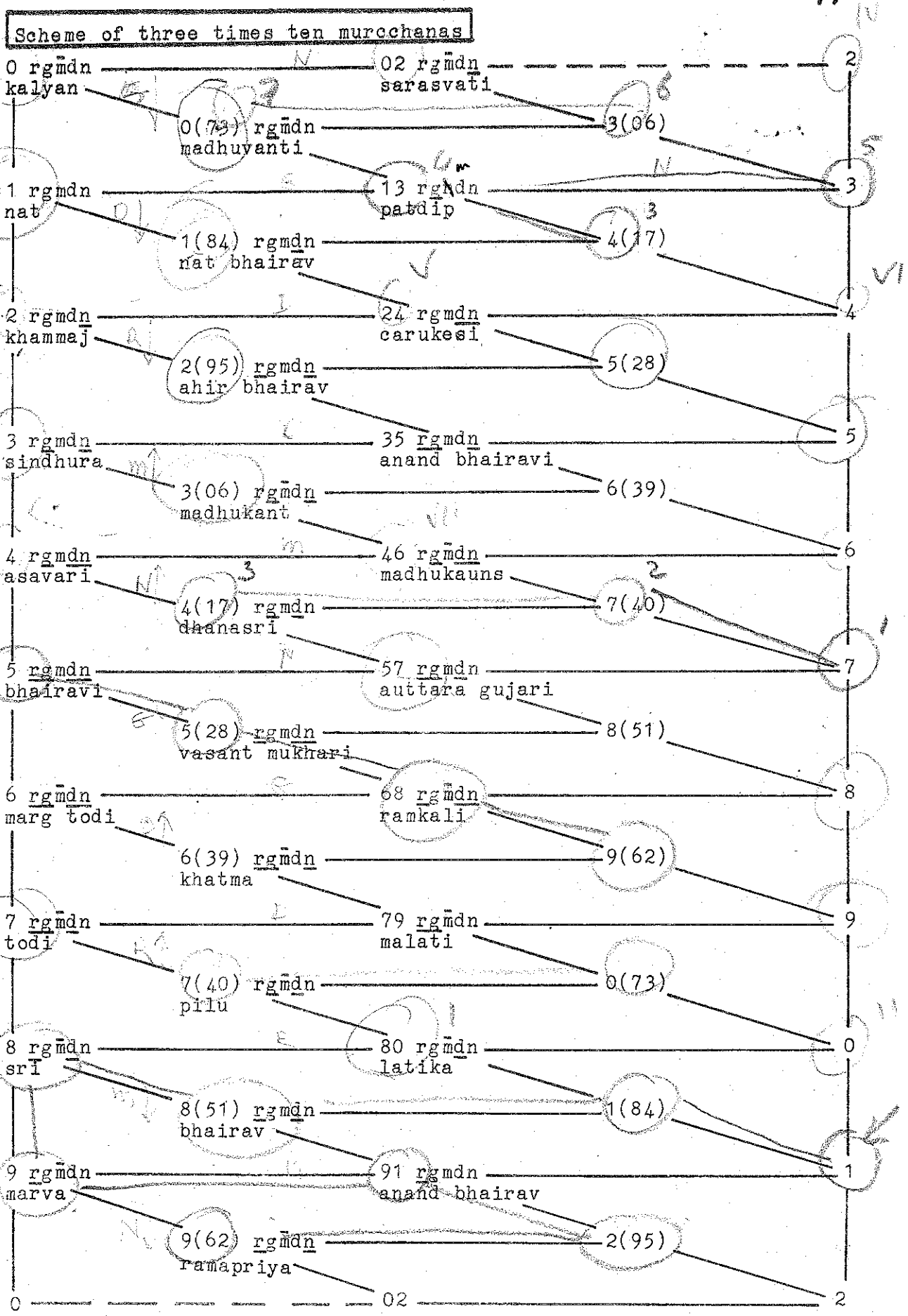
)))) For readers unacquainted with the North Indian system of musical notation:

Note in English	- in Italian	- in Hindustani	Abreviation
C	Do	Sa or Shadja	s
D flat	Re bémol	Komal Re	r
D	Re	Re	r
E flat	Mi bémol	Komal Ga	g
E	Mi	Ga	g
F	Fa	Ma or Madhyam	m
F sharp	Fa dièse	Tivra Ma	m̄ or ḿ
G	Sol	Pa or Pançam	p
A flat	La bémol	Komal Dha	d
A	La	Dha or Dhaivat	d
B flat (German B)	Si bémol	Komal Ni	n
B (German H)	Si	Ni	n

Note that 'shuddh' means 'unaltered', whereas 'Komal' means 'lowered by a semi-tone'.

Also note that this system accounts for a division of the octave in 12 semi-tones. In fact, the Indian tradition distinguishes 22 micro-tones (shrutis) and specific adjectives may be attached to the above terms. Ex: Atikomal Dha is Komal Dha lowered by one shruti (approx. one comma, or 22 cents in this case).

Scheme of three times ten murcchanas



I have used this scheme of heptatonic scales to analyse the tone materials of ragas actually in use, and compared this to the tone materials used nearly two centuries ago. For the sake of analysis all tone materials must be reduced to heptatonic scales. Such a reduction is legitimate because the musical system of North India is essentially a seven tone system. Thus, if we take the raga Khammaj, the tone material should be considered to consist of scales 1 + 2. When the tone material is nonatonic their must be four heptatonic scales, when the raga uses ten notes there are 8 scales inherent in it. Similarly in a pentatonic scale each of the missing notes may have two positions, so that there are four possible heptatonic scales involved. In the actual analysis however it is sometimes possible to simplify the structure of a pentatonic scale because the minds and touches in the raga indicate the position of the missing note. In bhupali for instance the missing ma and ni must be considered tivra ma and shuddh ni. In my analysis I have simply counted the actual occurence of any of the scales in ragas. For this I have gathered ragas and their tone materials from the extant literature, as well as from gramophone recordings. The material I have used for comparison with the recent past comes exclusively from Pratap Singh's Sangit Sar, a work compiled at the end of the 18th century. Whereas the material for the present covers nearly five hundred ragas the material of the Sangit Sar comprises about 180 ragas. In the table no distinction is made between major and minor ragas. Should we count the number of compositions in each raga the table would become more accurate, but comparison with the Sangit Sar would be impossible as this work gives only outlines of the ragas. When we analyse a nonatonic raga like sindhura kafi the inherent heptatonic scales are 1, 2, 3 and 30. Yet, the actual occurence of 2 and 30 can be questioned on melodic grounds. The conclusions I have drawn from the tables could therefore be called conservative, as the elimination of the scales that are not essential in such a raga would only make the results more pronounced.

USE OF HEPTATONIC SCALES IN SANGIT SAR (%)

0	XXXXXXXXXXXXXXXXXX	KALYAN
1	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	NAT
2	XXXXXXXXXXXXXXXXXXXXX	KHAMMAJ
3	XXXXXXXXXXXXXXXXX	SINDHURA
4	XXXXXXXXXX	ASAVARI
5	XXXXXXXXXXXXXXXXXXXX	BHAIRAVI
6	XXX	
7	XXXX	
8	XXXXXXXXXXX	SRI
9	XXXXXXXXX	MARVA
0(73)	X	
1(84)	XX	
2(95)	XX	
3(06)	X	
4(17)	XX	
5(28)	XXXXX	
6(39)		
7(40)	X	
8(51)	XXXXXXXXXXXXX	BHAIRAV
9(62)	X	
02	XX	
13	X	
24	XXX	
35	XXX	
46		
57	XXXXX	
68	XXXX	
79	X	
80	XXXX	
91	XXXXXX	

USE OF HEPTATONIC SCALES IN THE PRESENT (%)

0	XXXXXXXXXXXXX	KALYAN
1	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	NAT
2	XXXXXXXXXXXXXXXXXXXXXXXXX	KHAMMAJ
3	XXXXXXXXXXXXXXXXXXXX	SINDHURA
4	XXXXXXXXXX	ASAVARI
5	XXXXX	BHAIRAVI
6	XX	
7	XXX	
8	XXXXXXXXXX	SRI
9	XXXXXXXXX	MARVA
0(73)		
1(84)	XX	
2(95)	X	
3(06)	XX	
4(17)	XXXX	
5(28)	XX	
6(39)		
7(40)		
8(51)	XXXXXXXXXXX	BHAIRAV
9(62)		
02	XXX	
13	XXXXXXXXXXX	PATDIP
24	XXXX	
35	X	
46		
57	XX	
68		
79		
80		
91	XXXX	

CONCLUSIONS:

The first and most important conclusion is that the scale which predominates both in the present and 200 years ago is the shuddh scale. Other scales that are well represented in ragas are (in order of frequency) khammaj, kafi, kalyan, bhairav, asavari, patdip, bhairavi, sri and marva. In comparison with the ragas of Sangit Sar, we see that the all-flat tone material (bhairavi) covered many more ragas in the past. Should we look at frequency of performance and number of compositions however then bhairavi as a raga is by far the most popular of all ragas. Therefore the relatively unimportant number of ragas now using this tone material must be the result of the fact that one single raga, bhairavi, has assimilated the properties of a number of other ragas that were still considered separate ragas in the time of Sangit Sar. The exaggerated importance of patdip is the result of the fact that many present day ragas use a mixed tone material of kafi and nat, in which patdip is a spurious concomittant. Striking is also that the theoretically primary scales of todi and marg todi are much less important than the scales of sri and marva. Curiously in the time of Sangit Sar there was no raga using exclusively the tone material of the todi scale. On the contrary the tone material of marg todi was used independently but has gone out of vogue. Both in the past and in the present the only scales which never occur are 6(39) and 46. Many of the other scales were never used independently in the past, they are by-products of other scales . From the second series only 8(51) bhairav was used as an independent heptatonic scale, from the third series only 91 (anand bhairav, then called shuddh sohini). In the present a number of other scales have gained the status of an independent heptatonic tone material: 0(73) madhuvanti, 1(84) nat bhairav, 2(95) ahir bhairav, 3(06) madhukant, 4(17) kirvani, 5(28) vasant mukhari, 7(40) simhendra, 9(62) ramapriya and ahir lalit, 02 sarasvati, 13 patdip, 24 carukesi, 80 latangi. These ragas are mainly imported from south India, which shows that the theoretical development of the melaKarta system has had an impact on change in the use of tone materials in the present. For the tradition of north Indian music by and large sticks to the primary murcchanas of the shuddh scale. Analysis of the tone material shows that theoretically there must be scope for developping scales 6 and 7 (especially 6). If we look at the real murcchanas in each of the series the following basic groups of scales can be discerned:

perfect diatonic scales :	0 (kalyan), 1 (nat), 2 (khammaj) , 3 (sindhura), 4 (asavari), 5 (bhairavi).
primary chromatic scales :	6 (marg todi), 7 (todi), 8 (sri), 9 (marva).
secondary chromatic scales :	7(40) pilu, 8(51) bhairav.
imperfect diatonic scales :	02 (sarasvati), 13 (patdip), 24 (carukesi), 35 (anand bhairavi).
mixed from the second series I:	0(73) madhuvanti, 1(84) nat bhairav, 2(95) ahir bhairav.
mixed from the second series II:	3(06) madhukant, 4(17) dhanasri, 5(28) vasant mukhari.
mixed from the third series I:	46 (madhukauns) , 57 (auttara gujari).
mixed from the third series II:	80 (latika) , 91 (anand bhairav) .

If Indian musicians go on exploring tone materials by trial and error, and if the scales from the second and third series become acceptable to the Indian ear as seems to be the case to some extent, we can predict that the scale 7(40) (simhendra, ancient pilu) has as great a potential as the scale of bhairav. From the other scale types not much can be expected as they always have one note without a balancing fifth. Scales which seem to have no potential at all are the numbers 6(39), 9(62), 68 and 79, as they do not interrelate with any other scale through a direct plagal shift. They simply have too few harmonic intervals to satisfy the needs of Indian music, in which samvada plays such an important role. Some scope for developping tone materials may lie in the use of the transitional modes, in which ma tivra replaces pa. Of course lalit is a well known raga, but also between 8 and 9 we find the raga pancam , now out of vogue, between 9 and 10 the beautiful though rare raga dipavali has a place, and between 8(51) and 9(62) ahir lalit (earlier created by OmKarnath Thakur under the name pranvendra madhyama) has found a definite place.

After having examined the scale system from the angles of murcchana, that and practical use the next step is to define the precise intonation, i.e. the gramas on which the murcchanas are based. This will be the subject of the next article, while in the third article I shall propose a new classification of the extant ragas using a two-dimensional scheme to show interrelations between ragas (historically, melodically and in scale type), as well as relative importance of the groups of ragas.

(to be continued)

Wim van der Meer was born in the Netherlands in 1949. He graduated from the University of Amsterdam in anthropology and ethnomusicology and studied vocal music in India under Pt. Dilip Chandra Vedi. His doctoral dissertation (Ph.D. Oriental studies, University of Utrecht), published in the Netherlands and India under the title 'Hindustani Music in the Twentieth Century', was well received by musicologists and the press both in India and abroad. At present he is co-operating in the ISTAR-project of 'the ragas of D. C. Vedi' and at the same time working with Joep Bor on a large and illustrated book on the history and performance practice of Hindustani music.

NEWS FROM ISTAR'S WORKSHOP - New Delhi by Bernard Bel ISTAR Project #1

Melodic Movement Analyser: another step

MMA2, a new version of Melodic Movement Analyser, is under construction in our workshop, and will be used on the premises of the National Centre for the Performing Arts, Bombay, for scientific documentation and research. MMA2 will be hooked to a fundamental pitch extractor allowing the analysis of vocal and recorded music. Unlike its predecessor MMA1, it will keep track of the exact pitch of the drone; to achieve this, it will generate the sound of a reference drone which one will be able to re-tune to match the speed variations of the tape recorder or the frequency shifts of acoustical instruments. The pitch data will be stored on the tape in a 12 bit format (instead of 16 bit -) and the remaining 4 bits will be used to store the measurements of the sound intensity. The system will also perform the data compression (averaging) of pitch information in order to reduce the flow of data to the computer.

One of the applications undertaken under this scheme will be the automatic transcription of raga outlines with view to improve the existing notation systems. (See our next Newsletter)

A new 'intelligent' computer language

James Kippen and Bernard Bel have started investigating applications of mathematical linguistic models to the study of North Indian Rhythm (ISTAR Project #5). 'Kaida' compositions, which J. Kippen is studying in Lucknow with the help of Ustad Afaq Husain, provide a most valuable frame of 'primitives', that is, a minimum set of axioms and transformation rules generating a 'tabla language'.

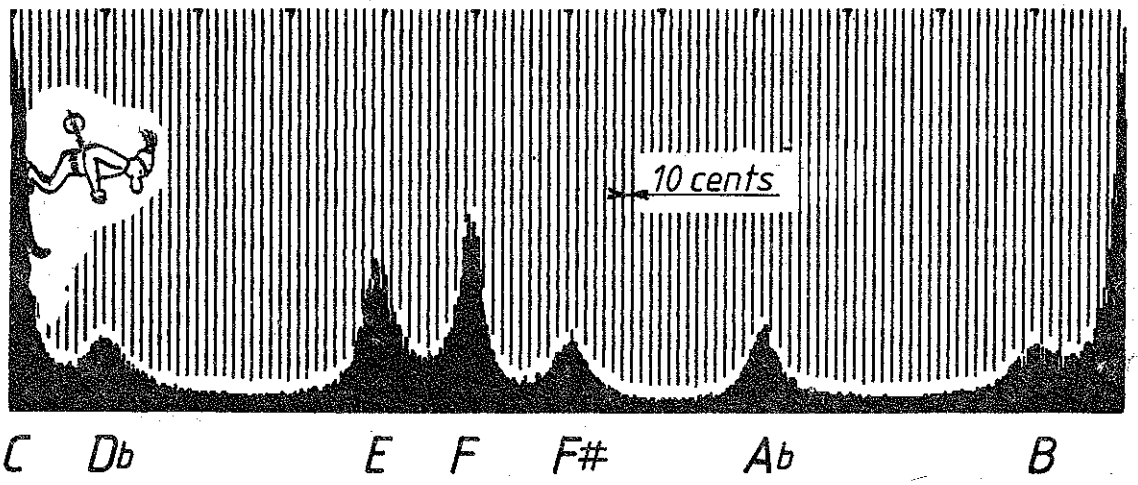
For this study, a 'Bol Processor' has been implemented on an Apple II computer. Basically it is structured like a 'Word Processor' with the visible difference that each key of the computer's keyboard can be re-programmed to represent a 'bol' (e.g. 'dha', 'te', 'na', etc.). Another major difference is that all functions have been designed to minimize the time of data transfer and 'garbage' (deleted data) collection. 'Bubbles' of deleted data are progressively 'pushed up' to the edge of the storage space, growing in size as they meet other 'bubbles' on their way, like bubbles in boiling water...

The reason for such sophistication is that, as a second step, 'search-and-replace' operations will be automated, and therefore should be accomplished at a maximum speed. By programming such operations (a generative 'grammar'), one can give enough 'intelligence' to the computer to analyse and generate rhythmic pieces in a particular style.

This new 'intelligent' computer language, potentially as powerful as its elder brothers LISP, FORTH, SMALLTALK, LOGO, etc., will be easy to assimilate and interpret by researchers more trained in music than in computer science. Sometimes it is also convenient to adapt machines to human needs...

Tonal diagrams ('tonagrams')...

drawn by MMA1 are nowadays available on computer printers. Such diagrams are both useful for the study of raga intonation and morphology, and for the evaluation of the 'statistical scale' of various instruments. The landscape below is a tonagram of raga Lalit recently performed in Germany by Hariprasad Chaurasia:



ESSENCE OF CLASSICAL MUSIC

An interview with Pandit Dilip Chandra Vedi.

)))Q. You are at present working on a big project for ISTAR. What is your aim in this work?
D. C. Vedi: The necessity of this work is because many half-baked people do not know the structure of the ragas. They listen and try to copy. They learn a few tunes or songs and think that they can become musicians. The masses only know how to enjoy a beautiful voice, they cannot distinguish between good and bad music. But the pandits go further than the voice only. Of course, the voice is important, but there must be more. These fine arts are not only to entertain. They must make the brain and heart fine. So these people are spoiling ragas and there is no one to stop them. The so-called experts who have influence in the world of music do not care for this either. They only want to favour their friends. But the philosophers cannot sacrifice their philosophy. The masses think they don't have to worry about this. Some people say 'everyone can weep, so everyone can sing'. No doubt, but do you think that without any knowledge of grammar one can write something correctly? So is the case with our music.
)))Q.: You are talking about half baked people but what do you think can be done to improve the situation?
D.C.V.: First of all it must be made clear what is really good music. If people do not understand this then how can we go forward. There is much talk today of creating and innovating, but what can you improve if you don't know the fundaments. Do you think that this music we have is nothing? To understand the basis of our music we must give prime importance to vocal music. In vocal music there is the blending of poetry, melody, rhythm and feeling. Through these four the essential characteristics of the compositions will come out fully and clearly. Nowadays people are crazy about instrumental music. Instrumentalists are honoured by ignorent people who do not understand that the basis of our music is vocal, and that the profound tradition which we have can never be fully realized through instrumental music alone. When we were young we listened to many many great musicians and naturally we praised them. But now, at this age I can understand what is really essential in music and what is not. These essentials we are recording now. If after devoting my whole life to music I am not able to do this then who is?
)))Q.: How do you define classical music?
D.C.V.: Classical is not an Indian word. We say shastriya sangit. It means, music which depends on rules, laws. It would be better to say scientific music. These rules are universal and natural principles that were discovered by our ancient seers.
)))Q.: What is the first law of music?
D.C.V.: All the notes must be interrelated, there must be perfect harmony in a tune.
)))Q.: Would you mention some other essential laws?
D.C.V.: Compositions in slow rhythm are essential in our music. The really good compositions are the true reflection of a raga. Why out of hundreds of poets only a few survived? What went wrong with the other poets? So it is with our music. Lamp is in our control, but the sun is not. Some people think they don't need the sun because they can use a lamp. But not all are fools, some people still like the sun. The rules of music are so scientific that no argument can do anything. Harmony between the notes is the natural law of sound. These notes cannot be changed by man. Thank God.
)))Q.: What is your opinion about the shrutis?
D.C.V.: Touch two notes and see if they agree. Then we can discuss shrutis. The svaras are based on shrutis. The mother of shrutis is samvaditva.
)))Q.: Which are in your opinion the most important ragas?
D.C.V.: This is a long story. The most fundamental scale of our music is the shuddh scale. Call it Asa, Natnarayan or Bilaval. Some people believe the scale of sindhura (Kafi) to be our fundamental scale, but if you listen to many popular tunes of folk music you will see that the shuddh scale is most natural. Listen to your tanpura. Does it give Komal or shuddh ga? How did we fix the ragas? As a person goes into the jungle and finds a beautiful flower he gives a name to it. So it is with our music. People were singing something, then some others with a good brain gave full attention and tried to understand the interrelations of the notes..

A Founder Member of ISTAR, Pt Dilip Chandra Vedi was born in 1901. He was a brilliant disciple of the two prestigious masters, Pt Bhaskar Rao and Ustad Fayaz Khan, thus having access to the musical heritage of five main gharanas. He was acclaimed as one of the greatest vocal musicians by famous masters like Fayaz Khan, Nasiruddin Khan, Rajab Ali Khan, Mirashi Bua,, Ghulam Ali Khan, Wahid Khan, K.C. Brihaspati and in South India C.R. Shrinivas Iyengar, P.T. Sundaram Aiyar, etc... In 1937, the great sarod player Ustad Allauddin Khan expressed his great admiration for his raga Vedi-ki-lalit. In 1938, Vediji was awarded the gold metal as the best thumri singer, and the Abdul Karim Khan medal for Khayal. In 1964 he was given the title of Sangeet Mahamahopadhyay. In 1971, he was elected as a Fellow of the Sangeet Natak Academy. In 1978 he was awarded the post of Producer (Emeritus) of All India Radio. In 1982 he was honoured with the 'Tansen Award - gold medal', and in January 1983 he was confered the title of Doctor Litt. by the Khairagarh Music University. Among his most notable disciples are Pt Amar Nath, H.C. Bali, the late Pt Hussan Lal, the late Anita Roy Chaudhari, Master Bhagavan Das Seni, Sohan Singh, Manik Varma, Bhupender Seetal, M.R. Gautam, Nupur Roy Chowdhry and Vinod Kumar.

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