

ISAR

newsletter

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INTERNATIONAL SOCIETY FOR TRADITIONAL ARTS RESEARCH

EDITORIAL

As this Newsletter shows, it has been a very active period for all the project workers within ISTAR. The material available was so large and varied that it was not easy to make a selection. Therefore we decided to postpone the publication of Newsletter No 3 and bring out a double issue, presenting aspects of our work which show the direction in which we proceed.

This Newsletter contains articles on a variety of subjects. We are pleased to publish the first part of a series of articles on Persian musicological works of great historical interest by the historian Shri Shahab Sarmadee of Aligarh. We are sure our readers will enjoy the reflections on famous women singers by Pt D.C. Vedi, who has a living memory of the world of Indian music in the twentieth century. There are also several articles which approach musicological questions from a scientific point of view.

Perhaps the most exciting event during the past months was the completion of our equipment and its installation at the National Centre for the Performing Arts. This enabled us to transcribe automatically hundreds of old and new recordings of considerable length. We are encouraged by the collaboration of Pt Dilip Chandra Vedi, Pt Ram Chatur Malik, Smt Kishori Amonkar, Ustad Asad Ali Khan and other expert musicians. With their knowledge plus the new technology, we feel that scientific musicology has entered a whole new phase. Readers may enjoy the vigorous exchange of opinions between Prof N.A. Jairazbhoy and our team of researchers, expressing the controversy which the existence of this new approach has created.

Participating in the seminar-cum-workshop on 'Documentation and Archiving' (organised by the ARCE and the AIIS) at Pune in September 1984, gave us a chance to exchange ideas with colleagues. Presenting lecture demonstrations in Bombay and Pune in February-March 1985, sponsored by the Max Mueller Bhavan and the NCPA, gave us an opportunity to communicate the gist of our research to inquisitive audiences. In Bombay, Pt Ram Narayan generously agreed to join our workshop and conclude an illustrated talk on the history of sarangi (by Joep Bor) with an unforgettable recital. The Educational Media Research Centre of the University of Pune documented a presentation of ISTAR for broadcast on the educational network.

ISTAR, SCPS and Radio France gave their support to this year's Dhrupad Samaroha in Vrindaban, which over sixty dhrupadiyas and pakhawaj players participated. A high point in the attached seminar was the active exchange of ideas between musicians of different schools and musicologists. This was followed by an historical encounter at the Banaras Hindu University between Prof Premlata Sharma and Shri Shahab Sarmadee, the most distinguished authorities of the Sanskrit and Persian traditions of Indian musicology.

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George Ruckert's recital at USIS, sponsored by ISTAR with the assistance of AIIS, proved that a generation of Westerners playing Indian music professionally, is coming to the fore. He was highly praised by the Indian press as the "Uncrowned King of Sarod" (Indian Express, 24/3/85), and "A mature US sarodist" (Patriot, 25/3/85).

Following the publication of this Newsletter, the ISTAR enters a new phase in its development. Several researchers will be carrying on activities in Europe and in the United States. We look forward to this period and to closer contacts with international artistic and scientific communities.



LETTERS

Thank you for sending the most recent copy of the Newsletter. I find it interesting and useful... Congratulations to you on this noble effort.

Jon B. Higgins
Director of the Center for the Arts
Wesleyan University, Middletown

In this second issue of ISTAR Newsletter, I find several of the articles informative and useful to me, especially the articles on 'Gauhar Jan', 'East West Dance Encounter' and on 'Isadora Duncan'.

Susheela Misra
Producer Classical Music (Retd)
AIR, Lucknow

One copy of your ISTAR Newsletter has reached us recently. As we are very much interested in receiving your magazine on exchange basis we are looking forward to hearing from you soon...

Vesna Turcin
Institut za filologiju i folkloristiku
Zagreb

I wish to express my support to ISTAR. Your Newsletter is an inspiration to me as a lover of traditional arts to continue doing research in this field.

Courtney Shriver
Varanasi

Thank you for sending me a copy of your most interesting Newsletter... I shall be particularly interested in hearing more about Bernard Bell's work on intonation analysis as this is a subject that interests me greatly also... Meanwhile, congratulations on such a lively Newsletter: it's so good to hear of work of such calibre being done in India.

Peter R. Cooke
Head of Ethnomusicology Programme
University of Edinburgh

I want to thank you for sending me a copy of the ISTAR Newsletter... I am enclosing a response to Mr Bell's article, 'Musical Acoustics', which I would be grateful if you would publish in your next issue. I invite Mr Bell's comments, either in a personal note or in a published form.

Nazir A. Jairazbhoy
Professor of Music
University of California, Los Angeles

Can't tell you how pleased I am to see the development of ISTAR and am very grateful to receive the issues... Since I last saw you I have been working a lot more with acoustic piano using various tunings in just intonation... It really does my heart good to get the vibs from India in the mail.

Terry Riley
Musician, composer
Camptonville, CA

We have liked your issue No 2, its approach and the type of material you have published.

Damoo Kenkre
Kala Academy for Goa, Daman & Diu

I would really like to receive your Newsletter on a regular basis. I enjoyed the first one. Among other things, I appreciated the computer art with the 5-pointed stars. And the general irreverence.

Ed Henry
Department of Anthropology
San Diego State University

The work that is being done by your Society, as reported in the Newsletter, is valuable and very promising, particularly in the field of musical acoustics, documentation and computer applications.

Nikhil Ghosh
Director of Research
Sangit Mahabharati, Bombay

We loved being with you all in India... You opened doors for us. You opened everything else, too: minds-hearts-offices-arts-teachers-pockabooks-houses-kitchens. With such beautiful warmth and gladness... We came away with a profound respect, and even awe, for the clarity and cynical purity, the dedication and fullness, and the humor and wonder of your work(s).

George & Gretchen Ruckert
Sarod player & Kathak dancer

THANKS: The Editors wish to thank Assad for designing the new ISTAR logo, John Thomas for typing this Newsletter, and Kelly Verma for assisting in editing. We also would like to express appreciation to the Ford Foundation, the National Centre for the Performing Arts and the Government of India; Dept of Education & Culture, who made possible the growth of our Society.

JON HIGGINS BHAGAVATHAR

"When time permits, I should like to contribute some material for your publication", wrote Jon B. Higgins to ISTAR in October 1984. But it was never to be. We were stunned to read of his untimely demise in Indian press. The Times of India wrote: "There have been foreigners who have mastered Indian languages, history and philosophy. But it is difficult to name anyone from abroad who was accepted as a first-rate exponent of Carnatic music -- as Jon Higgins undoubtedly was", while the Financial Express recalled that "almost every listener felt spell-bound by the authentic nature of Higgins' musical expression".



It is true, Jon Higgins became a living legend after he startled an audience of up to 10,000 people with devotional songs of Tyagaraja in 1965. "The audience was amazed and in awe", said his guru, T. Viswanathan of that performance. "He met challenge after challenge, becoming a full-fledged performer in the tradition". Soon he was recognised all over India, both in the South and the North.

Jon, who was better known in India as 'Higgins Bhagavathar', returned in 1967 to the USA where he pursued his academic career. In 1978 he was appointed Director of Wesleyan's Center for the Arts. "This is an unspeakable tragedy", said Wesleyan President Colin G. Campbell, and we cannot but agree with him. Jon Higgins was a pioneer. He was the best example for all those who believe in world music. Indeed, few people combine his qualities of performer, scholar, teacher and organiser. Wesleyan and the world of Indian music and musicology in the USA have lost one of their greatest ambassadors, a fine and sensitive man who understood the art from within.

SARASWATI PROJECT is a loose co-operative with Indian musicians, attempting to bring you live music in concert format recorded on high quality equipment and tapes. Indian music is first and foremost feeling, and the record format does not give space for a musician to develop his feeling nor to display his learning or skill. Saraswati project, therefore, chose the 3 hour concert format to give you the music in its totality. Saraswati project works with both North and South Indian musicians. The musicians are those that are the best in India, who are not necessarily famous or even known in the West. The first concert, THE LOST SARASWATI, by vina virtuoso Prof. R. Visvesvaran, is a stunning concert showing the quality and the direction of things to come from Saraswati Project. R. Visvesvaran is a musician's musician. He gives us a ragan tanam pallavi in Todi, then a superb tanam in seven different ragas starting with the Hindustani raga Jaijaiwanti, and next a satkala pallavi which is rare. This is truly live music, years ahead of its time. For further information please contact:

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MEMORIES OF AN OLD SARANGI PLAYER

by Joep Bor
ISTAR Project #11



He is a small, unassuming man dressed in a simple 'kurta' and pyjamas. A friendly man with a wrinkled face and white hair, not afraid to show his 'pan'-stained teeth. A man who lives in Ajmeri Gate, the poor and overcrowded city of Old Delhi, who comes and goes daily on his bicycle to the Kathak Kendra where he earns a modest living accompanying the modern 'dancing girls'. A man who deeply respects the people he has served, and never expects to receive much praise himself. He narrates with pleasure about his life and art.

Talking to us is Ustad Mohammad Jan, the prototype of an old and unambitious sarangi player. An artist belonging to a race, time and era which have almost vanished. An unknown musician from Moradabad who has travelled all over the world, has learned a lot and has a lot to say. He tells us the story of the sarangi, as he sees and experiences it.

Undoubtedly, the sarangi is one of India's most versatile and colourful instruments. It has an almost unlimited range of musical possibilities. Its enchanting sound can be appreciated both in accompaniment and in solo performance.

While accompanying, the artist either follows and enriches his simple folk tunes, or he echoes the intricate melodic movements of classical singers. Sometimes he will play a repetitive time-keeping tune ('lahara' or 'nagma') lending support to the improvisations of the drummer or the dancer. While playing solo, the musician narrates a timeless and wordless story, expressing sorrow and joy, wonder and expectation, hopelessness and peace.

We may encounter a wandering sarangi player singing devotional hymns or ballads in the calm, North Indian country side, or we may find him in the noisy bazars, playing with a courtesan, singing songs of love and separation. But whenever we hear him play, we are attracted by the plaintive and mysterious resonance of his instrument.

The musicians explain that the "saurangi" is an instrument of a "hundred colours" and, indeed, the sarangi with its thirty-five (or more) sympathetic strings generates an ocean of sounds and sentiments.

Why such a wonderful instrument has remained in the background, stigmatised, despite the efforts of the late Ustad Bundu Khan and Pandit Ram Narayan, is hard to understand and explain. It seems, the sarangi is doomed to die in anonymity.

TRAINING

I was seven or eight years old when I began learning from my uncle, Fida Hussain of Moradabad. He was the son-in-law of Sugra Khan, an excellent sarangi player who was a brother of the famous Ustad Mamman Khan of Delhi. He taught me the style of Bundu Khan who surpassed all sarangi players. Nobody equal to him has yet been born.

My father, Ahmad Jan Khan, was also a sarangi player but he was not a very good musician. He played mainly at weddings and travelled with singing and dancing girls. He used to play in the house of a baiji at night. When I was ten or eleven my father had a quarrel with my uncle. As a result, my uncle stopped teaching me. Then I began to take singing lessons from Ustad Ghaffur Khan, who also came from Moradabad. He was a disciple of Kallan Khan of Agra and Nasiruddin Khan, the father of the Dagar brothers, and sang both dhruwad and khayal. He also knew how to play on the bin and the sarangi. Ghaffur Khan was a sober man who never smoked or drank liquor. Although my father made enough money to feed us, we were quite poor, so my guruji advised him to have me stop singing and continue the sarangi, because it was not so difficult to make a living as a sarangi player. I switched back to sarangi. Ghaffur Khan taught me most of the khayals, thumris, tappas and taranas I know. He also taught me complex paltas. I will show you an example which is an exercise for the three main strings of the sarangi. You can practice it in any sampurna (heptatonic) raga:

S R G M P M G M G R G R S R S N D N M D N S G R M G P M D P N D P M G R

S R G M P D N S R G S - R G M P R - S R S N D P M G R G M P R - S -

After Guruji's death I learned from his nephews and from Munshi Khan, a sarangi player from Moradabad. Nabi Bakhsh, the disciple of Ghasit Khan, who also came from Moradabad, also taught me something, and many other musicians as well. Among these were Hussain Bakhsh, a sarangi player from Najimabad who left sarangi and became a well-known tabla player, but remembered enough to be able to teach me. I know so many Khayals that I could continue for nights on end singing or playing them. I could also sing thumris and taranas for many hours.

COURTESANS

When I was quite young, I began playing with professional songstresses, known as tawaifs or baijis. I travelled a lot with Fakurunnissa and we performed in Karachi, Peshawar, Bombay, Calcutta, Baroda and Ahmedabad. We visited Junaghad, Kathiawad, Bhavanagar, Gondol and many other small states of rajas who were great lovers of art. We also went to Gwalior to celebrate the coronation ceremony of the Maharaja. Many tawaifs and ustads were invited for that occasion. Fakurunnissa was very beautiful and a good singer. She was my pupil, and I played with her for almost twelve years. After the partition in 1947, she went to Pakistan.

Chammubai, who became known as Shamshad Begum, performed frequently on the radio. She was another excellent singer whom I often accompanied. Shamshad Begum was a famous figure in Delhi, and the head of many tawaifs. She learned music from Hidayat Husain, my uncle, and I also taught her. After marrying a rich man, she left the profession. Shamshad Begum is still alive.

Fakurunnissa and Chammubai had a wide repertoire. They could sing Khayal, thumri, tappa, tarana, dadra, ghazal and khamsa. Khamsa, which consists of four lines or couplets, was once very popular but is forgotten nowadays. The music and poetry which the tawaifs sang was very good, classical. Now the music has become cheap, filmy. Even if they still sing classical songs or high class verses, who would understand and appreciate them?

Baijis learned mainly from sarangi players. [1] I would visit their houses three or four times a week in the morning. Other musicians went daily to practice with them. If they were rich and wished to expand their knowledge, they would spend a lot of money to receive training from different masters, most often reputable artists who came to their homes to teach them. Even Shri Acchan Maharaj, the great Kathak guru, taught dance to baijis. Hirabaiji, a famous and wealthy tawaif of the rajas, learned abhinaya from Shri Krishna Maharaj, and all the great exponents of Kathak frequently visited her house in Kanpur. She wore large ear-rings and a necklace with big diamonds and emeralds. Hirabaiji was such a good performer that she could make people cry...

Annu Akhtar learned from the well-known Ustad Kale Khan of Agra. She sang mainly classical music. Two sisters were quite famous in Delhi at that time. They were called Doanni and Chawanni, which means "two annas" and "four annas"! There were many other accomplished women singers, but after the fifties their prosperity started declining.

Performances of these professional songstresses were known as mujras. The customers were always received in a special room. Sometimes there was only one visitor, but at other times there were as many as ten. The visitors would usually request to hear a particular song. The girl would then stand up and please her client. Although they wore ghunghrus, in general they did not dance very much.

The audience consisted of only men, and then, only those who could offer a certain amount of money, depending on how pleased they were. Some gave one hundred rupees, others fifty or twenty five. The rate for the musicians, two sarangi players and one tabla player, was fixed to 37.5%, which they divided among themselves. It was common for the sarangi player to be rewarded with silver coins, which he would slip into a hole in the skin of his instrument!

Baijis performed regularly outside their homes. They were invited to sing at the birth and hair



A tawaif with two sarangi players (by courtesy of Musée de l'Homme, Paris)

1 Pt Birju Maharaj confirmed that the basic vocal training was always given by sarangi players. In fact, he also received his first singing lessons from a sarangi player.

shaving (mundan) ceremonies of boys, at the holi festival or at weddings. In fact, the groom would always be accompanied by a tawaif and her musicians. If he arrived without a tawaif, the bride's family would refuse him entrance and ask him to return home, no matter how much money he had spent. The last time I played for a wedding was ten years ago. In Bihar this custom still exists. There they still respect the tawaif.

With Fakurunnissa I went to Rawalpindi to attend a yearly festival, called Inman-Ka-mela. Thousands of tawaifs from all over the country came to this mela which lasted a week. In a large tent at least ten tawaifs performed and "spent time" with their customers... behind a curtain. All kinds of people, Hindus, Muslims, Sikhs and Christians came there and spent lavishly. Sometimes a tawaif would earn as much as 10,000 rupees ! After the people started drinking and fighting such melas were forbidden by the government.

KATHAK

At the age of thirteen or fourteen I began playing sarangi professionally. I played quite well and regularly accompanied Shri Acchan Maharaj, the father of Shri Birju Maharaj. Although a very chubby man, he was tremendously swift. Usually he would conclude his performance with abhinaya while sitting on the floor and singing thumri. Most of these thumris I remember, and I have shown them to Birju Maharaj. When his father died he was very young and I have often reminded him of these things.

Shri Acchan Maharaj would often take me along with him. I once accompanied him in the palace of the Nawab of Rampur. There were many excellent artists such as Mustaq Hussain Khan, Hafiz Ali Khan, Aliya-Fattu and Kale Nazir Khan. The Nawab was a good Kartal player. In those days nobody was allowed to look him straight in the eyes and nobody could sit in front of him without a cap or something else on his head.

I have also played for Shri Shambu Maharaj and worked for many years in his class at the Bharatiya Kala Kendra. They did not pay more than 250 or 300 rupees then. When I joined the Kathak Kendra, the salary was much higher, 1250 rupees. Shambu Maharaj was an excellent singer and a King of abhinaya. His na-dhin-dhin-na was superb. I remember a performance in Madras when people in the audience broke out in tears... an unforgettable programme. But Shri Birju Maharaj is a unique dancer, and an excellent musician as well. He sings thumri and plays flute, nal, dhol and tabla. He also composes the music for all his ballets. And, mind you, he is self-taught !

Shri Acchan Maharaj always danced in tintal and used to say: "Tintal is the father of all talas... If you really know tintal you can understand any tala." He would show all the other rhythms in tintal. That is the major difference between Kathak then and now. Today many complex talas are used. Another difference is that the musicians stood and moved along with the dancer while they played. There were always two sarangi players, and one tabla player who would stand behind the sarangi players. Another man would hold a torch on a long stick and also move along to cast light on the dancer. The audience sat on all four sides of the stage and the dancer moved in the middle of the square. The sarangi was the major instrument, and it was the responsibility of the sarangi player to keep the exact timing; the tabla was secondary, and harmonium was never allowed. I also played in this way. The sarangi bag, which was tied around my waist, supported my instrument, while I followed and accompanied the dancer (see photograph).

Even the laharas have changed. In the past I would play laharas in ragas such as Shankara, Kedara, Desh and Gara. The two sarangi players played exactly the same tune. But from time to time, after the dancer had reached gam, one of the sarangi players would improvise one or two tanas. The audience appreciated this and reacted by clapping or saying 'wah-wah'... Now no one bothers about the sarangi.

My sons do not play sarangi. They have to choose their own way of life. I began to teach them, but they gave it up. The sarangi requires a lot of practice. It is a very difficult instrument and one has to be very sincere. Youngsters today do not like to work hard or use their brain. In my community there are not more than two boys who play sarangi. Yes, I believe that the sarangi is almost finished.

ON FAMOUS WOMEN SINGERS And Their Teachers

by Dilip Chandra Vedi
ISTAR Project #6



Throughout history, until the beginning of this century, the influence of female singers and dancers in the life and culture of Indian cities has been strongly felt. However, as a result of social prejudices and male chauvinism, the names of famous songstresses have virtually been banned from the literature of Indian music. These artists have not been forgotten, and as Pt. D.C. Vedi recalls, they were often excellent performers and the favourite disciples of legendary ustads or well-known sarangi players.

Vediji, one of the seniormost scholar-musicians of India, was born in 1901 in the Punjab. From 1919 he began performing all over India, and soon he became recognised as one of the most powerful exponents of classical Hindustani music. A keen observer, and gifted with a remarkable memory and sense of discrimination, Vediji loves to recount anecdotes about the great musicians of the past. Here follows an excerpt from his recorded MEMOIRS. He talks about the famous women singers he knew, heard, or heard about. J.B.

If a woman can sacrifice her whole life for the sake of music, is that not a credit? Why do they call them 'baijis'? Why should we stigmatise them with such cheap social labels? Only people with a low mentality use such labels. There was a famous singer with the nickname BAVLI BAI, who was a real devotee of music. I never heard her sing but my Guruji, Bhaskar Rao Bakhle, talked many times about her. He told me that even while she slept the tanpura was within her reach, lying next to her on another bed, just like a lover. Whenever she woke up in the middle of the night, she would play tanpura and sing till she fell asleep again. She was a real example for many women singers.

Bavli Bai came from Goa but lived in Bombay where she learned from the great Miyan Nathan Khan of Agra. She was one of his best disciples and was unchallengeable in khayal, although not in thumri; not in thumri or other styles. Later she was appointed a court musician of the Maharaja of Bhavanagar. Although she was invited to sing in many other states, she never left Bhavanagar where she died in the beginning of this century. All the great ustads, Ghulam Abbas Khan, Alladiya Khan, Bhaskar Rao Bakhle and many others praised her. Faiyaz Khansahib heard her when he was still a boy.

Another famous songstress of the last century was GOKHI BAI, the best disciple of the great scholar-musician 'Pandit' Bahram Khan, who was a court musician of Maharaja Sawai Ram Singh II of Jaipur. He was the great-great-grand uncle of the Dagar Brothers. Gokhi Bai was a versatile singer who performed dhrupad, dhamar, khayal and thumri. Although I never heard her sing, I heard a lot about her. It is said that Miyan Kalu of Patiala, also a pupil of Bahram Khansahib, accompanied her on sarangi, and that his son, Ali Bakhsh 'General', received some training from Gokhi Bai. Ali Bakhsh was considered the founder of the Patiala gharana. When I heard him in 1920 (he was in his seventies) his tanas were still very clear and in tune.

Some women singers were so good that they even surpassed the ustads. This was the case with ZOHRA BAI of Agra. As a boy, before I had begun studying music, I heard her at a marriage party of a big landlord in Lahore. Later, after some training of dhrupad and related styles, I had a chance to listen to her disc records. I forgot everything and tried to imitate those records. I was convinced that I wanted to learn that style of singing...

Zohra was a disciple of Ahmad Khan, a sarangi player and a first-rate singer who learned dhrupad and dhamar from Ghulam Abbas Khan, one of the stalwarts of the Agra gharana, and Khayal from Mehbub Khan 'Darsapiya' (or perhaps from his father) of Atrauli. It is said that Ahmad Khan taught Zohra Bai

like his daughter. She became an all-round vocalist and was praised by each and everyone. At that time it was very difficult for a woman singer to challenge her. Zohra's voice was so impressive, so mature. But only those who knew music, could really appreciate her style. A layman enjoys a good voice, the words and the speed. He cannot go into details. How can he judge what is right and what is wrong? That is the task of learned musicians... Zohra spent the later part of her life in Patna where she died (in 1911?).

In those days Abdul Aziz Khan of Patiala, who became famous as a binkar, was playing sarangi. He was living in Bombay and accompanying SHAMIA and PUTLI, two sisters who learned from his father, the great sarangi maestro Alladiya Biltuwala. They were very rich and in the service of a wealthy Hindu landlord. His name was Chamman Lal, if I remember well. In 1919 Shamia and Putli spent one lakh rupees for their brother's marriage. The money was spent only on music. How many musicians were invited! There were ustads from Hyderabad, Delhi, Patiala, and many other places. I attended the whole performance which began in the evening, around 7.30 p.m., and lasted until 9 or 10 in the morning.

But after some time, there was a serious quarrel between Abdul Aziz and Shamia, who was better known as Shamshad Begum. [1] She taunted and insulted him, after which he told his friends (I was also present): "Now I will stop playing the sarangi. This instrument does not give me any respect", and he put his sarangi in a bag and hung it on a peg. He took this decision in spite of the fact that he was a reputed sarangi player, both as a soloist and an accompanist, and, that he earned sufficient money. In no time, however, Abdul Aziz Khan became the leading vichitra vina player. He was a fabulous musician and a wonderful man.

Many sarangi players taught women singers because the sarangi was always used by them. The timbre and pitch of the sarangi suit the female voice. And most sarangi players are singers as well. They learn music from vocalists, either directly or indirectly, by imitating as much as they can. But learning is different than imitating. With the help of training one can never go wrong, whereas those who only copy often fail to follow the right path.

GAUHAR JAN of Calcutta was also very famous in the beginning of this century. [2] She was a Jewish girl and learnt from many ustads. Her voice was very attractive and appealing and she sang Khayal, thumri, ghazal, bhajan, Bangla songs, and even a few Karnatak, English and Persian songs. To sing in many languages was Gauhar Jan's speciality. She was a big 'showman' and was highly paid at that time. But in classical music her technique was not as polished, not as vast as that of Zohra Bai or Babli Bai.

Gauhar Jan was engaged by the Nawab of Rampur. After that she went to Bombay and was appointed a court musician in Mysore state, where she died in 1929 or 1930. I heard her in Amritsar and in Bombay, in 1919. When she was invited by Maharaja Bhupender Singh of Patiala, Mamman Khan, the famous sarangi player from Delhi, accompanied her.



JANKI BAI of Allahabad (see photograph) was famous for popular music, dadra, thumri, ghazal, bhajan etc., but not as a classical singer. She had a very good voice and tried to follow Gauhar Jan. She performed all over India. I heard her once at a marriage party. Another good thumri singer was MALKA JAN of Agra. She had a very sweet voice and learnt from a well-known sarangi player. When Faiyaz Khansahib was in Calcutta she became his disciple and learnt something from him. But the most excellent thumri singer was MUSHTARI BAI of Agra. Her style was different from other women singers and she was always acclaimed by the experts of thumri. In the late twenties no woman could equal her in thumri.

There were many other good women singers. MUKHTAR BEGUM belonged to Amritsar district but lived in Calcutta

where she was well-known as a singer of light-classical music and Punjabi songs. She inspired AKHTARI BAI FAIZABADI, better known as Begum Akhtar, who became well-known as a ghazal singer. Begum Akhtar learned from Ata Khan of Patiala, and always paid honor to the great musicians. She became popular after 1932, when she acted as the heroine in a movie, called 'Roti'. Although she failed as an actress, she was very much appreciated as a singer.

In Lahore there was another good singer, called SARDAR BAI, who was a pupil of Ali Bakhsh and Fateh Ali of Patiala. WAZIR JAN of Indore was another wonderful thumri singer. In 1922 I heard her sing, and I was very moved. ILAHI JAN of Jagarawan (in Punjab) was also unique as a singer of ghazal, mand and Punjabi songs. We met in 1926 when both of us performed at a wedding. She was very sharp and very gifted. It was very difficult to imitate her style of singing.

In Banaras there were several good women singers. RAJESHWARI DEVI learned from Siya Ramji, a very famous sarangi player and a dedicated teacher. In playing tappa he was unique. Rajeshwari was really a wonderful singer and her daughter KAMALESHWARI DEVI even surpassed her mother in thumri, although not in the other styles. Kamaleshwari was a refined and educated lady. She knew Sanskrit, Hindi, Urdu and English. After marrying a businessman she left her career as a professional singer.

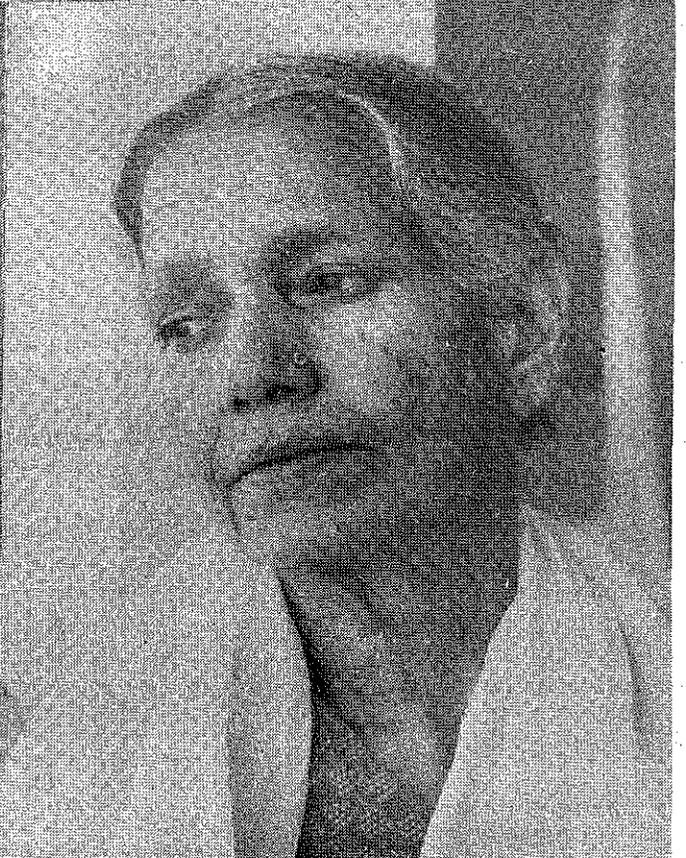
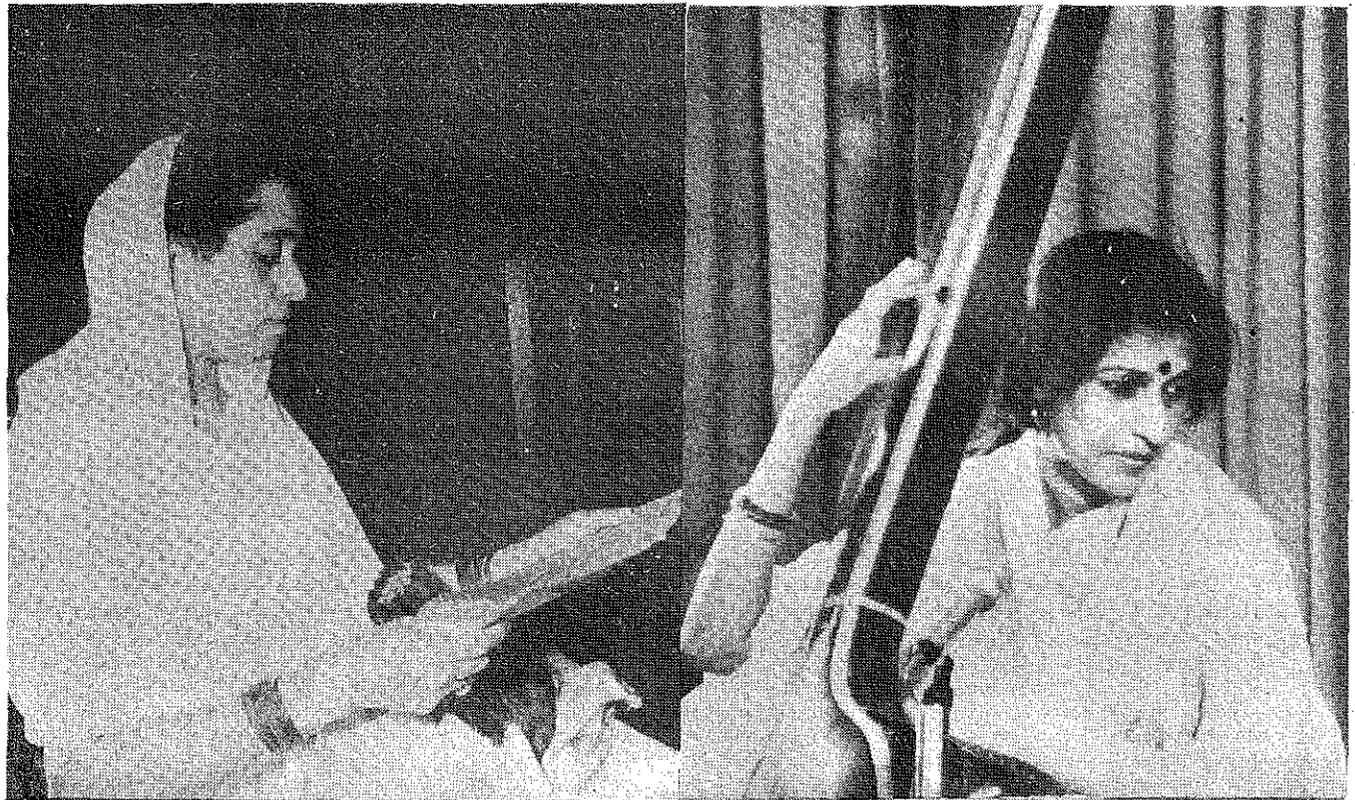
SIDDESHWARI DEVI first learned from her aunt, Rajeshwari; then from Siya Ramji, and then, after he died, from another sarangi player, Sarju Prasad. She was also a very good singer, and so were Rasulan Bai and Kashi Bai, who were also pupils of Sarju Prasad. In her youth, RASULAN BAI had a much better and more vibrant voice than Siddeshwari or Kamaleshwari. But later, when she was old, it was just the other way around. KASHI BAI was versatile and sang khayal, thumri, tappa, bhajan, but not ghazal. Nowadays, GIRJA DEVI excels her colleagues in singing tappa. She has learned from Sri Chand Mishra who was the guru of many sarangi players, and was himself the son of a sarangi player. He was a master in tappa. NIRMALA DEVI, the daughter of a famous tabla player, Vasudev, is known for thumri and ghazal. But she also sings khayal, tappa and bhajan very well, and very sober. Her voice is extremely tuneful, even when she sings fast, and she was a first-class playback singer in the movies. Nirmala Devi is a cultured and humble woman, and a good example for many women singers.

BADI MOTI BAI of Banaras was also well-known. She was a senior disciple of the great thumri singer Mojuddin Khan, and died only a few years ago. Between 1925 and 1930, she was at her prime, but at the end of her life her voice declined. Her guru, Mojuddin Khan, was himself the favourite pupil of Bhaiya Ganpat Rao. Bhaiyaji was a pioneer, a man who really knew how to express emotions through music. He was the son of Maharaja Jivaji Rao Scindia of Gwalior and CHANDRABHAGA DEVI, an excellent singer and a beautiful and refined woman. In Gwalior, Bhaiyaji learned dhrupad and sitar from the great binkar, Bande Ali Khan. After his mother left Gwalior, he continued his studies in Lucknow with Sadiq Ali Khan who was a famous vina player, and a good thumri and tappa singer as well as an author. [3]

Bhaiya Ganpat Rao was not only a fantastic thumri singer but he was also responsible for popularising the harmonium. At first nobody liked the harmonium and it was not used for classical music. Since he knew dhrupad and sitar, he was able to play harmonium in such a way, giving the right touches, that each and everyone started liking it. He played in a soft, inimitable way, and his special quality was to link classical techniques with the light songs of U.P. That is why everybody tried to follow him, and people still remember him.

The majority of female singers were known for thumri and ghazal, expressing sringara rasa, eroticism and love. Such songs excite simple-hearted men. How many people can resist a beautiful woman with an attractive face and an appreciating voice? Compare it to a garden with blooming jasmin and rose flowers. Some people relish the scent from a distance; others pick the flowers and take them home, to be able to enjoy them longer. But within a few days the flowers wither...

Other women singers were known for khayal. For instance, there was TARA BAI SHIRODKAR of Goa, a fabulous Khayal singer. She was the senior disciple of the great Bhaskar Rao Bakhle, and her style was a real photocopy of his gayaki. But she married a businessman who was not interested in music, and stopped performing. So her name never spread. Four years before her death (in 1949) she started broadcasting at All India Radio, Bombay. At that age she was not the same Tara Bai who I heard in 1919. Then her singing created a magical spell.



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- 1 Two other women singers were known as Shamsad Begum. One was a singer of light-classical music from Delhi, and the other a Khayal singer from Punjab.
 - 2 Joep Bor, My name is Gauhar Jan, ISTAR Newsletter 2, 1984: 4-6
 - 3 Sadiq Ali Khan Dihlari, Sharmayahi Ishrat, Delhi 1875.

There was another Tara bai, TARA BAI BARODEKAR, who was in the service of a big zamindar in Baroda, Sardar Mane. She was learning from Abdul Karim Khan, who played sarangi with her before he became a famous vocalist. But there was a grave misunderstanding between Sardar Mane and Abdul Karim Khan, and he and Tara Bai were compelled to leave Baroda. HIRA BAI BARODEKAR is the daughter of Tara Bai and Khansahib, and so was her elder brother Suresh Babu Mane. He looked just like Abdul Karim Khan, the same eyes, the same nose and the same facial expressions. Suresh Babu was a good-natured man, and an alchemist. He promised to teach me this art if I would give up singing for money in public. We were intimate friends, and both he and Hira Bai were very good singers. They learned from Abdul Karim Khan and Abdul Wahid Khan Behre, who also began his career as a sarangi player, accompanying Lila Bai in Saharanpur. Hira Bai is one year elder to me, and always gave me a lot of respect and affection. She had a great admiration for Bhaskar Raoji's style.

FIRDAUSI BIBBO BAI of Jaipur was a pupil of Ustad Kallan Khan of Agra, the uncle of Faiyaz Khansahib, from whom she also learned. We came to know each other in 1926 in Baroda, where Khansahib was a court musician. Undoubtedly she was one of his favourite followers and had a broad repertoire and melodious voice.

In more recent times KESAR BAI KERKAR was the most famous female Khayal singer. She was the main disciple of Alladiya Khansahib. Earlier she had learned from Ramkrishna Vazebuwa, the great sitar player Barkatullah Khan, and Bhaskar Rao Bakhle. In 1919, Guruji took me along to Kesar Bai's house. We were practising together, S M G P M D M P G M G R S, in Bihag. But from 1921 onwards she started learning from Alladiya Khan and practised for many, many years. She was admired all over India. The style of Khansahib was not meant for ordinary musicians. It was at such a high level that only real connoisseurs could appreciate it.

The technique of his second son, Manjhi Khan, was even more impressive than that of Kesar Bai. That technique was followed by PADMAVATI SHALIGRAM. She takes very much care of raga and her tanas are like "falling flowers". She does not repeat the same piece over and over again. Besides, she sings all the styles of thumri, and is a very educated lady from a respectable family. Her father was a good pakhawaj player.

Most women singers were taught by men. Only a few learned from their mothers or sisters. KISHORI AMONKAR, for instance, learned mainly from her mother, Moghu Bai, who gave her very profound training. After that, she was taught thumri by the late Pt Hussan Lal. MOGHU BAI KURDIKAR was a very, very good Khayal singer, equal to Kesar Bai, when she was young. She learned from Haider Khan, the illustrious brother of Alladiya Khan.

At present, I think Kishori Amonkar is the leading young woman singer. PARVEEN SULTANA is also very good. She learned mainly from Chirimoy Lahiri, a disciple of my gurubai Pt S.N. Ratanjankar. PRABHA ATRE is the best disciple of Suresh Babu Mane, and in my opinion the most sober and sincere follower of the Kirana gharana. She is a very refined and educated lady. MANIK VARMA is also a well-known student of Suresh Babu. In 1944 she became my pupil and after that she also learned from Jagannath Purohit. In other words, she represents both the Kirana and Agra gharanas.

The professional women singers were very good and faithful to their ustads. Abdul Wahid Khan told me for instance, that Hira Bai Barodekar paid him monthly, even after she had become a well-known singer. Today students do not care so much for their gurus. After learning, very few even visit their teachers. They tend to forget who is the guru and who is the chela. This is called 'progressive' thinking, but in my opinion it is ungratefulness. How can one talk about progress, without learning first for an extended period of time, without having the patience to listen to others? Everybody is in a hurry, and everything depends on publicity nowadays, whether what has been written is right or wrong. This is the modern craze...

In 1923, Pt Jivan Lal Mattoo convinced me not to teach professional songstresses, and I took a vow never to accept them as my disciples, only as friends. Now I think it was not a wise decision. These women gave more respect (and money) to their teachers than the girls from so-called respectable families.

THE SVARUPAS OF RADHA AND KRISHNA From Swami Shriramji Sharma's Rasamandali

by Srivatsa Goswami
Sri Caitanya Prema Sansthana



'Rasalila' is a unique composite which brings together the ritual enactment of a central Krishna Myth in dance, with the semi-operatic performance of any one of a vast number of peripheral stories of the Krishna cycle", wrote Norvin Hein. Thus, rasalila is an unwritten musical drama; in the European tradition it is most comparable to the mediaeval Christian mystery plays. Divine deeds are known in Sanskrit as 'lilas'. "Krishna's famous deed is called 'rasa'. On an autumn night He favoured the 'gopis' by dancing with them a circular dance, which is called 'rasa' by the Visnu Purana." The rasa dance is continually re-enacted in this well loved form of religious drama, called 'rasalilanukarana'. Conveniently, the compound is shortened, and the plays are called 'rasalilas'. They consist of an initial dance followed by a one act play based on one of Krishna's lilas. The entire performance is named after the prior element, the rasa, its most sacred and invariable feature.

Mathura and Vrindaban, a small city of temples, are the hub of the cultural and linguistic region known as 'Braj'. Its language, called Brajbhasa, is a Western Hindi dialect. This area is the geographic and cultural center of Northern India. Because of the Krishna cult, Braj culture and language have an appeal all over India.

HISTORY

The Bhagavata Purana, the ancient Indian description of Krishna's life, tells about Krishna dancing with the gopis, the milkmaids of Braj, along the wooden bank of the River Jamuna on a full moon night. Rasa is the dance in which he reveals

himself to each gopi separately. This dance plays a central role in Krishnaite (Vaishnava) theology. When Krishna disappeared from the dance, meaning to cure the gopis of their pride in dancing with him, the gopis began to impersonate Krishna. They performed not only the rasa dance, but other lilas from Krishna's youth as well, to become aware again of their God, and to call upon Him. Radha is the central figure among the gopis and her companions are called sakhis.

Although it has been described in the Bhagavata Purana, Vrindaban exists as an historical location only from the early 16th century. At that time, many holy men, poets and singers came to Braj. They experienced Krishna's youth in their vision and thus built up the religious topography throughout Braj. Sri Krishna-caitanya Mahaprabhu and the six Goswamis revived and developed Braj and Vrindaban as the main center of the Vaishnava movement. Their movement was called the Bhakti cult, which teaches the way to liberation not through a philosophical negation of creation but rather through loving devotion to a personal God. It radiated from Vrindaban all over India.

According to the Bhakti cult's teachings, creation is not an illusion (maya) from which one must liberate oneself; instead, it is a reality, and liberation can only be attained through sensual experience of this reality. As a social reform movement Bhakti cults stand against orthodox caste separation. This is expressed by Krishna's life having been translated from Sanskrit to Brajbhasa, the native language of Braj, by the founders of the movement. The singers who recited the padas or

verses of the Bhakti poets in the temples had been called to the Mughal courts in the 16th century because of their superior quality. Thus, Brajbhasha became the most important language in the development of North Indian classical music up to the 19th century.

Swami Haridas, teacher of the famous singer Tansen, and therefore one of the most important figures in the history of Indian music, lived secluded in Vrindaban. A legend relates that the great Mughal Emperor Akbar wandered to Vrindaban in the company of his court singer Tansen, to listen to Swami Haridas. It is certain that during Akbar's time, Vrindaban was free of the usual tax for non-Muslims.

Swami Haridas is also considered to be connected with the origin of the modern rasalila tradition, although references from Patanjali, the Hariyamsa and Visnu Puranas, and inscriptions, prove that Krishna drama existed previously in Braj. The Govinda-lilamrita of Krishnadas Kaviraj describes what is still the prevalent style of rasalila. The revival of the rasalila was undertaken by the Telangana Brahmin, Narayana Bhatta, who came to Braj in 1545 A.D. (samvat 1602) and settled at Unchagaon. He revitalized the tradition by establishing rasamandalis or troupes of child actors and musicians, established the rasa mandala or typical outdoor stage for these enactments, and began the tradition of the ban yatra, the pilgrimage of the holy places within Braj, re-enacting the appropriate lila with the rasamandali at the very site (also known as 'processional theatre'). The burnhi lila, which is still performed today during the festival of Radhastami (Radha's birth anniversary) is also said to be his contribution. Other saints who shared in this revival are Gamadi-Deva Acharya, Gopala Bhatta, and, in the 17th century, the King of Jaipur, Swami Jai Singh, who built the original compound which is nowadays the home of Sri Caitanya Prema Sansthana.

While it is not clear that the Swami Haridas connected with the rasalila tradition is the same historic personality who had been Tansen's teacher, it is certain that dhrupad had originally been part of the Krishnaite temple ritual. Today there is still a vocal tradition called sama in the Krishna temples of Braj and Rajasthan in which the padas or verses of the Bhakti poets are performed in the same metres commonly used in classical dhrupad singing. However, the artistic shape of the latter developed in the royal courts and finally led to the musical tradition known today as North Indian art music. We also know that rasalila in its modern dramatic and musical form originated in Braj at about the same time dhrupad was born.

To take part as a character in the rasalila is a privilege reserved exclusively for the Brahmin boys of Braj. They are allowed to act only until reaching puberty, after which they may stay with the troupe as musicians. Some eventually form their own mandalis, as the troupes are called. The children who take the roles of Radha, Krishna and the gopis are called svarupas, 'embodiments', and indeed, the Indian audience looks upon them not as actors but as embodiments of the divine figures they portray. The children in this mood of svarupas spontaneously improvise dialogues or make jokes with the audience. The incidents depicted in rasalila portray Krishna's childhood and youth, when he was full of mischief. Therefore the dominant aesthetic principle of rasalila is not to have a perfectly consistent artistic performance - which one could hardly expect of child actors in any case - but to make visible the playful, spontaneous character of Krishna's childhood games. Even the choice of the lila enacted at a performance is usually made by the child portraying Krishna, depending upon his mood.

Outdoors, the rasalilas are usually performed on rasa mandalas, round platforms which one finds spread out all over Braj, perhaps symbolizing the circular character of the dance. Performances also take place in temples - known for their generous patronage - or in private homes. Nowadays, the mandalis must travel out of Braj for their survival and are invited all over India. Because the temple or private patron is financing them, performances are free of entrance fee. At a certain point in the performance, the svarupas form a jhanki or 'living picture', at which time the audience is invited to come on stage and offer gifts and to touch the feet of Radha and Krishna. During the rainy season in the months of July and August, most of the troupes return to Braj. Some undertake the ban yatra, the pilgrimage around Braj, visiting all the holy sites and enacting the appropriate lilas; they are accompanied by large groups of pilgrims.

Until the present day, rasalilas have played an important part in educating the local people. Rural people in Braj, as elsewhere, are often illiterate and receive their religious tradition through rasalila rather than the Sanskrit text of the Bhagavata Purana and other similar works.

Different elements of a performance, the dialogues, singing and dancing may be adjusted to present day incidents. The basic texts consist of verses by the mediaeval Bhakti poets, sung in classical dhrupad metres, on which the dances are also based. But these are constantly supplemented by present day forms.

The revival of the classical dhrupad element in rasalila has been a special project of Sri Purushottam Goswami. Goswami has founded the Sri Caitanya Prema Sansthana, where classical dhrupad festivals have been taking place for the last several years and a dhrupad music school was also established in 1988. A rasalila troupe will also be taught there.

STRUCTURE

Each performance starts with the rasa dance, the central event of the Krishna cult. This is followed by the lila, whose theme is always an incident in Krishna's youth up to the time he left Braj. There are about 150 such lilas existing today. The style of acting may be characterized as suggestive, even Brechtian, with a minimum of scenery. Padas are sung and then explained in soliloquies to be certain the audience comprehends. Local traditions are adapted into the scenes, and the dance is giti natya, or dance drama, basically in Kathak style. Vallabh, the first historic rasalila choreographer, was a court dancer. However, the paramalu and other movements are different, as they are not fixed in rasalila dancing as they are in Kathak.

While these are elements of folk drama, there is still a link with the Sanskrit drama which can be observed in such details as the theme from the Puranas, the classical dance and music, and the characters (for example, Manasukha as the Vidusaka), the mangalacarana corresponding to the nandi, and the swami corresponding to the sutradhara. Thus it brings some of the great Sanskrit literary tradition to the masses.

A typical rasalila performance begins with the nitya rasa, the daily rasalila performed by Radha, Krishna, and the gopis. The svarupas first sit on the dais or throne (simhasana) while the swami, the lead singer, invokes his guru and God in the mangalacarana, after which devotional songs are sung by all the samajis or musicians, songs which recall Braj, God, grace, etc. Then dhrupad is sung by the swami. This is followed by the arati, the waving of lights before the svarupas by a sakhi, for the glorification of the divine couple. The Ashtapadi of Jaysdeva's Gita Govinda is sung at arati.

The sakhi then requests Krishna to begin the daily rasa dance, and Krishna obligingly invites Radha to join him; they dance while the chorus of gopis sing along with the swami. Often the high point of this dance comes with the peacock dance of Krishna, on his knees, spinning around the stage. Then, Radha, Krishna and friends, all take rest on the simhasana, while the swami sings in vilambit (slow rhythm), very sweetly.

Now Krishna rises to give a sermon, a tradition started recently by Baba Premananda. This is also called rasia, because it is sung in the form of a rasia or folk song, with explanations and gestures. The curtain drops and Kirtana follows, singing hymns in honour of Radha and Krishna. The main gopi engages the audience while the jhanki or 'living picture' is set up. Then there is padagayana, singing of verses describing Radha and Krishna's beauty and love, and the audience is free to come on stage to touch their feet and make offerings.

The lila part now follows. These depict stories of Krishna as a child in Braj, and show only madhurya rasa, the sentiment of sweet love. The stories are based on the Bhagavata Purana, but also include the inspired writings of poets and saints.

The accompanying orchestra nowadays consists of sarangi, bansuri (flute), pakhawaj or mridanga (drums), jhanjha or kinnari (cymbals), harmonium, and tanpura; the sound systems as well as stage backdrops and decorations are of course modern innovations. The make up worn by the children has as its base powdered conch shell and talc. Today the dots on the forehead and cheeks are made from gopi candana, a sacred earth from Dwaraka in South Western India, while in former days chandana or sandal paste was used; while the dots are still wet, the mica is sprinkled on to give the effect of sparkles. Various colors are used, especially white, red and green. Kajal, Indian mascara, is used to highlight the eyes and eyebrows. The costumes are very particular with great profusions of

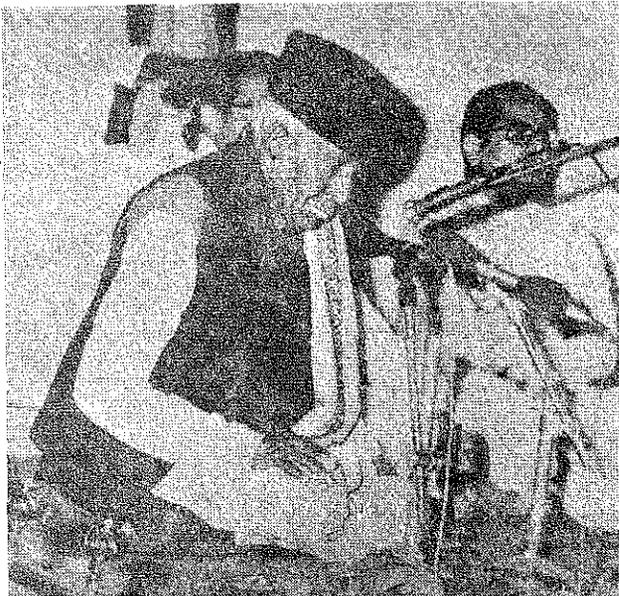
fittings, all of which reflect 16th century Mughal costumes. The mukutas or crowns are specially worked in gold embroidery. Only when the svarupas don these mukutas are they considered to be Radha and Krishna; that is to say, the divinity has descended into them.

One can certainly say that Krishna is central in Indian art forms such as music, dance, drama, literature, painting, sculpture, etc., and may be considered India's unique contribution to world culture. Braj has the distinction of being Krishna's home, and the home of the rasallias where Krishna's play is still brought to life today.

Norvin Hein, The Miracle Plays of Mathura, Delhi, 1972: Oxford University Press: 129-276.

J.S. Hawley and Srivatsa Goswami, At Play with Krishna: Pilgrimage dramas from Brindavan, Princeton, 1981: Princeton University Press.

NEWS FROM THE DHRUPAD PROJECT



Pt Ram Chatur Malik

The 'Audiovisual Library of Dhrupad Compositions' was started in October 1983 with the aim of conducting a survey of the various dhrupad styles which are still sung in India today, giving preference to the preservation of the heritage of old masters. The recordings are done on high quality audio tape and specimens are taken on video. Whenever possible, the texts of the compositions are written down, translated and transcribed.

The site of the project is the Shri Caitanya Prema Sansthana in Vrindaban. Source materials for the library either come from the collection of the Dhrupad Samarohs which were held at the Sansthana during recent years, or are being recorded for the project.

Altogether 411 items have been collected during the first year of the project. Of these, 35 are raga chalanas, 10 mangalacaranas, 104 alaps, 74 dhrupads, 52 dhanars, 22 sulphaktas and 34 are other types of compositions. Besides these, 25 haveli sangit items have been recorded, 44 pakhawaj solos and 14 Rudra vina recitals. Nearly a hundred video recordings have been done as well.

The main artists who have contributed to the library include: Asgari Bai, Vittaldas Bapodra, N.C. Bural, Balji Chaturvedi, Lakshman Prasad Chaturvedi, Pushpa Chaya, R. Fahimuddin Dagar, N. Zahiruddin and N. Faiyazuddin Dagar, Z. Fariduddin Dagar, H. Sayiduddin Dagar, Shubhada Desai, Ram Chatur Malik, Abhaya Narayan Malik, Vidur Malik, Ramprasad Pande, Sudha Mukul Ray, Gaudi Shankar, Gopi Rasik Tailang, Siya Ram Tewari (vocalists); Purushottam Das, Pagal Das, Govindram, Raj Kumar Jha, Ramashisha Pathak, Lakshmi Narayan Pawar, Paramanand Sharma, Ramji Sharma, Raja Chatrapati Singh, Ramji Upadhyaya, Tribhuvan Upadhyaya (pakhawaj players); Asit Kumar Banerjee, Z. Mohiuddin Dagar and Asad Ali Khan (binkars).

At present, emphasis is given to documenting the music of Pandit Ram Chatur Malik, the doyen of the Darbhanga tradition. A catalogue of all vocal recordings is under preparation and will be available soon. It will classify the ragas, artists, different types of compositions, and first line of each song. For further information please contact:

Peter F. Mueller, Braja Kala Gurukula, S.C.P.S., Jaisingh Ghara, Vrindaban 181 221, India.

MANKUTUHAL AND RAG DARPA
Reflections of a Great Seventeenth Century scholar-Musician

by Shahab Sarmadee
ISTAR Project #9

Be it any country, any period of time, a singer ('gayak') or instrumentalist ('vadaka') - even if he is a composer ('nayaka') - has very seldom been a writer ('lekhaaka') also. In India this has been so, almost uniformly. And so the inevitable has continued to happen: the practised art has had its exponents but not its spokesmen, with the result that many of the procedural details, the essentials of technique, together with its aesthetic preferences, often failed to be incorporated. On the other hand, the writings of those who were adept in theory did not convey any feeling for the living aspects of art, much less authenticate them for the future.

Bharata, Matanga or Sarngadeva are so much alive today because they were both writers and full blooded artists. Likewise Amir Khusrau, Raja Man and Sultan Shah Sharqi continue to remain vital even today because they inspired the up-coming art of their time in full measure and wielded a scholar's pen to perpetuate it.

Faquirullah, the author of Rag Darpan, also belongs to this category. He was an ardent lover of the art, a connoisseur of all its virtues, a musicologist, an innovator, a composer, a critic and a historian - all in one. To add to his credentials, Faquirullah, who was really Nawab Saif Khan, was a soldier-statesman, a general, and a confidant and courtier of the potentate Aurangzeb; one, who could defy him on a point of principle. For all this plus his administrative ability, he was made the Governor of Kashmir during the middle ages. Furthermore, he was a saint and a scholar, a 'faquir', who in all genuineness desired to become a 'Faquir ul'lal' (a beggar in the way of God).

It was this exceptionally gifted and self-disciplined person who sat writing his RAG DARPAN, during an extreme winter of the year 1076 H./ 1665-66 A.D. in Kashmir. In an outspoken colophon to it he writes:

On this account, the text prepared in Sirhind [1] was what it was. But most of my dear ones treated the same as the final draft and took it away. I earnestly pleaded to them that it was still incomplete, but they mistook my pleadings for an excuse...[2]

He continues:

In spite of so many insistent preoccupations during this Zamistan (height of winter) of 1076 H., when all roads to and fro were laden deep with ice, the present draft of this Risalah took two to three years till the conditions prevailing suited its completion.

The indications are quite clear. The document referred to is only the RISALA-i-RAG DARPAN. The translation of Raja Man's treatise, MANKUTUHAL, had already been attended to and finalised by the author while he was at Sirhind. As such, the book presently known as Faquirullah's Rag Darpan may be considered in two parts: the first a TARJUMAH of Mankutuhāl and the other a Risalah, the author's own contribution. An unequivocal classification to this effect occurs in the main text. [3]

With good luck for all concerned, we were able to study the manuscript of this Risalah during the course of our bio-bibliographical survey. Apart from being complete and all-correct, it is definitely the author's own copy, bearing his official seal and an endorsement, in his own hand (see photograph). [4] It also contains some marginal notes not to be found in any of the other handwritten copies. And, being of techno-aesthetic significance, these additions are remarkably informative.

Mankutuhāl was presumably a treatise in braj-bhasha the language of Braj. It was meant to contain the records of the proceedings of a great conference of musical experts assembled under the orders of the rāja. According to Persian sources, [5] these experts were Nayaka Bhanu, Nayaka Pandavi, Nayaka Charju and Nayaka Dhundhu, headed by the rāja's own music-laureate Nayaka Bakhshu. All the NAYAKA-s came from the South, except for Nayaka Bakhshu who belonged to the North. In spite of this, all of them are known to have adhered to the same tradition, and abided by the same technique. The supposed bifurcation of the Hindustani and Karnataka systems of SANGIT does not seem to have come in force by that time.



Title-page of Faquirullah's RAG DARPAN with the author's own official seal
(by courtesy of Maulana Azad Library, Aligarh)

The impeccable raja and his exceptionally gifted rani Mrga-Nayari, have been credited by their chroniclers with the pioneering work of progenerating the DHURPAD (S. dhruvapada) style of the post-ancient period. Dhundia Mallar, Charju-Ki Mallar, Tilangi, Kurkani, and Karnati, as well as Gujari and Mal-Gujari have been only some of their spectacular melodic contributions to the art of the time. The contributors have been the well-known maestros from India's South and the Gujari princess from the West. On a still higher plane worked the immortal genius of Nayak Bakhshu. It was through him that Dhurpad attained the historical status it has. Bilawal (Vilavali), as practised today and likewise Nayaki Kanhda, Bahaduri Todi, Bakhshu-Ki-Mallar and Nayaki Kalyan are some of his marvels. The Music Academy at Gwalior was also his official responsibility. Tansen is often said to be a product of this institution. And that is testimony to the effulgence of the Gwaliyar Gharana.

How regrettable that a first-hand record of such valuable creations is no more with us! But the Persian adaptation of Mankutuhāl [6], incorporated in Faquirullah's Rag Darpan, authenticates a good deal from it. It tells for instance, that the Nayaka-s named above had "come from the part of the country called Tilang (Andhra-deshā) [7], en route to Kurkhet (Kurkakhshetra) on pilgrimage". The raja invited them to the conference to obtain from them and note down "in detail and with practical illustrations the form and norm of the mukha raga-s", so as to help the students out of their "prevailing difficulties..."

The idea was "to bring out a book based on the interviews and discussions among those masters and publish thereby a consensus of the frontline RAG-s, their RAGINI-s and PUTRA-s..." In Faquirullah's own words:

A copy of this book fell into my hands... And since a non-controversial and at the same time authentic work like this makes one less dependent on BHARAT SANGIT, SANGIT DARPAN (of Damodara Misra) and SANGITA RATNAKARA, and, even if the dependence on these still persists, this Risalah [8] - which purports to serve as a digest - may prove of some help. For this reason I am designating it as Rag Darpan, for a mirror reflects the truth and makes even a small detail appear more clear.

As a proviso to the above, the author makes two additions:

Some reliance had also been made on NIRAT NIRNAY and CHANDRAVATI [9], in matters of time-allotment for Rag-s and about their structure, because in no other book do all the Rag-s of the day find elucidation...

On folios 12 and 14 is found:

Apart from the Rag-s and Ragini-s included in this book (Mankutuhāl), others I could get to in the books RAG SAGAR, RAG PARKAS and yet another Risalah of Sayyid Mansur. [10] Besides these, the melodic compounds and their compositions, which we owe to Amir Khusrau, Sheikh Bahauddin Zakariya Multani and Sultan Husain Sharqi, have as well been carefully considered...

The SHUDDH (S. suddha) Rag-s were Bhairon, Malkaus, Hindol, Dipak, Shri-Rag and Megh.

The time and season best suited to invoke these, together with their respective RAS and LACCHAN (S. lakṣaṇas) have been brought to date. Take the case of Bhairon. Faquirullah calls it SARAMAD (first and foremost), and enumerates Bāngali, Bhairvi, Bilavali, Punki (S. Punyaḳi) and Snehki as its Ragini-s. Its sons are eight. [11] Another attendant virtue has been Ras (the accompanying sentiments). The appropriate time and season have also been specified.

In regard to Ragini Bilavali, Faquirullah adds in his own hand on the margin:

It aggravates passion and incites sex instinct.

As regards the Rag-s "created and coloured" by Nayak Bakhshu, the information on record reveals:

Mixing Deskar with Todi, he named it Bahaduri after Sultan Bahadur of Gujarat. Kanhra is also his invention, a combination of Syam and Khambaichi. And so is his Kalyan, an admixture of Hamir, Kalyan, and Jait-Kalyan. This is now known as Nayaki-Kalyan, as Kanhra has become Nayaki-Kanhra.

Tansen (may his soul rest in peace) mixed Malar with Kanhra; similarly he experimented with Kanhra by mixing Kalyan into it. In Asavari he mixed Deva-Gandhar. Kanhra he named as Durbari-Kanhra, for it has been his creation after reaching the Durbar (court) of the Arsh-Ashiyani (AKbar). The latter two he did not name...

Further elaborating on the song forms in his Risalah, the author says:

In Hindi-Zaban these forms are numerous; some of those utilised musically are:

GITA: those in praise of gods, known as SURAJ-PARKAS; those in praise of Kings as CHANDAR-PARKAS; and those only for Rag elaboration, called RAG-KADAMB (S. Kadambaka)...

JHUMRAH: sung in four lines...

SARAVARTANI (S. svarantani): in which Ta-Na-Tilli and such other meaningless combinations occur as song-components...

PARBAND (S. prabandha): sung in two lines, in praise of the devata-s and the raja-s; also in imitation of the animal cries... In short, till Dhurpad came into force, Parband was relied upon to serve the listeners with a kind of music which appealed to their senses and warmed their hearts.

DHURPAD: an imaginative creation of Raja Man of Gwaliyar consisting of four misra-s, and exploiting any of the nine Ras-s. The said raja imparted a popular base to this type of classical singing. Very soon it came to be cherished by the elite and the populace alike. His co-ordinators have been the Nayak-s, Bakhshu, Mahmud, Karan and Lohank. [12]

Dhurpad, as a form of song and melodic-rhythmic composition, superceded and surpassed all others. Explaining this historic phenomenon, the writer lays stress on two factors:

One, that ever since Dhurpad took over, the RAG-GITI-s and the prabandha compositions of the Mang type tended to become obsolete. Among the Rag-s, too, only those survived in which no perversion had set in, and in which the people of the Sudes [13] continued to compose and sing, using their own Desvali language. Another, that Dhurpad has been well-integrated and thus self-sufficient. It has imbibed and adopted, one thing or the other, from every other song form, be it marga or desi.

Certainly every art lover of the last two centuries, or more, is indebted to the raja.

Other song forms, called BHAKHA:

Whatever is sung in Deccan in the Dravari language is called CCHAND. It consists of three to four lines; the theme being an oration, an eulogy or praise.

And, whatever is rendered in Tilangi or Karnati language is known as DHRUVA. Its usual theme is love's prattle.

Similarly what they sing in Bangal is BANGLA; it also deals only with love.

And in Jaunpur is sung CHUTKULA [14], in two lines, both unrhymed. The Paran [see note 30] is completed in the first line rather than the second. Its theme is either lyrical, or martial... In the latter case it is called SADRAH-CHUTKULA. The originator of both was Sultan Husain Sharqi, the ruler of Jaunpur.

In Dehli and roundabout, they sing GAWL, TARANAH, KHAYAL, NAQSH, NIGAR, BASIT, TILALLANAH and SOHILAH...

The promoter of all these was Amir Khusrau and his compatriots, the great ones among them being Samit and Tatar... They sang to everyone's delight, mixing Persian and Indian melodies and melodic compositions, with all their excellences in tact.

GAWL has become almost analogous with Gita... Khayal, too, is sung in two lines in Desi language...

Faquirullah narrates the circumstances which accelerated the emergence of Khayal:

From the days of Amir Khusrau up to the golden era of Akbar, and thence to the present day, the language of the people of Dehli has developed by far...

At the time when Akbarabad (Agra) became the capital (of the Pathans and Mughals) the melody makers of the time assembled there from all corners of the world. Even the number of Ustad-s was such that had not been seen anywhere else at any time. [15] Most of these hailed from Gwalior. [16] And upto this day in the year 1076 H. (1666 A.D.), and before this in the reign of Sahib Qiran-i-Sani, when the capital city of Shahjahanabad was built [17] near Dehli... the population has gone up so much that even the affluent class had to face immense hardships finding a place to live in...

In spite of this (also because of all this) the language of the country called Hindustan has gained in elegance by ten-fold. In Khayal, the compositions in this composite language, have been based on the topic of love and love making.

NAQSH: is sung in prose, having no Ta-na-Tilli, composed on the lines of MANN.

BASIT: compares well with Cchand.

TARANAH: whether in verse or non verse, but comprises Ta-na-Tilli. [18]

TILALLANAH: is all Ta-na-Tilli. [19]

FARSI: consists of a portion taken from a Persian GHAZAL or GASIDAH, and composed in Rag and Tal. [20]

FARD: in one BAIT (two lines), set to tune in accordance with some Rag and Tal.

SOHILAH: sung in few lines, in celebration of somebody's marriage, or on the occasion of any merry-making or community festival; always a song of joy. [21]

BISHUN-PAD: popular in Mathura region; is composed in four to eight phrases; the theme being the praise of KISHUN (Lord Krishna).

TIRVAT: its lines range up to four; the playing of PAKHAWUJ forming the theme. [22]

KAFI: sung in Sind; usually expresses the sentiments of passionate love. [23]

LACARI: popular song form prevalent in Tirhut (Bihar); that, too, has for its theme the overpowering passion of love.

GUJARI: sung and played by the people of Gujarat. In it historic heroes are eulogised.



Rabab player, by Hunhar; Mughal, c. 1650
(by permission of the Director of the India
Office Library and Records, London)

KARKHA: composed in four to eight lines to sing the praises of the war-lords, the brave soldiers and to narrate the affairs of battles and war [24]; each set to rhyme separately.

SADRAH: in four, six or eight single lines. Sung in different languages; the praises of warriors, their physical feats and courage being its usual theme. [25]

BAL-LILA: sung like Khayal, but in single lines. In this the words convey: "your (child Krishna's) coming has brought new life to the world of your father and mother; their eyes acquired a new vigour; your cradle will be decorated like a swinging rose-branch. Also, that God has destined you to a long life of fortune and fame..." [26] It is to be composed and rendered in Rag-s such as Mangal-Ashtak or Jait-Sri, specified for the purpose by the great masters.

CHAND: sung in and around Lahaur; only consisting of a few single lines... Hazrat Sheikh Baha'ud Din Zakariya Multani gave it the Persian name of CHAND [27] and adopted it for musical rendering... The story of love and the humility of man before his Creator forms its exclusive theme.

TAPPA (seems to have also been heard as DAPPA): sung mainly in Punjab, in the language of that country made up of two to four lines, rhyming separately... The theme is usually didactic, calling upon man to think of death, which is inevitable, but not to lose faith in the efficacies of love, which is eternal.

MANGAL: sung in all languages, but mostly in that of Jaunpur and Awadh. There is, however, no restriction... Two to four lines constitute it; each two lines rhyme separately, and the leading line [28] is repeated to lead to the paran. The Shagird repeats the opening single lines while the Ustad renders the song... The songs speak of love and the loved one; also, of the pangs of separation.

BAR (some prefer to have it as PAR): none else but the DHADI-s (of Punjab) sing it; the number of the lines vary, and the Tal changes twice... In this, too, the exploits of a hero are related in DASTAN form (that of a heroic ballad)... Initially, they did not allow even a word of fiction to come in; subsequently imaginary stories were inserted to enhance the effect... It is sung at least by two persons: the Ustad (leader of the team) tunelessly recites

the opening lines; the third line is done by the Shagird (also the partner). The Ustad then recites all the lines in pairs, and the Shagird goes on repeating the opening single line alone.

JIKRI (may even be JAKRI or CHAKRI): structurally the option lies with the performer to fix the number of lines. [29] But these are sung in pairs, and each pair is made to rhyme. Moreover, the paran [30] occurs in every misra... Its founder and originator was Qazi Mahmud Gujrati (peace be upon him). Its usual theme is ISHQ and ASHIQI, as well as the inevitability of death...

There are several other song forms besides these. Their specific ways of composition and the procedure of rendering them vary. But here only those better known and more in popular practice have been noticed.

Chapter V of the Risalah deals with the instruments of music. Faquirullah gives importance to the following: JANTAR [31], with five iron strings; BIN [32], with three strings; their family members KINNAR-BIN and AMBIRTI, and SURMANDAL. SARANGI, he calls the GHICHAK of Hindustan, and next he enters into a significantly detailed description of RABAB. [33, see photograph] Thus, on folios 29-30 of his own manuscript, he states:

RABAB has six gut-strings; some of the kind have twelve too, still others even eighteen. But the extra strings are of iron or copper... These improved varieties prove to be advantageous in two ways. Firstly, during the days of excessive moisture in the air, the metallic wires do not become sluggish. Secondly, the artists who specialise in singing Khayal and ChutKulah, prefer them in the interest of their own style. Moreover, the strings of metal yield well to correct tuning. They are also far more sensitive to a soft touch, thereby facilitating more command over the melodic intervals to produce Nagma laden with pathos and feeling...

Other instruments given some importance, are:

SURMANDAL: 'house of sounds', is akin to QANUN. It has twenty-five strings in all. A few of these are of copper and the rest of iron. Half of these remain in the forefront like Qanun; the other half lie underneath. But Qanun is now fitted with forty strings, three of which are on one side and three on the other. The rest of the strings occur in between and in pairs. The strings of Surmandal are not arranged this way.

KINGRAH: like the Bin, but has two (instead of three) gut strings. The resonating gourds attached to it are smaller than those of the Tamburah... [34]

TAMBURAH: the same as the Tambur of the Arabs. It has five strings of copper and iron. Some instruments of this variety are Pardah-dar (with frets). The PARDA-s are fitted to the fingerboard with chords or gut pieces. Another variety of it is BUND ('closed', i.e. without Parda-s). The fretted one is like the Bin; the frets are to be adjusted for various Rag-s. Those without frets are like Ambirti. [35] These can be played without any change of scale.

Next to TAT ('chordophones'), the BITAT ('membranophones') category of instruments is said to include DAURU (or DAMRU), PAKHAWUJ, AWUJ, DUHL (same as the Hindustani dhol), DUFF, DHOLKI (P. duhla), ARDHAWUJ and KHANJARI. Of these the following have received more attention:

PAKHAWUJ: made of a block of wood cut up into an Halelah shape, and made hollow inside. It is a yard in length; so, if held, the player's arms should be stretched out for the hands to reach each side. Its two faces are just a little bigger than the mouth of a KUZAH (an earthen cup) [36] and are rubbed by skilled hands... The two covered tops are held in their places by leather straps made taut like those of the NAQQARAH. Besides these, four pieces of wood are inserted underneath (the straps), mainly towards the left hand side. The tonal high and low is governed by controlling the tension on these leather ropes. [37]

The fourth category [38], SUKHIR (S. susira, 'aerophones') includes instruments like the SHAHNA (present day SHAHNAYI), and the MASHK (similar to a bagpipe, in which two reed pipes, with note holes arranged in a particular manner, are joined together). Persians call it NAY-AMBAN. The MURLI is the same as an Arabic NAY, but a little smaller in size. The UPANG is also Nay-like. It is hollow from inside, and about a yard in length. Its note holes are made on top, and then a thinner Nay is inserted (giving it a particular quality of tone).

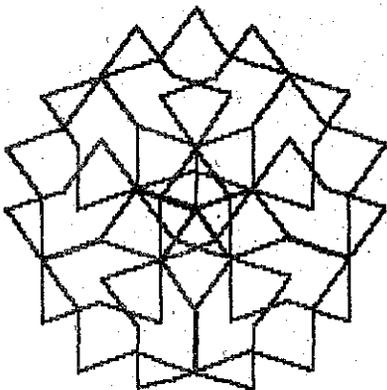
This is followed by an exposition of Nayak-Nayika-Bhed, i.e. different kinds of men and women in love and their physical qualities. Obviously the Ragmala theme had by then paved the way for the apt-triad of poetry, music and painting to move together, each colouring and influencing the other.

The remaining chapters (VIth to VIIIth) adopt a conventional tone dealing with "the demerits of a singer", "the functioning of a musical throat and the production of melodic notes", "specific qualities of a good and a bad voice", and "the virtues of an USTAD-i-KAMIL, etc." [39]

It is chapter XII, however, which still preserves the most precious part of this Risalah. It is "about the GOYINDA-s and SAZINDA-s (vocalists and instrumentalists) who have either lived during the times (of Shahjahan), or are still living." Under this heading, the author makes a really remarkable contribution towards a clear understanding of music in mediieval and modern India. His vignettes of all the notable musicians, musicologists and maestros, together with those of the poet-composers and connoisseurs of the art (both foreign and indigenou) who rose to prominence during the days of Shahjahan and Aurangazeb, prove to be an adequate base for sustained research on Gharana music. This information is not known to exist anywhere else, except to a certain extent in Abdul Fazl's JADWAL. For this reason and because of the undoubted authority of the source, the data provided assumes even greater importance.

It is, therefore, proposed to report in full on the above and also on the music of mediieval Kashmir, and the author's personal views on musical aesthetics, through ISTAR very soon.

Note on spelling: Persian/Arabic (P.) words are written in capitals. If repeated, only the first letter of the word is capitalised. Sanskrit (S.) terms are underlined. Names of persons, places, ragas and notes are not specifically marked (Eds.).



Shahab Sarmadee (b.1914) did his B.A. (Hons.) from the University of Allahabad before going in for higher studies in music and its history. The folk culture and dialects of Northern India have been his special study. Life and Works of Malik Mohammad Jayasi, Meer and his Geetkari, The Significance of 'Lahja' in Ghalib, and Place of Song and Dance in the Folk Life of Northern India are some of his publications. Subsequently, as a Visiting Fellow of the Centre of Advanced Study, Department of History, Aligarh Muslim University, he has presented Ghanyat - ul - Munya, The Earliest Known Persian Work on Indian Classical Music. More recently he has been able to complete a bio-bibliographical survey of all available important writings on the subject of music and theatrics, called Nur Ra'naakar, which is ready for the press. At present, he is engaged upon an English translation of Faquirullah's Mankutuhul and Rag Darpan (ISTAR Project #9), together with a research based introduction.

- 1 The place Faqirullah belonged to, and had retired to on incurring Aurangzeb's displeasure in 1073 H./1663 A.D.
- 2 This is the reason why the extant manuscripts of Rag Darpan are mainly copies of the original draft, and only a few are of the final and revised one.
- 3 On p.22 of the AMU Lytton MS. No.41: FARSIYA-ULUM.
- 4 Occuring on the title page of the volume; it runs as: MALIK-U-MUSANNIF-I-IN-RISALAH... etc.
- 5 Particularly Abul Fazl's AKBARNAMA, MARIFAT-ul-ARWAH (anonymously written), and some other treatises of early Mughal days in India.
- 6 My young friend, Mr. Andrew J. Greig, succeeded in getting access to a manuscript of this work, preserved in the erstwhile Anupa Library of Bikaner, but it proved to be only a fragment.
- 7 The region where the great Tyagaraja, the initiator of the Karnataka style, and most of the others came from.
- 8 Apart from the Tarjumah, he means to say.
- 9 Neither of these could so far be identified.
- 10 Nor could anything further be known, so far, about Sayyid Mansur.
- 11 All these have been named.
- 12 A very important piece of information, not to be seen or recorded anywhere else so far.
- 13 Sudeś, so usefully described by Faqirullah, has meant: "the town of Gwaliyar, the entire territory once administered from it, the present capital town of Akbarabad (Agra) and Bareilly, then northwards up to Mathura, towards the east up to Etawah, southwards up to Unch; and in the west up to Bhusawar and Bayana... In the whole of Hindustan, the language of this Sudeś (S. svadesa) and its towns is most elegant like that of Shiraz in the country of the Fars (Southeast Persia)".
- 14 Has been invariably associated with the Sharqi Monarch, Sultan Shah. It is generally believed that Chutkuiah was the precursor of Khayal.
- 15 Manucci, the 17th century Italian traveller, and Lahauri, the historian, have been eye witnesses to this fact.
- 16 The writer of A IN, Abul Fazl, gives a candid account of these Gurus.
- 17 This was by the year 1642 A.D.
- 18 Taranah is all Ta-na-Tilli now. The transition from a light music form of Iran to that of Hindustan is well worth closer study.
- 19 This form still maintains itself in the Karnataka style.
- 20 The Indianness of this Farsi speaks of its history.
- 21 The Sohil songs of present-day Awadh relate to child birth, congratulating the proud mother.
- 22 This has changed in many respects since then.
- 23 Kafi has now developed into a major Thali; during medieval days, too, it provided the basic scale to the art music of India. It also continues to be a song form in Northwest India till today.
- 24 In true spirit of the ballad songs of Rajasthan and its Raso-Kavya.
- 25 Its full form is likely to be Sadah-Rah, literally meaning 'straight path', and technically referring to light (fast moving) rhythm.
- 26 Among the authorities on medieval India's music, Faqirullah is perhaps the only one to authenticate such aspects of the art.
- 27 Meaning 'a few'; it is not to be confused with the Sanskrit term cchanda, meaning prosody.
- 28 A probable reference to teka of folk-poetry.
- 29 Believed to be based on the quasi-religious institution of Zikr, one of the pivotal forms of musical activity based on Quranic injunctions.
- 30 The author used the term PARAN in the sense of a sama.
- 31 Kalliaatha, the illustrious commentator of Sangita Ratnakara, holds it to be the popular name of Mattakokila.
- 32 Other than the snake-charmer's Tonbi Bin (venu), and the vina in its generic sense. This particular type had much to do with the evolution of sitar during the middle ages.
- 33 An indication to the effect that the Rabab had acclimated much better than other instruments of its kind in India.
- 34 Lives on as the Kingri (from Kinnari) of a beggar community; till late also seen moving about in some of the districts of Uttar Pradesh. The present writer found a whole tribe of these people settled in Manauri, one of the towns in the Sadar Tahsil of Allahabad district.
- 35 Sarngadeva has been very elaborate in dealing with this instrument; see his ch. VI, slokas 279 et seq.
- 36 Called Kullhar in Hindustani.
- 37 Mrdang, finding no place in Faqirullah's list, encourages the supposition that Dhurpad had by then chosen Pakhawaj as its life-long partner.
- 38 Ff. 32-33 onwards.
- 39 It has been regrettable that four complete folios from here onwards have been lost to this valuable manuscript. All we could do was to consult other 'revised version' copies and fill in the gap. The AMU Sulaiman Collection MS. No. 280./1 (Persian) has been one of those utilised.

SANTAL MUSIC AND DANCE TERMINOLOGY

by Onkar Prasad
Palli Charcha Kendra, Sriniketan

Terms are generally conceptual constructions having their basis either in realized or in observed events of life. Hence, on the basis of such terms, an attempt has been made to understand the way the Santal conceptualize and judge their 'melody', 'dance' and 'drumming'.



A Santal playing the dhodro banam
(with permission of Samiran Nandy, Santiniketan)

MELODY

The Santal use a term rar for melody and ror for ordinary human speech. But the difference between the rar and ror is not very sharp. The Santal perceive the former as a continuum of the latter as is obvious from their saying - "rorakteya rarak" (melody is a prolongation of ordinary human speech). This perception of the Santal parallels a musician's perception of melody (personal communication Sri Ranadhir Roy). Melodic sound is classified into two categories: nanha (high) and mota (low). An onomatopoeic expression for the former is noron-noron or nurn-nurun and for the latter nere-nere (Bodding 1935: 435). Hence, the Santal classify their musical sound into a dialectic of 'high' and 'low'. Besides, the quality by which the Santal judge their melody is rela (one which is harmonious and pleasing) and the melody which is very harmonious and pleasing is adiye rela. As apparent from this, the Santal have both technical and aesthetic considerations in the judgement of their melody.

Melody, for the Santal, forms the basis of their seren (songs) and hence a Santal saying, "serenre rar, munga arakre dal" ("as horse radish is to split peas, so the tune is to the song"), indicates that they do not think of poetry without melody. In other words, they consider the latter inseparable from the former. Further, any sort of refinement brought in, or flourish added to singing, is termed as laboj.

The Santal however, do not consider the sound of the drums as melodic or musical. They equate its sound to sad (noise). This observation of the Santal also parallels the scientific observation in relation to the sound quality of membranophones. As Jeans points out, the vibrations of stretched membranophones, as in drums, usually show no simple relation between their frequencies, so the sounds they emit are generally discordant musically. However, the case of stretched strings is totally different

where the frequencies of vibrations stand in simple ratios, 1:2:3:4... Here, the harmonics are 'natural', hence concordant musically (Jeans 1961: 123). But to the Santal, the sound of membranophones are not non-musical or discordant as rau stands exclusively for the noise that is biting to the human ears. The Santal classify their drumming sound into two groups - soron-soron (one which is mild and concordant) and naran-naran, nandur-nandur, libir-libir or lobor-lobor (the first two for the sound of the tumdaK' - a cylindrical drum and the last two for the tamaK' - a Kettle drum meaning 'one which is dull and discordant'). Ringau is a term, however, applied to the human voice or material sound of high order.

DANCE

The Santal use the term eneg for 'dance' as well as 'game', e.g. the sokrae eneg (sokrae dance) and the oko-oko eneg (a game of hide and seek). As the term eneg carries a dual meaning, this duality of the term is denotative of the Santal's attitude towards their dance. In fact, dance in the Santal society is viewed as a kind of game and hence performed with a sportsman's spirit. This is further obvious from their antics and expressions made during dancing such as the lajun-lajun (dancing with languid movement in the way the jackal walks), loc'-lopop' (an obscene expression meaning projected penis), lambuc'-lambuc' (forward and backward movement having sexual connotation), latic ladar and labhe-labhe (a frivolous expression). As it appears from these examples, in Santal dance, both obscenity and decency go together.

DRUMMING

In Santal society drumming is an essential constituent of singing and dancing. The quality of their music and dance performance is judged in terms of degrees of intensification of drumming. When a music or dance performance is moderated and is in complete harmony with the drumming, it is designated as lithur, and when slightly intensified and harmonized as thankao.

Among the Santal, ru is a term standing for the beat pattern. The beat pattern is shown by tay (clapping or beating time). The beating of the drum, especially with dance, is accomplished in four steps, ru-ehop (opening drum-beat), ru-calti or sordi (continuing drum-beat), ru-toraw (changing drum-beat) and ru mucet' (final drum-beat). The opening drum-beat indicates the beat pattern which accompanies the following dance. It creates the necessary mood and keeps the dancer in readiness. It is a complete form in itself and lasts for a short duration. The continuing drum-beat is a dance drum-beat. It is the beat of the longest duration. The changing drum-beat usually alters the form, by bringing change into the style of drumming. The final drum-beat is brought to an end either by shifting from the changing drum-beat to the opening drum-beat or with a different set of rhythmic phrases (Hembram 1976: 29).

Further, drum-beats of the Santal, as also observed by Hembram, are a repository of their life experiences. For example, the expression godak'-godak', which is a small piece of a Santal drum-beat, refers to the technique of trapping rats from the rat holes by smoking them out at the entrance. Thus, the drum-beat in the Santal society on the one hand is a measure of movement (both melodic and dancing) and on the other a storehouse of their experiences.

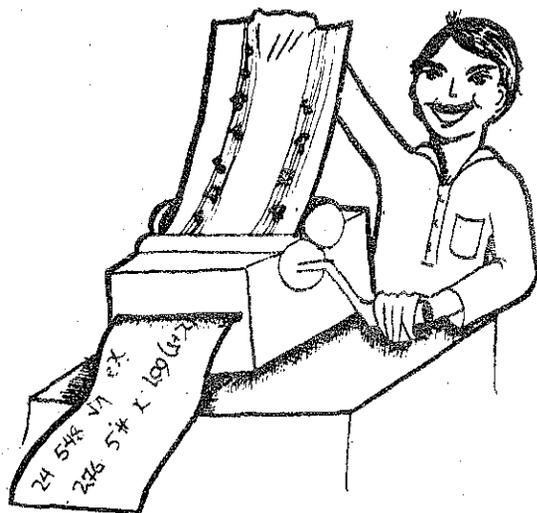
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NOTATING HINDUSTANI MUSIC Giving Importance to Note Treatment

by Joep Bor, W. J. Arnold and Issaro Mott
ISTAR Projects #2 and 6



It is hard to find traditional Indian musicians who notate their music or who encourage their disciples to make use of music written by others. On the contrary, the masters tend to believe that oral transmission, involving tedious repetition and memorization under their watchful eye, is the only way to pass on the art. This is not surprising since oral traditions are deeply rooted in India. Classical music was usually the prerogative of families of professional performers. Children born or disciples 'adopted' into such families acquired the knowledge by being continually immersed in it. In such an environment there was, and indeed is, no need for notation. [1] Nevertheless, the last hundred years or so have witnessed a strong movement to popularize music education by several open-minded musicians who established schools for this purpose. Along with schools came the need for written music. Maula Bakhsh in Baroda, Kshetra Mohan Goswami and Raja S.M. Tagore in Bengal, were among the pioneers who propagated music notation in the latter half of the nineteenth century. In the

early twentieth century, Vishnu Digambar Paluskar and particularly Vishnu Narayan Bhatkhande published major collections of written music, making significant contributions to the body of notated music literature. [2] A generation later Vinayak Rao Patwardhan and Onkarnath Thakur also published important volumes of music in which they further developed the notation systems of their predecessors, by paying more attention to aspects of note treatment. [3] These collections have become standard reference and text books.

Today nearly every major Indian university supports a department of music, and private music teaching institutions flourish. A wealth of written music in the Hindustani raga system is available in various solfege (sargam) notations. Foreign musicologists too, have tackled the problem of notating Indian classical music, most of them favoring a system based on European staff notation.

The sargam notation systems which have been used, show considerable agreement in the categories of musical facts that the authors consider important. Disagreement exists however in the choice of symbols and their placement. Although the idea of solfege (or syllabic) notation is ancient in India, its evolution is still in its early stages. Existing systems show a confusing variety of ways of representing a limited set of musical facts. Nevertheless, one can observe that increasing importance is being given to symbols which clarify how notes are to be treated.

1 Why notate Indian music ?

Improvisation plays a major role in Hindustani music. Only part of what a musician performs is composed. For a performer the most difficult and essential aspect of the art is to learn how to slowly and systematically expand a raga with an appreciation of its principles, melodic movements and personality, paying close attention to subtle melodic shades and nuances (what we refer to as 'note treatment'). Few musicians believe that notation has any relevance to the development of these highly important skills. Thus, despite the large number of music schools and an abundance of published music, professionally motivated musicians still find it necessary to attach themselves to ustads using traditional methods. At conferences of academically trained musicians, the question "Why have the universities failed to produce high calibre performers?" is regularly raised. This fact is not lost on traditional musicians who take it as proof of the validity of their own long established methods.

The orthodox musicians who feel that the subtleties of melodic movement and note treatment cannot be captured in notation, have been partly justified in this opinion. We know from experience how difficult it is to understand and reproduce much of the music that has been notated. Melodies in the

Hindustani system are not generally rendered as series of discrete pitches, like notes on the piano, which would be easy to grasp from the notation. Rather they intricately curl and weave together to make the fabric of a raga. What happens around and between notes is critically important. Unless a notation is able to simply and accurately convey this, it will fail to capture the essential details of the art.

Several Western musicologists have succeeded in transcribing examples of Indian music in considerable detail, and there is little doubt that with much labor many of the nuances can be captured. Their motivation is 'descriptive' (to use Charles Seeger's term [4]), transcription being their base for analysis. Therefore readability is not so important for them, as it is for Indian music teachers whose primary aim is to communicate. Other Western authors on Indian music implicitly agree with N.A. Jairazbhoy, who argues that the "... extreme subtlety of the ornamentation virtually defies accurate notation..." (Jairazbhoy 1971:189) and, like the Indian authors, they avoid the more difficult issues of note treatment, emphasizing readability at the cost of detail. [5] Composers and teachers who want notation for preserving and transmitting music, however, require a balance between accuracy and readability.

2 An extended notation system

The main questions are: "What are the significant facts of Indian music that need to be notated and with what symbols are they to be expressed?". Two distinct types of 'prescriptive' notation can be isolated. The simplest is the mnemonic system used by a student who expects that his notebook will communicate to him later what he has already learned. This level of notation we might call 'suggestive' notation, since its function is to suggest and remind. An author, on the other hand, must communicate something which has not previously been learned. What may suffice for a student will not suffice for a writer, who requires a more explicit notation. Without proper extensions, suggestive notation, as most of the Indian sargam systems are, fail to really convey to readers what the writer intends. Just as this lack was felt by Patwardhan and Thakur vis-a-vis Bhatkhande, so we feel it regarding them.

Our own need to notate Indian classical music arises out of documentary, pedagogical and musicological interests. In documenting the music of Pt. D.C. Vedi for instance, we require the ability to capture the facts which he considers essential, and to present them in a way which is practically useful to both Indian-trained and Western-trained musicians and students. These needs call for a prescriptive notation. In addition, we require notation as a base for scientific musicological studies. This calls for a descriptive notation.

2.1 SARGAM NOTATION

Recent trends in ethnomusicology recognize that indigenous musicological terms and methods are often the most appropriate for discussing or representing the music. Most non-Indians who are learning to perform Indian classical music also find sargam notation appropriate and easy to use. The sargam notation format established by V.N. Bhatkhande has gained the widest acceptance. [6] Because of its popularity, we adhere to it as far as possible, adding extra symbols to express common ways of handling the notes. In choosing additional signs, we have been guided by the principle that signs should be clear, concise and, as far as possible, suggest the musical phenomena they represent. In addition they should be easy to memorize, write and print. [7]

2.2 AUTOMATIC TRANSCRIPTION

The Melodic Movement Analyzer (MMA) designed by Bel generates an automatic transcription of recorded music which has allowed us to study minute details of 'note-shapes' and melodic movements. The effect of seeing melograms has influenced our thinking. Several signs used in the Key to Notation Symbols below, derive from the need to represent events which the ear might not have recognized so easily on its own, but are evident if one examines the melograms. N. A. Jairazbhoy has remarked: "The primary value of automatic transcriptions would be to throw light on what we do not "hear", what we change in the process of "hearing", or what we take for granted. They can also provide an insight into some of the extremely subtle elements of music which we cannot readily distinguish aurally, but which might

nevertheless influence our perception of the music on an unconscious plane..." (Jairazbhoy 1977: 270).
 [8] There is no doubt that the eye can help train the ear, as we all have experienced.

For storing material as data for computer assisted research on Indian music, we have developed a one-dimensional notation which puts significant musical facts in a serial order. Here notation is a link between the melograms and their further analysis and processing. As Bruno Nettl observed, "... even with machine transcription, the informed human interpreter must be available... [since machines] record everything regardless of its importance, and selection of the essentials must be made later by the scholar" (Nettl 1964:102-3). [9] Whenever possible, we have used the same sargam symbols for the computer notation within the limits imposed by the keyboard, display and the printer. [10]

2.3 STAFF NOTATION

Attempts either by Indians or Westerners to encourage the use of staff notation in India have invariably failed. Even in places where there are obvious advantages for using it (in radio orchestras, for example) Indian musicians prefer a sargam score. For the benefit of foreign musicians and musicologists unfamiliar with sargam notation, however, we also prepare a 'transnotation' into staff notation working from the sargam score. Symbols of the two systems overlap where possible.

Because the format of staff notation is well established, no attempt has been made to describe or explain this system, except where our use differs from traditional practice. For readers unfamiliar with this subject, we recommend Gardner Read's excellent Music Notation. [11]

We believe the systems of notation presented in the following tables are broad enough to encompass the needs of both the student, the music writer and the musicologist. They include a fairly large set of symbols, allowing description up to a point of considerable detail. These symbols may or may not be utilized, according to one's purpose. Where details have been notated, they are to be printed small and may be ignored while reading if one so chooses. In this way the systems are at once multilevelled.

- 1 Music being the property of a small and competitive elite, musicians have always guarded their treasures, refusing permission to outsiders to write anything down. After all music is not only an art, it is a business, the 'merchandise' of which is often sold at a very high price, paid in money, service, and sometimes 'favours'. Indeed, many musicians prefer to take their knowledge to the grave rather than make it a part of the common cultural heritage. This is one of the differences in the social organization of music in India and the West.
- 2 Vishnu Narayan Bhatkhande, Kramik Pustak Malika, 6 Vols. Hathras 1970 etc.: Sangit Karyalay.
- 3 Vinayak Rao Patwardhan, Raga Vigyan, 7 Vols. Pune 1964.
- 4 Omkarnath Thakur, Sangitanjali, 6 Vols. Banaras 1959.
- 5 Charles Seeger, Prescriptive and descriptive music writing, Musical Quarterly 44, 1958: 184-95.
- 6 Nazir A. Jairazbhoy, The Rags of North Indian Music: Their Structure and Evolution, London 1971: Faber and Faber.
- 7 Ravi Shankar, My Music, My Life, New York 1968: Simon & Schuster.
- 8 The sargam notation is being used by ISTAR Projects #2 (W.J. Arnold), #3 (P.F. Mueller and F. Hermann) and #6 (D.C. Vedi, J. Bor, I. Mott and W. van der Meer).
- 9 Nazir A. Jairazbhoy, The 'objective' and subjective view in music transcription, Ethnomusicology 21, 1977: 263-74.
- 10 Bruno Nettl, Theory and Method in Ethnomusicology, New York 1964: Free Press.
- 11 The computer notation is used by the program RAGANL.MUSIC.EDITOR to store data which can be processed and studied using the RAGANL.PACKAGE developed by Arnold.
- 12 Gardner Read, Music Notation - A Manual of Modern Practice, London 1982: Victor Gollancz Ltd.
- 13 Bruno Nettl, The Study of Ethnomusicology - Twenty-Nine Issues and Concepts, Urbana 1983: University of Illinois Press.

3 KEY TO NOTATION SYMBOLS

3.1 Pitch Symbols

3.1.1 NOTES

CATEGORY	SARGAM NOTATION	DESCRIPTION	STAFF NOTATION																														
Natural notes (shuddh svaras)	<table border="1"> <thead> <tr> <th>Name</th> <th>Syllable</th> <th>Degree</th> </tr> </thead> <tbody> <tr><td>S</td><td>shadj</td><td>Sa</td><td>1</td></tr> <tr><td>R</td><td>rishabh</td><td>Re</td><td>2</td></tr> <tr><td>G</td><td>gandhar</td><td>Ga</td><td>3</td></tr> <tr><td>M</td><td>madhyam</td><td>Ma</td><td>4</td></tr> <tr><td>P</td><td>pancham</td><td>Pa</td><td>5</td></tr> <tr><td>D</td><td>dhaivat</td><td>Dha</td><td>6</td></tr> <tr><td>N</td><td>nishad</td><td>Ni</td><td>7</td></tr> </tbody> </table> <p>No mark indicates natural (shuddh).</p>	Name	Syllable	Degree	S	shadj	Sa	1	R	rishabh	Re	2	G	gandhar	Ga	3	M	madhyam	Ma	4	P	pancham	Pa	5	D	dhaivat	Dha	6	N	nishad	Ni	7	
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N	nishad	Ni	7																														
Altered notes (vikrit svaras)	<p>Line beneath note: lowered (komal). Stroke above note: raised (tivra).</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Syllable</th> <th>Degree</th> </tr> </thead> <tbody> <tr><td>Ṛ</td><td>Komal rishabh</td><td>Re</td><td>2</td></tr> <tr><td>G̣</td><td>Komal gandhar</td><td>Ga</td><td>3</td></tr> <tr><td>Ṃ</td><td>tivra madhyam</td><td>Ma</td><td>4</td></tr> <tr><td>Ḍ</td><td>Komal dhaivat</td><td>Dha</td><td>6</td></tr> <tr><td>Ṇ</td><td>Komal nishad</td><td>Ni</td><td>7</td></tr> </tbody> </table>	Name	Syllable	Degree	Ṛ	Komal rishabh	Re	2	G̣	Komal gandhar	Ga	3	Ṃ	tivra madhyam	Ma	4	Ḍ	Komal dhaivat	Dha	6	Ṇ	Komal nishad	Ni	7									
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Register	<p>Dot beneath a note: low register. Note without dot: middle register. Dot above a note: high register.</p>																																
Main notes	<p>Notes written in capitals on the line indicate major melodic steps.</p>																																
Auxiliary notes	<p>Notes written in lower case on the line indicate auxiliary notes of short but definite duration.</p>																																
Grace notes (kan)	<p>Notes written small and superscript, before or after a main note, indicate grace notes without measured duration.</p> <p>Grace note on beat is marked with accent.</p>																																
Hidden notes	<p>Grace notes in parentheses indicate 'hidden' notes, or approximate pitch.</p>																																

CATEGORY	SARGAM NOTATION	DESCRIPTION	STAFF NOTATION
Intonation	$\begin{matrix} (+) \\ N \\ (-) \\ N \end{matrix}$	Plus or minus in parentheses above note indicates high or low intonation.	
	$\begin{matrix} (-) \\ G \\ (+) \\ G \end{matrix}$	Minus to plus or vice versa in parentheses indicates microtonal evolution of a note.	
	$\begin{matrix} (x) \\ G \end{matrix}$	Small (x) in parentheses indicates note is out of tune.	
Inflection	'S	Short oblique dash before or after a held note: rising or falling inflection, e.g. Sa intoned from below, Sa ends with falling inflection, Ni intoned from above, Ni ends with rising inflection.	
	S'		
	$\begin{matrix} N \\ N' \end{matrix}$		
Oscillation (andolan)	$G \sim G$	A < > or < > : note rendered with slow downward or upward microtonal wave.	
	$G \sim \sim$	Wavy line: a series of faster microtonal oscillations.	
(vibrato)	$G \sim \sim \sim$	Tight wavy line: vibrato.	
(ganak)	$\tilde{D} \tilde{D} \tilde{D}$	Sawtooth line on a series of notes indicates a vigorous shaking.	
Embellishment (murki)	*M	Trident sign: a fast down-up or up-down figure, at the beginning of, end of a held note. Mordent: fast down-up-down, or up-down-up melodic figure. Tilde: a quick four-note turn. A quick melodic figure written as a connected series of grace notes.	
	M^		
	S^		
	S M		
Note connections	$\tilde{S} \tilde{R}$ $D \tilde{P}$	Notes are presumed to be connected unless otherwise indicated by punctuation. Pitch dips slightly before rising or rises slightly before falling.	
	N / S	Oblique line: glide of noticeable duration between notes (mind), has duration of one time unit.	
Glide (mind)	P \ M	Short oblique line: mind of half time unit.	
	R \ N	Mind rises slightly before falling or vice versa.	

3.2 Time Symbols

3.2.1 DURATION

CATEGORY	SARGAM NOTATION	DESCRIPTION	STAFF NOTATION
Duration	S	Note of one time unit.	
	s	Note of half time unit (or less).	
	/	Mind of one time unit.	
	/	Mind of half time unit (or less).	
	-	Prolongation of one time unit.	
	.	Prolongation of half time unit.	
	0	Rest of one time unit.	
Note prolongation	S - S - -	Horizontal dash marks a prolongation of preceding note by one time unit. (Dashes may be stacked on each other.)	
	S =		
	S.	Dot prolongs note by half a time unit.	
	[∞] S	Hold sign indicates indefinite prolongation of note or rest.	
Rests	S - 0	Capital (0): whole rest.	
	S 0	Small (o): half rest.	
Pauses		See Punctuation (infra).	
Time units or beats (matra)		When two or more notes are rendered in one matra they are grouped:	
	SR gmgr S	by spacially separating each time unit, or	
	SR gmgr S	by placing brackets under the beats.	
	srgrs └─5─┘	Odd numbers of notes in a matra are indicated.	
	S R G R S └─4:3─┘	Numbers indicate note to matra ratio: e.g. four notes in three matras.	
Matra division	sr gnp	Vertical line indicates equal subdivisions of the matra.	
Downbeat		Barline: next note is on downbeat.	

3.2.2 RHYTHM CYCLE (TALA)

Tala division (sam)	X	(X) above note indicates first beat of rhythm cycle.
(tali)	+ 2, 3, etc.	Numbers or plus above note indicate divisions of rhythm cycle.
(Khali)	0	Zero above note indicates 'empty beat'.



3.3. Punctuation and Articulation

CATEGORY	SARGAM NOTATION	DESCRIPTION	STAFF NOTATION
Punctuation	:	Colon indicates end of a sub-section.	
	;	Semi-colon indicates end of a phrase.	
	,	Comma indicates end of a sub-phrase.	
	(,) (;)	Punctuation in parentheses indicates that (sub-) phrases are conjunct.	
Pause	'	Apostrophe indicates a brief pause or short breath w/o specific time value.	
Articulation and text	G - R S - re - nom	Syllable beneath note indicates where text is articulated.	
	S /R, R Ja - ge	Horizontal dash in text indicates syllables held.	
		Capital letter indicates the beginning of each word of text.	
		Syllable in parentheses indicates repetition of previous syllable.	
Instrumental bols		Vertical dash: down or 'Da' stroke.	
	-	Horizontal dash: up or 'Ra' stroke.	
	^	< ^ > indicates down-up or 'Diri'.	
	(chikari) v	< v > indicates a pluck on drone strings.	

3.4 Additional Marks and Signs

Dynamic signs		Increasing volume (crescendo). Decreasing volume (diminuendo).
Accents		Pronounced attack. Stress without accent (written above note). Staccato.
Slurs		Short slur connects several embellishments to a main note. Long slur connects several notes articulated in one stroke or syllable.
Octave signs		To be performed at the octave above. To be performed at the octave below.
Repetition signs		Repeat bars mark the beginning or end of section to be repeated. D.C. Da Capo, repeat from beginning. D.S. Dal Segno, repeat from the sign.
Tempo signs		Accelerando, getting faster. Ritardando, slowing down. At the performer's pleasure. Metronome marking (beats per minute).

4 Comments on the Key

4.1.1 NOTES

Indian classical music is a monodic music; the melody is performed against the continuous background of a drone. Commonly the tonic (shadj) is equated to the note C of Western music, in spite of the fact that musicians are free to select any pitch as their ground note.

Today the 'natural' (shuddh) scale of Hindustani music is taken as Bilaval, the major mode. Although up until around two hundred years ago the Sanskrit musicological tradition regarded the Sa-grama (a dorian mode similar to today's Sindhura or Kafi) to be the basic scale, the similarity between Bilaval that and the Western major mode has probably influenced the choice of C, to translate the idea of shadj. However, there is debate on what is the best equivalent for shadj; those favoring the Sanskrit tradition argue that D (the tonic of D-mode) should be used.

The note C as the ground note has the advantage for persons trained in Western music, in that it is easy to express a given scale type in terms of sharps and flats in reference to C major. This corresponds to the common practice, to refer to notes as natural (shuddh, the intervals of the major scale), flat (Komal) and sharp (tivra). In the sargam notation system we follow this practice, using no mark for unaltered or shuddh notes, underlining lowered or Komal notes, and using a stroke above a note if it is raised or tivra. In this system only five notes can be altered, since the tonic and the fifth are considered unalterable.

When it comes to notating Indian melodies in staff notation, the keynote F has certain advantages. The middle register is then symmetrically placed on the staff, eliminating the need to use many ledger lines. Nevertheless, because of the widespread tendency to use C as shadj, our staff notation follows this practice. It may be indicated where the actual performance pitch is otherwise. Raga 'signatures' which specify a scale type (not a Key in the Western sense) are written as one normally does for Key signatures.

TYPES OF NOTES. A written musical note indicates both pitch and relative time duration. In addition to main notes (Ex. 1c) we distinguish between what we call (1) 'auxiliary' notes, which are of short but definite duration (Ex. 1b), (2) 'grace' notes which have virtually no duration and are rendered as quick touches (Ex. 1a), and (3) 'hidden' notes which are subtly expressed in a glide without arresting the tonal movement (Ex. 1c).

Example 1: Darbari Kanada

In the sargam notation, the placement of the note symbols affects their meaning. Notes (and other symbols) written on the line have a durational value; those written above the line have no significant duration. Among notes written on the line, capital letters indicate main notes, lower case letters indicate auxiliary notes. When capitals are placed in brackets, as opposed to parentheses, it means that the notes are optional. Notes written in superscript may either be grace notes or hidden notes (in parentheses). Notes in parentheses may also indicate approximate pitches.

In notating alap, which is an example of "... non metric music in which rhythm and duration cannot adequately be represented by traditional note values" (Nettl 1983: 79) [12], the duration of notes and other time bearing symbols is always approximate. In general, notes of circa one time unit are considered main notes, and those of less than half a time unit are shown as auxiliary notes. The decision to use main, auxiliary or grace notes in transcribing recorded music however,

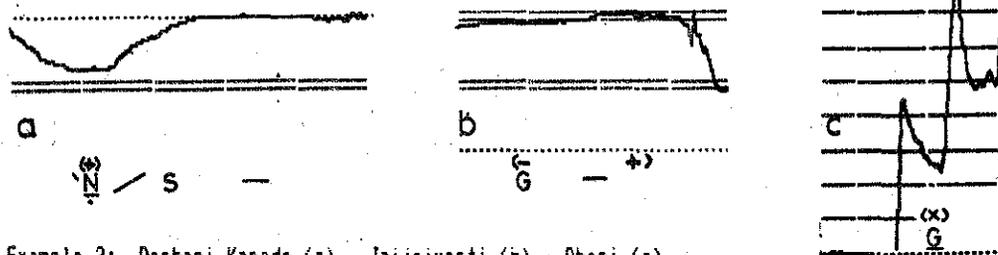
depends on tempo and the melodic context. Thus a note which is considered essential in the melodic development of a raga, even if its duration is brief, will be written as an auxiliary note (on the line). When a composition is rendered in slow tempo, it is often more appropriate to show notes of half a beat duration as main notes (Ex. 7).

In staff notation, auxiliary notes are written with smaller heads than main notes. Single grace notes are tiny with a slash through the stem and flag. Hidden notes or notes of approximate pitch are written as grace notes in parentheses.

4.1.2 NOTE TREATMENT

Many terms exist to describe types of note treatment. Unfortunately, no study has comprehensively brought these terms together with the definitions musicians give to them. Such a study would be valuable indeed. Since there is a lot of disagreement in terminology, we only use the few terms which are commonly accepted.

INTONATION. In listening or in studying melograms, one often finds examples of notes which are interesting from the point of view of micro intonation. Some notes are consistently intoned high (Exs. 1b, 2a) or low, and sometimes there is a microtonal evolution from higher to lower or vice versa (Ex. 2b). Occasionally a note is simply out of tune (Ex. 2c).



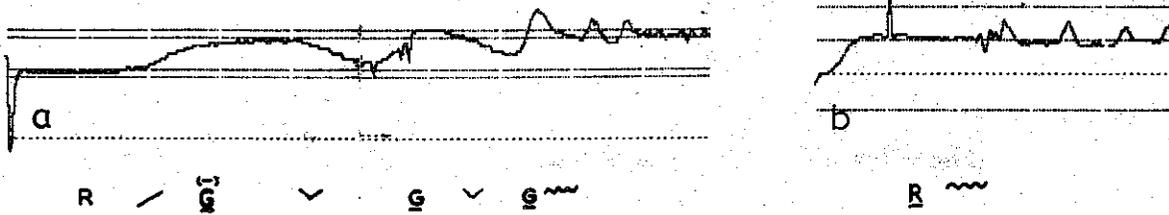
Example 2: Darbari Kanada (a), Jaijaiivanti (b), Dhani (c)

INFLECTION. The melograms reveal that some approaches to a note begin from definite scale positions, while others do not. For us, a grace note must begin from a clear note position; it cannot be prolonged. If, on the other hand, a note is approached from an indeterminate position, we use the inflection symbols < , > to express it. N. A. Jairazbhoy refers to this as an "... indeterminate rise or fall before or after a note...", but he uses different symbols to express it (Jairazbhoy 1971: 192). [5] In transcribing music 'by ear', it is convenient to use the inflection symbol for any quick slide, the origin of which is not clear.

Depending on the context, the symbols for inflection may have slightly different meanings.

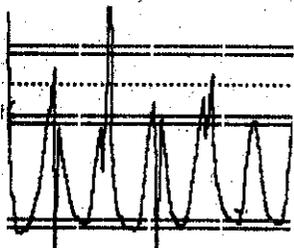
- 'S - Sa (Ni) is approached from a nearby, but indeterminate rising
- 'N - or falling pitch (Exs. 8 #1, #11, #13; 6 #74).
- S - Sa ends with a slight downward (upward) touch (Ex. 8 #12).
- R^S - Re ending with a slight upward rise that falls immediately to Sa (Exs. 6 #70, #79).
- S^R - Sa ending with a slight downward dip that rises immediately to Re (Ex. 6 #81).
- S^R^G^M - Ascending series, each note approached from above with a downward inflection (Ex. 6 #70-71).

OSCILLATION. There are several ways notes can be treated with an oscillating movement. When it is fast and regular, it approaches the vibrato found in Western music (Exs. 3a, 6 #87). When, however, the oscillation is slower and involves a larger tonal space, it is called andolan. Both the gandhar of Darbari Kanada (Ex. 3a), and the rishabh of Bhairav (Ex. 3b), for instance, are said to have andolan. The melograms show how different these two types really are.



Example 3: Darbari Kanada (a), Bhairav (b)

Another type of oscillation is the vigorous shaking between two notes known as gamak, which always occurs on a series of notes (Ex. 4). In the sargam notation, this is indicated by drawing a sawtooth line over the series. The pitch from which the gamak begins may be indicated by a grace note.



EMBELLISHMENT. Musicians distinguish several types of embellishments (murki) depending on genre and style. It is generally understood that embellishments take in the natural steps above or below the main note. A quick down-up or up-down shake can occur at the beginning or end of a note. For this we use the symbols $\langle \uparrow, \downarrow \rangle$ which are placed before or after the note (Exs. 8 #6, #10). Two common embellishments are quick turns of the type 'pmgM' and 'sprsqS'. In the sargam notation, the first is shown by placing a tilde above the main note, or by writing it out as a series of grace notes grouped under a slur (Ex. 8 #3-4).

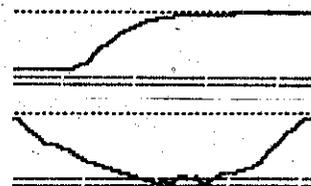
Example 4: Todi: Gamak

NOTE CONNECTIONS: An important characteristic of Indian music is that notes are usually linked together in a continuum of pitch. How one passes through the tonal space between notes is critically important. Since linking notes together is the rule, it is not marked and should be understood, unless otherwise indicated by punctuation. Two ways to give emphasis to glides are: (1) by connecting a series of notes using the slur which indicates that the notes are played in one stroke, or articulated within one syllable; (2) by using an oblique line between two notes indicating that they are linked by a noticeable glide (mind).

In Western music a glissando is defined as "... a rapid swoop up or down at a tempo so fast that the intermediate pitches are not heard individually" (Read 1982: 243). [9] Minds, however, are slow glides; one passes through intermediate pitches in a definite time duration. Characteristically a certain weight or emphasis defines the shape of the glide. Rarely are minds linear 'swoops'; rather they are carefully drawn curves which bulge upward or downward (Ex. 5). Therefore both the sargam and computer notations give duration to the mind symbols. In staff notation the duration of the mind is given by an auxiliary note associated with the oblique line.

Minds may be associated with other forms of note treatment as the following examples show.

- N / S - Ni connected to Sa by a mind of one time unit (Ex. 6 #71-2).
- P \ M Pa connected to Ma by a mind of half a time unit (Ex. 6 #90)
- R \ N Mind rises slightly above Re before proceeding to Ni (Exs. 6 #79, #82).
- ^ \ N Mind begins immediately from a grace note (Ex. 6 #75-6)
- M - g Mind first touches the final note before it is articulated (Ex. 8 #17).
- N - P Hidden note expressed in a mind (Ex. 6 #81-2).



Example 5: Darbari Kanada

1.2.1 DURATION

We adopt the format used by V.N. Bhatkhande and other Indian musicologists with slight modifications. Accordingly, matras (beats) are delineated separately. A dash prolongs a note, rest or mind by one time unit. We also find it useful to be able to indicate a prolongation of half a matra. For this we use a dot.

The time value of each note or time-bearing symbol occurring within a matra, is relative to the total number of 'items' in the matra. In order to express changes of tempo (laya) within the matra, we introduce a vertical line to mark subdivisions of the beat. For example, srjgmp is equivalent to in staff notation, where the crotchet equals one time unit.



RESTS AND PAUSES. For the most part, the existing Indian systems of music notation ignore the question of silence. One is never sure where, or how much silence is intended. We find it necessary to mark the difference between note prolongation and rest. Contrary to rests, pauses have no specific time value. The apostrophe indicates a very brief pause, equivalent to a short breath. The hold sign associated with a rest indicates a prolonged silence. It should be noted that punctuation signs (indicating conclusions of phrases etc.) also imply indefinite pauses.

DOWNBEAT. In notating madhya alap, it is common to find that a rhythmic pulse sometimes falls on the 'downbeat' and sometimes on the 'upbeat'. It is convenient to create a symbol to indicate that the next note falls on a downbeat. In staff notation, this fact is shown by using the barline or broken barline.

4.2.2 RHYTHM CYCLE

The symbols used to indicate the first beat of the rhythm cycle (sam), the 'empty beat' (khali), and the sections of the tala which like sam are expressed with a clap of the hand (tali), are the ones commonly used in Devanagari script. In staff notation the barline indicates sam, while subdivisions of tala are marked with a shortened barline.

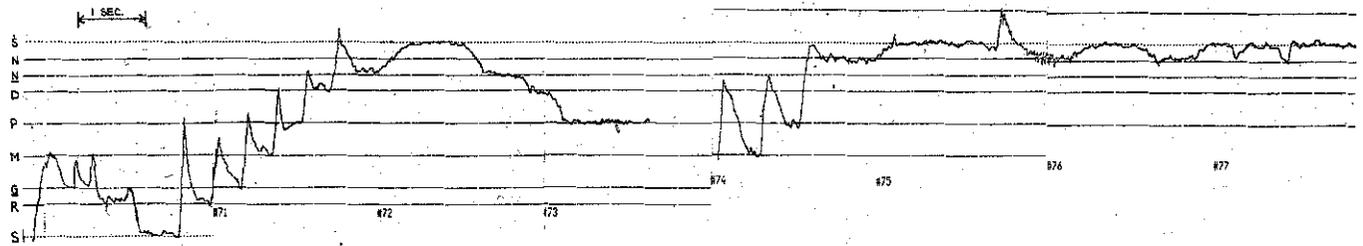
4.3 PUNCTUATION AND ARTICULATION

Common punctuation marks drawn from language are used to indicate the ends of sub-phrases, phrases and sections. If the mark is placed in parentheses, it indicates that the last note of the preceding phrase becomes the first note of the next. In staff notation phrasing is shown either by the use of slurs, or where conserving space is important, a modified form of the vocal pause sign has been used. A double slash < // > is equivalent to a semicolon, and a single slash < / > to a comma.

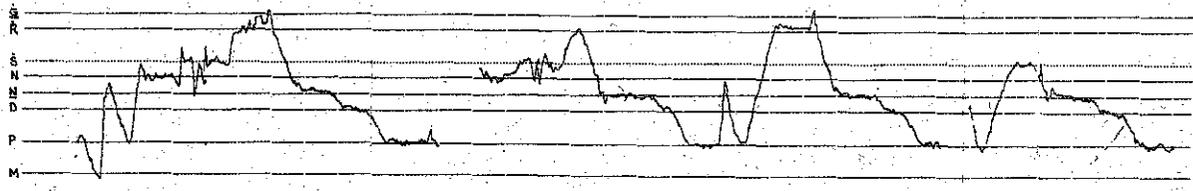
The sargam notation allows the use of a stroke or a syllable beneath the note to indicate a pluck or the articulation of a new consonant. Where it is important to emphasize that a series of notes are played in one stroke, or sung on one syllable, a slur sign over the notes is used both in sargam and in staff notation.

5 Music examples

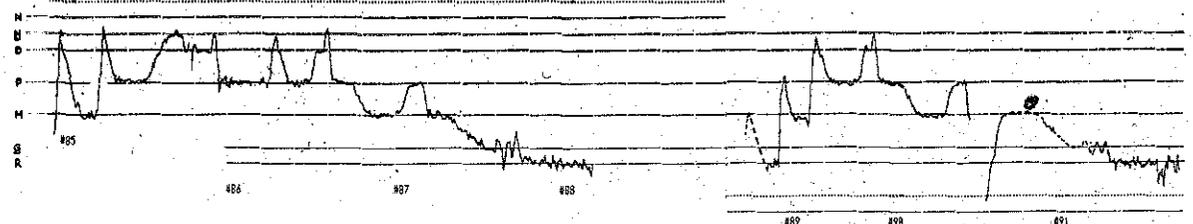
The final segment of an alap (Ex. 6) and a dhrupad in raga Sindhura (Ex. 7), and a melodic outline (chalan, Ex. 8) in raga Asa, composed by Pt D. C. Vedi, and sung by Bhupender Seetal and Nupur Roy Chowdhury, have been transcribed in the sargam notation above and transnotated into staff notation. The transcriptions are shown below along with the melograms. Although the aural transcription was done before, without referring to the melograms, and most of the nuances could be easily determined by the ear, still, seeing the melograms allowed us to improve on the earlier version. In the following examples, most of the signs discussed above can be found in their practical applications.



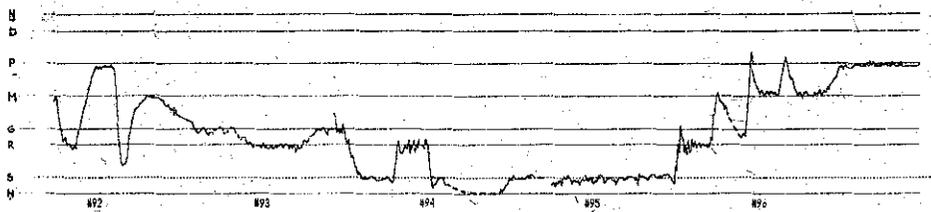
$\overset{m}{M} \overset{g}{G} \overset{r}{R} \overset{s}{S} \overset{r}{R} \overset{g}{G} \overset{m}{M} \overset{p}{P} \overset{d}{D} \overset{n}{N} / \overset{s}{S} - \backslash \overset{n}{N} \backslash \overset{d}{D} \backslash \overset{p}{P} - - ; \overset{m}{M} \overset{d}{D} \overset{m}{M} \overset{p}{P} \overset{n}{N} - / \overset{s}{S} - - \backslash \overset{n}{N} / \overset{s}{S} \backslash \overset{n}{N} / \overset{s}{S} \overset{s}{S} \overset{s}{S} - ;$
 Te Te Re Na Re Na Na Na Re No ——— ; Ta ——— Nam ——— Re Na ———



$\overset{m}{M} \overset{p}{P} \overset{n}{N} \overset{s}{S} \overset{r}{R} \backslash \overset{n}{N} \backslash \overset{d}{D} \backslash \overset{p}{P} - ; \overset{n}{N} \overset{s}{S} \overset{r}{R} \overset{d}{D} \overset{n}{N} - \overset{p}{P} \overset{p}{P} \overset{r}{R} \backslash \overset{n}{N} \backslash \overset{d}{D} \backslash \overset{p}{P} ; \overset{p}{P} \overset{s}{S} \overset{n}{N} \backslash \overset{d}{D} \backslash \overset{p}{P} ;$
 Te Te Re Na Ta No ——— m ——— ; Re Na Re No ——— m Re ——— No ——— m ; Re ——— No ——— m



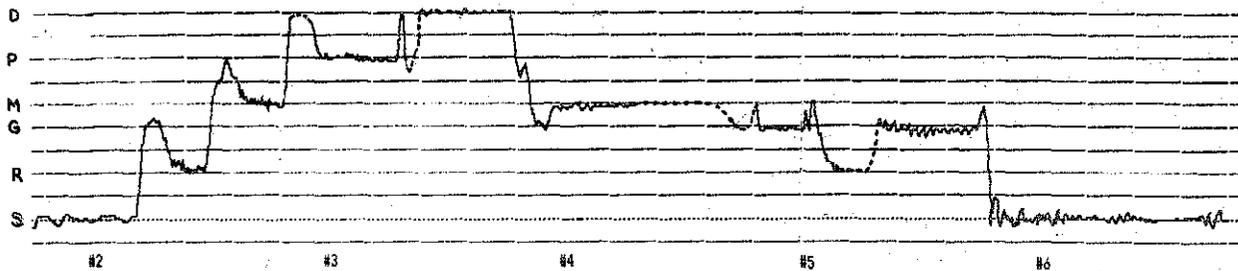
$\overset{m}{M} \overset{d}{D} \overset{m}{M} \overset{p}{P} / \overset{n}{N} \backslash \overset{d}{D} \backslash \overset{p}{P} - \overset{m}{M} \overset{p}{P} \overset{d}{D} \overset{p}{P} \backslash \overset{m}{M} \backslash \overset{p}{P} \overset{m}{M} - \overset{g}{G} \overset{r}{R} - - ; \overset{m}{M} \overset{r}{R} \overset{m}{M} \overset{p}{P} \overset{d}{D} \overset{p}{P} \backslash \overset{m}{M} \backslash \overset{p}{P} \overset{m}{M} - \backslash \overset{g}{G} \overset{r}{R} - - ;$
 Ta ——— Re Na ——— Re ——— No ——— m ——— Na ——— ; Re Na Re ——— No ——— m Na, ———



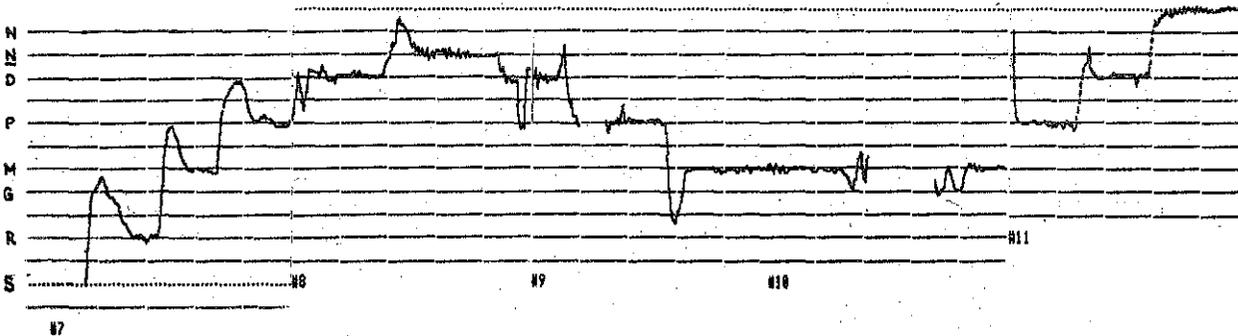
$\overset{m}{M} \overset{r}{R} / \overset{p}{P} \overset{m}{M} \backslash \overset{g}{G} \overset{r}{R} - / \overset{g}{G} \backslash \overset{s}{S} \overset{r}{R} \overset{s}{S} \overset{s}{S} \overset{s}{S} \overset{r}{R} \overset{m}{M} \overset{g}{G} \overset{m}{M} \overset{m}{M} / \overset{p}{P} - - ;$
 Re No ——— m ——— Na ——— Re Na Re Na Re Na Re No ——— m ———

Example 6: Raga Sindhura, end of alap, sung by Bhupender Seetal

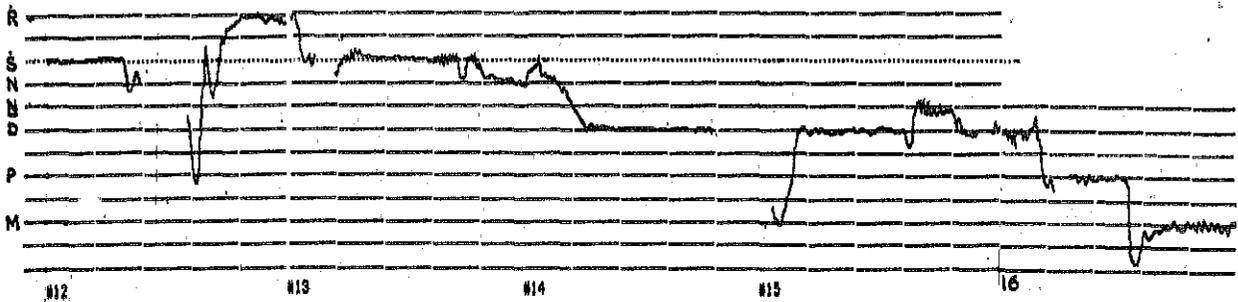
1 sec



Handwritten musical notation on a staff with notes and rests. Below the staff are the following symbols: 'S', 'r', 'p', 'm', 'P', 'D', 'p m g M (~M)', 'g', 'r', 'G', 'S', and a double bar line. The 'p m g M (~M)' is written in a smaller font and enclosed in parentheses.



Handwritten musical notation on a staff with notes and rests. Below the staff are the following symbols: 's', 'r', 'p', 'm', 'p', 'D', 'N', 'd', 'd', 'p', 'M', 'y', 'y', 'm', 'p', 'd', 'S'.



Handwritten musical notation on a staff with notes and rests. Below the staff are the following symbols: 'n', 'p', 'R', 's', 'S', 's', 'n', 'D', 'D', 'n', 'd', 'p', 'p', 'M'.



Handwritten musical notation on a staff with notes and rests. Below the staff are the following symbols: 'g', 'r', 'G', 'S'.

Example 8: Raga Asa, chalan, composed by D.C. VEDI and sung by NUPUR ROY CHOWDHURY

X
♩ = 104

O 2 O 3 4
STHAYI

S R R G R G S R
Ja — ge Mo — re

1

P M D P P D G R S R G R S R N S
Bha — ga Ā — li Śya — ma Sun da ra

R M M P D P D S N D P D M
Kaṅ va la Na ya na Ā — na Thā — re

R M P D G R S
Mo re Dva — ra D.C.

ANTARA

2

P P D M P D N N S S S
Ta na Ma na Dha na Nyo — cha (cha) va ra

R N S R G R S R N D P
Ka ri Hoṅ — Pa ri Hoṅ — Main Pai — yaṅ

M G R G S R M P D N S
Le (re) — Hoṅ — Ba lai — yā — an

R G R S R N S
Bā — ra Bā — ra D.C.

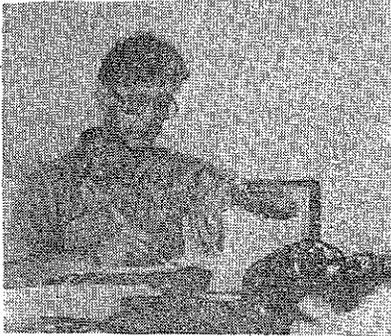
Example 7: Raga Sindhura, dhrupad 'Jage More Bhaga Ali' in chautal, sung by B. Seetal and N. Roy Chowdhury

ACKNOWLEDGEMENTS

We would like to thank Pt D.C. Vedi who has provided the raison d'être for this study with his wonderful music, and relentless criticisms of notation; Anello Capuano for his help in the 'pioneering' stages of this work; Fritz Hermann, Steve Landsberg, Wim van der Meer, George Ruckert and Bonnie Wade, all of whom made valuable suggestions.

RESPONSE TO
'MUSICAL ACOUSTICS: BEYOND LEVY'S INTONATION OF INDIAN MUSIC'

by Nazir A. Jairazbhoy
Department of Music, U.C.L.A.



It is with some reluctance that I write this response to Bernard Bel's article in the ISTAR Newsletter (April-June 1984), primarily because it is not considered 'seemly' to defend one's self in academic circles. To begin with, I must point out that I do not have 'mixed feelings' about ISTAR, as quoted in the Editorial; my mixed feelings are directed only to a particular research project sponsored by ISTAR, not to the principle underlying ISTAR, viz., to encourage research in Indian music. There are many different views as to what constitutes meaningful research - I have my own - and everything I write is coloured by this view; thus my reluctance to write this letter which may seem unduly critical of the article in question. Nevertheless, in the interests of collegiality, I have decided to attempt to communicate some of my views.

I found Bel's article, 'Musical Acoustics: Beyond Levy's Intonation of Indian Music' not only unconvincing and inaccurate, but even bordering on the libellous. To quote, "On one hand, the equipment and the methods used by Deva, Jairazbhoy and Levy were not much more reliable (than) those of Clements, Deval and Danielou". To the best of my knowledge, Clements and Deval, at least, must have used acoustic methods for measuring intervals, whereas Levy and myself used Oscillograms, Stroboscopes and Strobotuners, the last two of which claim accuracy within 1 or 2 cents. If Bel has proof that (1) acoustic measurements using such devices as monochords have equivalent accuracy, or (2) that claims made by the Strobococon and Strobotuner are false, he should publish those results as service to the field of ethnomusicology. Having worked with both kinds of tools, I am utterly convinced that Bel's statement is thoroughly inaccurate. Bel's personal comments, which I consider to be libellous, follow, "On the other hand, the latter musicologists (e.g., Clements, Deval and Danielou) may have benefitted from a closer association with great musicians (and even perhaps from a better understanding of music) than scholars working with commercial recordings or in artificial laboratory conditions (presumably, Deva, Jairazbhoy and Levy)". This is certainly grossly unfair to the late Dr Deva. Whether or not it is a valid statement with respect to myself, the reader must decide, but I think I should state that merely because I have carried out research in a laboratory, has not prevented me from making 16 field trips to India. Of Mark Levy, I can assure the reader, that he not only has an excellent understanding of music, but that he is a very highly regarded performer on a number of instruments, including several from Bulgaria. I can well understand Bel's passionate desire to promote his own work and his Melodic Movement Analyser, but it is not necessary to do so by making thoughtless derogatory statements about other scholars.

I think there can be no doubt that Bel's MMA is more sophisticated than the equipment used by Levy and myself. Yet, in order to go 'beyond Levy', Bel must arrive at results beyond those already reached by Levy. This, in my opinion, he certainly does not demonstrate in the article. On the contrary, his results tend to corroborate those of Levy. Levy's main contention is that intonation does vary, both from musician to musician and even within a single performance. Bel does not prove otherwise and even gives an instance when the Sa itself varies in a single performance. Bel states, "There is a great difference between the ideal which a musician is trying to achieve through the daily practice, his actual performance, and the way he perceives what he does...". I have no doubt that this is true, but of these, only the actual performance can be measured, and this is what Levy has done. Bel, however, argues that it is more important "to reveal their (i.e. musicians) concepts of perfection, and the psychology of sound perception in a particular musical system". Can Bel's sophisticated equipment resolve such issues?

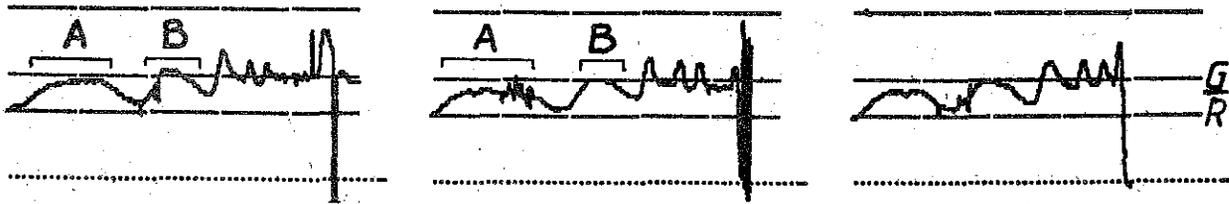
Bel then goes on to criticize Levy's methodology, implying that if Levy had been working with Bel's equipment he would have been able to determine certain details of intonation more accurately. Again, this might well be so; nevertheless, if Bel is going to go 'beyond Levy', he must show how these minor deviations have led Levy to false conclusions.

This response is not intended as a criticism of Bel's equipment; however, I can not avoid pointing out where my concerns lie - namely how the equipment is being used and what conclusions are being drawn from the research. Bel (and associates) decided that Ustad Asad Ali Khan should be the subject of the research evidently on the grounds that the Rudra vina (which he plays), "as pointed out by Sharngadeva in Sangita Ratnakara (XIIIth Century), is the best instrument to demonstrate shrutis and melodic patterns in general." Do they seriously think that an instrument recognised in the XIIIth century provides legitimate justification for analysis of North Indian music in the 20th century? Treatises do not even mention the common instruments of today, sitar, sarod, shahnai, tabla, until the 17th or 18th century suggesting that the music has evolved substantially in the last few centuries. With all due respect to Asad Ali Khansahib, who is a fine musician, is it reasonable to base an authoritative study of North Indian music on such a relatively obscure instrument? If one is looking for the "psychology of sound perception in a particular musical system", as Bel claims, is this the right way to go about it? Would it not be more meaningful to take examples from a number of performers playing the same rag, in order to identify common features and thus to comment about the musical system rather than an individual musician?

Bel then gives an example of his 'viewer', a kind of microscope for music. This could be a very useful analytical tool. It, however, apparently reveals strange phenomena because of the degree of detail, which we cannot really understand (and perhaps not even hear). Bel gives a graph in which on the left side the note Sa is approximately two cents while on the right, after the pluck it is raised to 8 cents. According to Bel, "such a difference is meaningful, as it creates a state of 'tension' when perceived by the ear". But why should the Sa be used to create a state of tension and not resolution, when all the other notes being discordant to some degree at least, provide various degrees of tension? The tonagrams also show a great variety of intonations for each of the notes - are these all to create tension variants?

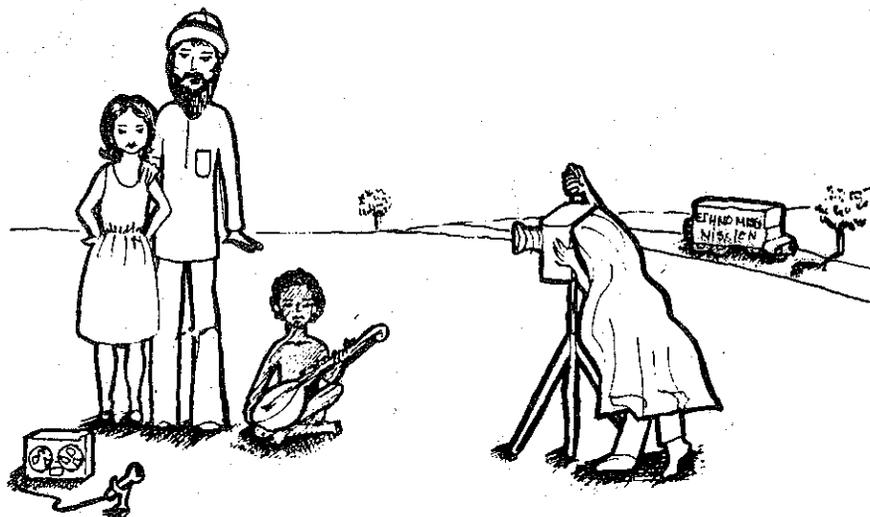
Bel, having criticised Levy for averaging measurements (which he did because there was no other way to determine Sa) and also pointing out that these averages were not very meaningful, then goes on to state that "the ear averages pitch perceptions so that melodic lines appear smoother to hear than to see". Evidently, he is trying to justify Asad Ali Khansahib's rendering of the Sa in the instances above, which he fears may be interpreted as Khansahib playing out of tune. Not satisfied with this, he resorts to what I consider to be a mystical explanation, "But also the brain performs a process of 'integration' of those perceptions which has a tremendous effect on the global 'feeling' of tonality". The concept of playing in tune or out of tune is not an objective phenomenon, but varies with musical genre, cultural context, personal predilection and many other factors. The criterion is the ear of the listener and if the listener finds that a deviation of 13 cents in the intonation of the Sa during the course of a performance is acceptable, then the musician is not playing out of tune. The fact that Ma and Pa also vary is more significant, in my opinion, than the fact that there is a thin peak at a point 3 cents lower than the perfect consonance in the case of the Ma and 6 cents in the case of the Pa. I do not think that Bel is justified in saying that the Re is of 199 cents and "belongs to the equal-tempered scale", when, in fact the tonagram shows various intonations for the note, perhaps ranging over as much as 30 or more cents with two thin peaks, one on either side of the 200 cent mark, at least from what can be seen from the published display.

Bel also gives 3 graphs of the andolit Ga Komal at different moments of the performance, with the comment that "MMA experiments on Asad Ali's Rudra vina have shown impressive consistency in the use of microtones and in the 'shapes' of melodic movements themselves". The graphs, however, show no such thing, except in general outline. For instance, comparing the first 2 graphs, at the sections marked A and B, it will be seen that there is a clear difference in height (about 20 cents). I would not call this "impressive consistency in the use of microtones", although I am absolutely sure that these would be perfectly acceptable to the ear.



I must stress that I am not denying the elegance of Bel's genius as electronic designer. I believe that the tonagram and viewer and the other tools he is developing will undoubtedly aid certain kinds of research. But, in my opinion, he does not go beyond Levy - on the contrary, he provides reinforcement for Levy's hypotheses. But Levy attempts to go further - to correlate musical context (i.e. rising or descending series of notes and many others) with the actual intonation used. Both Levy and Bel have found that intonation of a particular note varies, although Bel does not admit it in so many words. According to him, "Tonagrams prove that a 'tonal skeleton', a scale, does exist behind the somewhat fluctuant reality of raga", but from his article, it is not clear whether he derives the scale from the standard deviation average method or from his 'thin peaks'. If we assume, for the sake of discussion, that Bhatkhande is correct when he says that the precise intonation of a note rises when it is in a rising context, and lowers in a descending one, then ignoring context can only give a meaningless average which applies to neither context. This seems to me what Bel has done in his article, whereas, with much less sophisticated equipment and infinite amount of tedium, Levy has attempted to verify Bhatkhande's and other's hypotheses.

An automatic transcriber, such as the MMA, is, as Bel puts it, "not a universal panacea". I do not think, for instance that it will replace aural transcription in the near future, because music is created for the ear, not the computer. Only when we fully understand the transformations that take place after the sounds enter the ear and the way they are processed by the brain, can we hope to educate a computer to make meaning (in a human sense) of music. In an earlier article "The 'Objective' and Subjective View in Music Transcription" (*Ethnomusicology*, May 1977, p. 270) I have described what I felt was the present value of such automatic transcriptions (See pp. 30-31 of this Newsletter).



ON MEASURING NOTES
A Response to N.A. Jairazbhoy

by W. J. Arnold, Joep Bor, Wim van der Meer



"But the greatest error of all the rest is the mistaking or misplacing of the last or furthest end of Knowledge. For men have entered into a desire of learning and Knowledge, sometimes upon a natural curiosity and inquisitive appetite; sometimes to entertain their minds with variety and delight; sometimes for ornament and reputation; and sometimes to enable them to victory of wit and contradiction; and most times for lucre and profession; and seldom sincerely to give a true account of their gift or reason, to the benefit and use of men: as if there were sought in Knowledge a couch whereupon to rest a searching and restless spirit; or a terrace for a wandering and variable mind to walk up and down with a fair prospect; or a tower of state for a proud mind to raise itself upon; or a fort or commanding ground for strife and contention; or a shop for profit and sale; and not a rich storehouse for the glory of the Creator and the relief of man's estate... Howbeit, I do not mean, when I speak of use and action, that end before-mentioned of the applying of Knowledge to lucre and profession... Neither is my meaning, as was spoken by Socrates,

to call philosophy down from heaven to converse upon the earth; that is, to leave natural philosophy aside, and to apply knowledge only to manners and policy. But as both heaven and earth do conspire and contribute to the use and benefit of man; so the end ought to be, from both philosophies to separate and reject vain speculations, and whatsoever is empty and void, and to preserve and augment whatsoever is solid and fruitful: that knowledge may not be as a courtesan, for pleasure and vanity only, or as a bond-woman, to acquire and gain to her master's use; but as a spouse, for generation, fruit, and comfort."

Francis Bacon (1561-1626; in 'Of the Advancement of Learning', The First Book, V.11.)

Bel's intention when writing his paper was hardly to "promote his own work and his Melodic Movement Analyser" (supra: 43) at the cost of the respectability of our colleague N.A. Jairazbhoy. Bel is a skilled engineer with no need to set out on a march to mystify the musicological community with the wonders of digital techniques and computers... It is, however, the task of trained scientists to correct wrong notions, as Jairazbhoy has so often attempted to do himself. Improved technology brings about new insights which render earlier concepts obsolete. Bel's point is that only researchers who have deeply studied this music and who have spent sufficient time with their teachers to understand the thinking of musicians, can undertake to formulate its principles. The MMA technology was developed as a pragmatic way to grapple with the needs and questions expressed by such researchers and by traditional masters themselves. Our methodology, to intimately involve the musician in research, is based on the experience that, in the absence of such close interaction, one can be easily misled by occasional statements musicians make. As an example, Levy, and apparently his advisers, think that Indian musicians cherish theories which have nothing to do with reality, because, as he observes, "One of today's most well-known and highly respected sitar players (...) states that the Ga b and Dha b of Darbari are atikomal or very flat (...) however, this prominent sitarist intones the Ga b extremely sharp rather than flat. (...) This is yet another illustration of the Indian reverence for older and more traditional beliefs, even though they may conflict with current practise. It also reflects the inability of many performers to analyze or verbalise about their music" (Levy 1982: 109). Such a position is, in our opinion, anti-scientific, anti-musical, and even, anti-Indian. Why did he not take this remark directly to this great artist, Ustad Vilayat Khan (Jairazbhoy's main informant for his study on ragas) and first ask for some clarification?

The strobotuner and stroboconn are extremely limited measuring instruments. They depend on measuring standing notes of considerable duration, of which Indian music has very few. Using them for the study of the shape of gliding and oscillating movements, can be done only by measuring 'points' and linking them by hand (see Bel, infra: 55). Graphing pitch lines with a sonograph would be a better method. In spite of the limitations of his tools, Levy has often arrived at measurements that seem

reasonably close to our own verifications. We can only admire the trouble he has taken to measure intervals under such difficult conditions. But we find his interpretations unscientific, solely directed at proving the views of his mentor, N.A. Jairazbhoy.

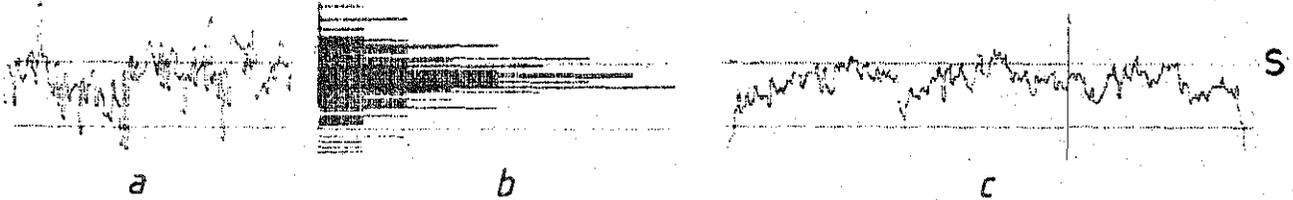
What are these views and where do we differ from them? One point where we evidently do not disagree is that intonation does vary. As Jairazbhoy says in his letter to the Editors, "Levy's main contention is that intonation does vary, both from musician to musician and even within a single performance." If this is Levy's main contention, then either it means that he wishes to study what any musician already knows well, or else, that he is obsessed with scale theory and desperately wants to disprove it. We certainly agree with both Levy and Jairazbhoy that note densities occur in tonal ranges rather than at exact points. Every musician knows that perfection is an ideal, but should this commonplace lead us to the conclusion that "... any intonation within certain limits (perhaps within 25 or 30 cents on either side of the tempered intonation) can be acceptable?" (Jairazbhoy and Stone 1963:130-131).

Is the idea, cherished by many great musicians, that it is meaningful to devote a life-time to the refinement of intonation, a waste of time and energy? Levy tried to answer this question by arguing that none of the extant theories of intonation is tenable in view of his measurements. But he did not attempt to see whether any one of the theories was better than the rest, nor did he attempt to improve upon any of them. He took Sa as an absolute reference point, which we find unsound, and did not examine the question of internal consonance of scales. His leap from rejecting simplistic scale theories to the acceptance of Jairazbhoy's non-theory is unwarranted. For, the idea that intonation in Indian music would be a gross twelve-semitone system with a 25 to 30 cent flexibility on either side of a tempered value, is no theory at all. This becomes perfectly evident when Jairazbhoy contradicts himself by speaking about "divergent intonation." What is the meaning of 'divergent' intonation when you use a model that inherently allows for a deviation of up to 60 cents?

The crux lies in understanding Jairazbhoy's ideas about intonation. According to him, divergence arises from scalar imbalance due to asymmetrical tetrachords (Jairazbhoy 1971: passim). In fact, the theory of asymmetrical tetrachords is nothing but the theory of grama and murcchana reformulated in different terms. To say that the ascending disjunct tetrachords in Yaman are asymmetrical and that therefore shuddh madhyam is likely to appear as an 'accidental' is the same as to say that Bilawal is the Pa-murcchana of Yaman, or in more general terms, the Pa-murcchana of Sa-grama with antara gandhar is identical to Ma-grama. Every time we shift the tonic by a fifth, one new semitone will be introduced but unless we use a perfectly tempered scale as our fundamental scale, not only gross semitones will be introduced but also one of the original notes will change by a fraction. That is why in Western music temperament is used at all: to be able to transpose without retuning the instruments. And that is also why Indian music uses transposition only very sparingly, if at all, within the performance of a raga. Jairazbhoy has tried to simplify Indian music by eliminating subtle intonation (i.e. svarasthana as defined in the concept of grama) and referring only to semitonal structure (i.e. the order of semitones and whole tones as defined in the concept of that). This becomes quite obvious in his statement, "... why should the Sa be used to create a state of tension and not resolution, when all the other notes being discordant to some degree at least, provide various degrees of tension?" (N.A. Jairazbhoy, supra: 44)

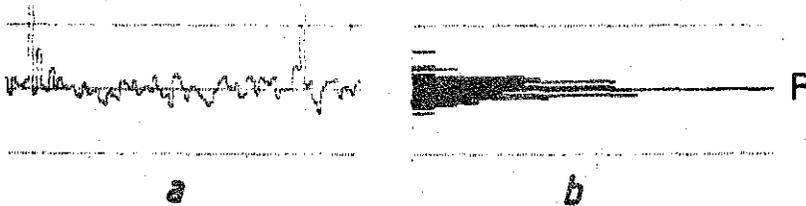
We believe he has not succeeded. For, Indian musicians still find these minute differences relevant, in spite of the fact that many of them tolerate the tuning of a harmonium. A careful analysis of the performance practice of reputable musicians clearly reveals that they do try to place the notes in a much more accurate way than tempered plus or minus 30 cents (see Arnold, Bel and van der Meer, *infra*). And they do achieve a meaningful difference in intonation when comparing different ragas. Even Levy's material should have led him to this conclusion! For instance, his measurement of the shuddh rishabh in Darbari Kanada (202-205 cents) is clearly higher than that of Bageshri (191-194 cents). Similarly, the komal nishadh of Darbari (1011-1015 cents) is higher than that of Bageshri (993-995 cents) (Levy 1982: 95-96). Unfortunately other comparisons are not possible either because of too small a number of measurements, because the notes are oscillating, or because of the technical problems relating to Levy's measurement of instrumental music. As a result, we would consider more than fifty percent of the values Levy established too unreliable to be taken into consideration.

If we look at the most 'standing' of notes, viz. shadj or pancham, we often see in the composite sound (consisting of pitches that vary by up to 40 cents) a slight upward and downward movement (Ex. 1). This movement can be heard clearly. In fact most musicians tend to go in and out of the Sa, in which going out is a downward movement. As a result, when we measure the average of shadj, we arrive at a lower value than the actual shadj.



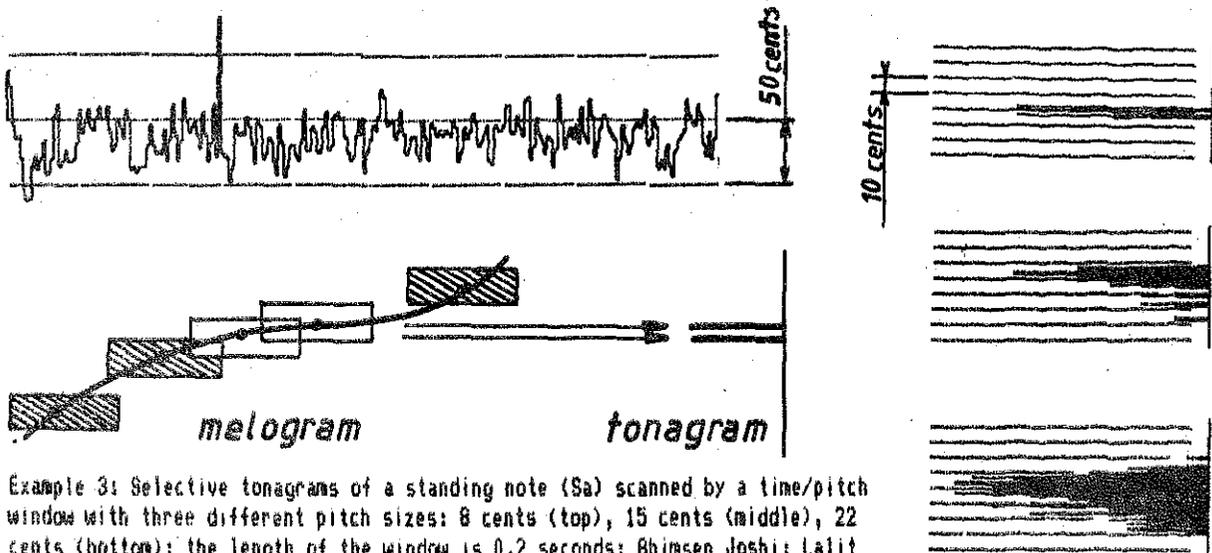
Example 1: Darbari Kanada: Faiyaz Khan, melogram (a) and mini-tonagram (b) of Sa; Bhimsen Joshi, Sa (c); distance between horizontal lines is 50 cents

Measurements of Asad Ali Khan's Todi, for example, show an upper limit for Sa of 3 cents, a lower limit of -12 cents, and an average at -3 cents from the Sa measured by ear. What we see from looking at the melographs is that the Sa at 0 cents is often the point where the musician finally 'sits' but the average is certainly lower. This becomes particularly clear when comparing shadj to pancham, where such in and out movement is not used (Ex. 2). Also, as the performance progresses, the shadj comes closer to a straight attack. Whatever the interpretation, this shows that even the measurement of shadj and pancham is open to discussion. The point is that if you cannot measure with certainty, how can you blame the musicians for not intoning accurately: perhaps the problem might lie with the measuring instruments and methodologies rather than with the measured subjects.



Example 2: Jaunpuri: Kishori Amonkar, melogram (a) and mini-tonagram (b) of Pa

This becomes also evident when we look at the 'selective tonagrams' of a performance. Selective tonagrams are made by defining a 'window' through which the computer looks at notes that are 'standing' for the duration and pitch stability specified for the window. The notes in a raga which are never standing simply do not appear in the tonagram. As one increases the pitch size of the window, more measurements are counted, but also the difference between standing and non-standing notes becomes less sharply defined; the shape of the distribution curve for notes becomes more or less Gaussean, since some information counted belongs to note connections (Ex. 3).

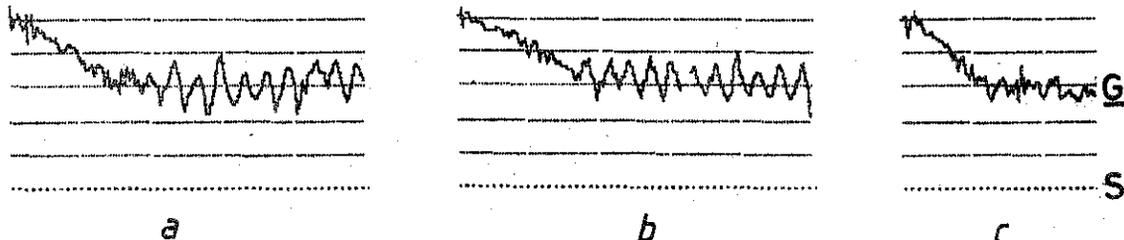


Example 3: Selective tonagrams of a standing note (Sa) scanned by a time/pitch window with three different pitch sizes: 8 cents (top), 15 cents (middle), 22 cents (bottom); the length of the window is 0.2 seconds; Bhimsen Joshi: Lalit

We do not doubt that, even using the MMA and computers, it will take us considerable time to arrive at general conclusions. It must also be made clear that the study of intonation in an objective way is limited by the absence of significant information about timbre (vowels) and volume, which for the time being is not being considered. However, to be able to understand the problems involved in studying intonation, we have analyzed over twenty different interpretations of raga Darbari Kanada and for comparison several interpretations of Jaunpuri.

Let us consider the morphology of melodic lines which is a function of the slope and curvature, two parameters which Levy could not study because he could not see them. Figure 4 shows a number of examples of the shape of gandhar in raga Darbari Kanada. We can recognise several types. In the first type (Ex. 4 a-c), Ga is almost straight, coming slowly from rishabh. The second type (Ex. 4 d-e) is a slow oscillation (andolan), usually following rishabh, which hovers around gandhar, sometimes raising slightly and then dipping below gandhar, towards rishabh. The third type (Ex. 4 f-i) is commonly a descending andolan coming down to Komal gandhar and oscillating in the tonal region above gandhar. Here the sawtooth shape is quite characteristic. Sometimes one hears combinations of these types (Ex. 4 j).

In the case of Jaunpuri (Ex. 5), the movement starts from madhyam, coming slowly (in mind) to Komal gandhar, which is characterised by a strong vibrato.

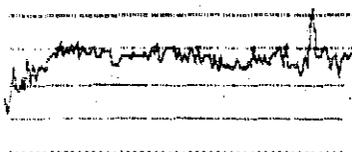


Example 5: Jaunpuri, gandhar: Kishori Anonkar (a, b), Bhupender Seetal (c)

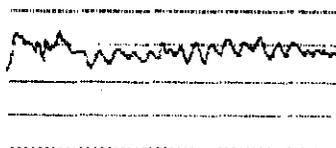
When comparing the oscillating gandhar of Darbari (second and third types) with the vibrating gandhar of Jaunpuri, the difference is that the pitch variation in the oscillation is clearly audible, whereas the vibrato gives the impression of a single pitch being produced. Levy has assumed that the andolit gandhar produces a 'note', the pitch of which he could define by taking an average. In fact he averaged the high points and the low points, and then again averaged these two extremes, as if he had expected the ideal pattern to be a sine wave. When we confronted Indian musicians with this methodology, they generally burst out in laughing! They suggested that if he wanted to arrive at a measured value for the Komal gandhar, he should have taken an average of only the low points. Moreover, Levy only looked at gandhars of the third type (with the exception of Bundu Khan). For the other two types it is evident that they represent a low gandhar, although it would be difficult to establish an objective criterion for determining a value in cents.

Even within the main categories of andolan, there is variation from artist to artist, and within a single performance. Again we do not believe that one can jump to the conclusion that both pitch and movement are 'random'. On the contrary, these differences are meaningful, certainly intended, and relate to the logic of the story telling context and the possibilities the raga offers (see Arnold, *infra*). It is curious that Jairazbhoy refuses to see the great similarity in shape ('outline') between the three andolit gandhars rendered by Asad Ali Khan. Apparently he is only interested in point measurements and simple arithmetics, which in our opinion have nothing to do with the science of music. If a biologist would find three growing patterns with such similarity, this would be considered highly significant.

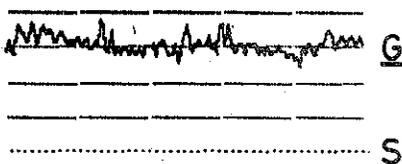
Another question of methodology is the choice of subjects. Levy's random selection of artists from among those who have a reputation, seems scientifically valid. However, once we realise that perfection of intonation is an ideal for which musicians are constantly striving, it becomes clear that we should select from among those musicians who have the highest reputation for sur (accurate intonation). Levy drew the conclusion that pitch within a single performance is not consistent, nor is



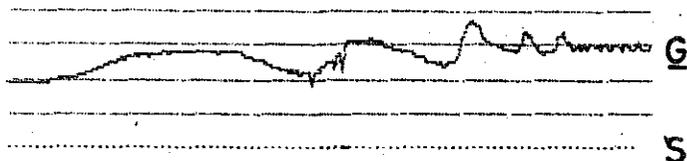
a Faiyaz Khan



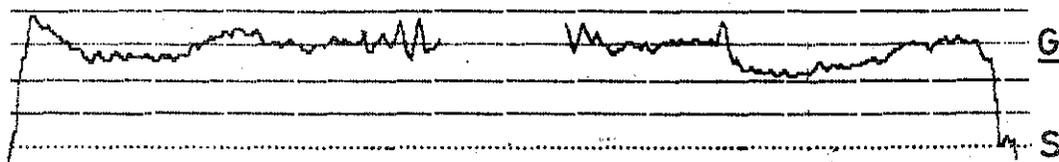
b Bhimsen Joshi



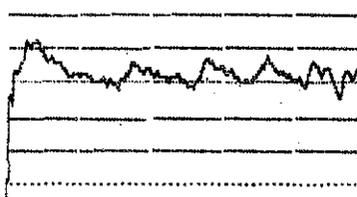
c Bade Ghulam Ali



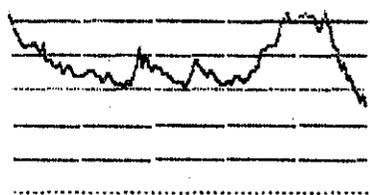
d Asad Ali Khan



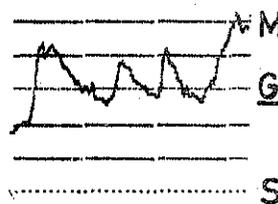
e Ram Chatur Malik



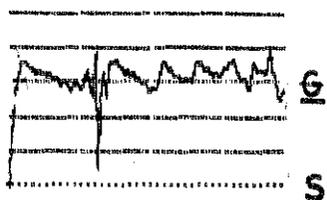
f Anir Khan



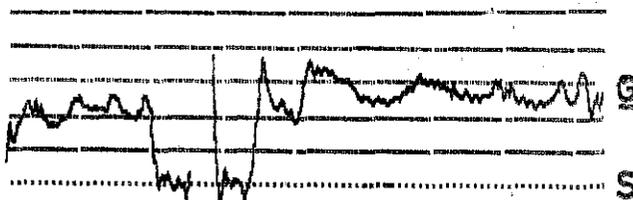
g Anir Khan



h Abdul Wahid Khan



i Vilayat Khan



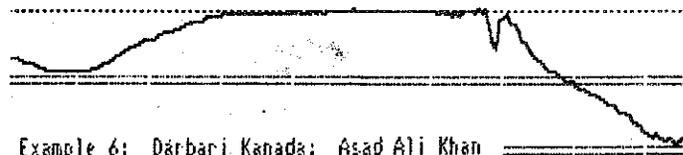
j Dagar Brothers

Example 4: Several types of andolit gandhar in raga Darbari Kanada. In a, b and c, gandhar is almost straight, sounding like a slight vibrato. In d and e the movement is slow, beginning from a very low gandhar; the oscillation increases in speed and the pitch raises. In f, g, h and i, the movement is faster, more regular and begins at a higher pitch. In j, a combination of the second and third types, the gandhar is very low.

it among multiple performances by a single artist, but he refrained from studying the question whether some musicians were more consistent than others and whether some musicians approached better theoretical possibilities than others.

In Bel's article in Newsletter 2, he stated that the bin or Rudra vina is the most appropriate instrument to study intonation. Jairazbhoy does not wish to accept Sharngadeva's authority on the subject and despite his association with Z.M. Dagar never seems to have asked him why he thinks Sharngadeva might have thought this. Great vocalists all try to control their voice in such a way that it comes close to the ideal of the vina. Dhrupad singers are aware that the vina can go on into the depths of intonation where the voice stops. But also many Khayal singers were highly influenced by the vina. Niyamat Khan (Sadarang), the greatest Khayal composer was a binKar himself. Bhaskar Rao Bakhle and several other Khayal singers learned from Bande Ali Khan binKar. Sitar and sarod are also heavily indebted to the vina. Both Allauddin Khan and Hafiz Ali Khan learned from Wazir Khan binKar. Vilayat Khan was strongly influenced by Muhammad Khan binKar, the father of Rais Khan. The sarangi player Bundu Khan often played in bin-ang.

To analyze the vina through recorded examples poses the problem of unfavorable sound to noise ratio. However when the vina is analyzed using a direct magnetic pickup its tones are indeed remarkably steady and precise (Ex. 6).



Example 6: Darbari Kanada: Asad Ali Khan

To conclude, more sophisticated equipment (which may be the result of a more involved attitude) requires more sophisticated methodologies. In our opinion, Bel (and associates) have 'gone beyond' Levy by rejecting short sighted and pseudo-scientific approaches which lead to oversimplified interpretations that wind up in dead ends.

So far there is no theory of Indian music worthy of the name in English. When it gets made, however, one can be sure that it will take seriously the ideas of Indian master musicians as well as those of sangita shastra. We challenge those ethnomusicologists who really want to contribute to such a theory, to make the personal sacrifice of studying the necessary years required to understand traditional art in some depth before setting themselves up, in far off bastions, as 'experts'.

N.A. Jairazbhoy, The Rags of North Indian Music : Their Structure and Evolution, London 1971: Faber and Faber.

N.A. Jairazbhoy and A.W. Stone, Intonation in present-day North Indian music, in Bulletin of the School of Oriental and African Studies, Vol. XXVI, part 1, 1963: 119-132.

M. Levy, Intonation in North Indian Music, A Select Comparison of Theories with Contemporary Practice, New Delhi 1982: Biblia Impex Pvt Ltd.

OVERHEARD THAT...

The Department of Music of the University of Gorakhpur has opened a course in Ethnomusicology focussing on 18th century Italian opera.

STRETCHING SCALES

by W.J. Arnold, Bernard Bel and Wim van der Meer
 ISTAR Projects #1, 2, and 13

Just intonation refers to a theoretical method of tuning scales using the principle of consonance, i.e. perfect fifths (702 cents) and harmonic major thirds (386 cents). Since Bharata's theory also makes use of the principle of consonance, a common belief is that it is equivalent to the theory of just intonation. Besides, many musicians and musicologists cherish the idea that Indian music does - or should - follow Bharata's scale system. A research project has been initiated to investigate these questions with modern tools and methods. The aim is to elaborate a comprehensive model of musical scales, encompassing both theoretical tuning methods, and tuning systems derived from a study of performance practice.

A preliminary mathematical investigation of Bharata's theory shows that other tuning systems different from just intonation can also be derived from Bharata's postulates. Since the major third (the 7-shruti interval) is not classified by Bharata as a perfect consonant interval (samyad), its size may be made variable within certain limits. This leads to solutions in which the size of the pramana shruti (the enharmonic interval) can vary from 0 to 57 cents.

Just scales (in which the major third is equal to 386 cents) use a 22 cent pramana shruti. Scales with a pramana shruti larger than 22 cents will take smaller major thirds. We refer to them as 'hyperjust' scales. Scales with a pramana shruti less than 22 cents take major thirds larger than 386 cents. We call them 'hypojust scales'.

Any scale can be systematically tuned in twelve different ways, depending on the distribution of perfect fifths and major thirds. Diatonic scales (with 5 to 9 notes) have less tuning procedures since some tunings overlap.

A first step in analysing the intonation of ragas is to determine whether the scale of the same raga performed by various artists, is based on similar or different tuning procedures. To answer this question, we compare the different tuning schemes of a given scale with the measurements of the performance. The second step is to ascertain the direction in which musicians 'deviate' from just intonation, towards hypojust or hyperjust intonation.

We have designed a method for determining the best way of matching theoretical scales and performance. Measurements of performed intervals are done with selective tonagrams (see On measuring notes, supra) and enlargements of melodic lines. We first calculate consecutive intervals of the scale, so that errors of the measurement of Sa have no multiple effect (see page 59, note 8). Each interval is attributed a weight depending on the reliability of the measurements. Then we calculate the difference between the theoretical and the measured interval, and square it. The weighted sum of the squares of the deviations, divided by the sum of the weights, is the 'quadratic deviation' from the theoretical scale. Its square root represents the average mismatch (in cents) for each note between the performed scale and the theoretical scale. The mismatch is calculated for each artist and for each theoretical tuning system. The minimum mismatch indicates which scale is closest to the musician's tuning. Then we calculate which value of the pramana shruti, for each tuning scheme, gives the best match. In other words, we determine how much each scale should be 'stretched' to best fit with the performer's ideal. We applied this method to the analysis of the intonation of raga Todi by the following artists:

1. Asad Ali Khan, tuning the shruti harmonium
2. Asad Ali Khan, alap on Rudra vina (ISTAR archives)
3. Bismillah Khan, alap on shahnaï (Odeon MOAE 120)
4. Malikanjun Mansur, khayal (private recording)
5. Zia Mohiuddin Dagar, alap on Rudra vina (NCPA archives) [1]

Seven basic tuning schemes, including the equal-tempered scale, were studied. The results indicated a general tendency of the musicians to favour one particular tuning scheme. That scale can be tuned by the following procedure: tune Ga Komal, Dha Komal, and Re Komal from Sa by a series of downward fifths, then drop a major third from Ga Komal to Ni, and tune Ma tivra as a perfect fifth above Ni. It is interesting that, except Z.M. Dagar and Malikanjun Mansur who were closest to just intonation, the rest of our musicians tended to play with a pramana shruti ranging from 16 to 22 cents, i.e. in hypojust intonation. Malikanjun Mansur's scale showed a considerable internal dissonance, with Re unusually low and Ma relatively high, so that the mismatch from just intonation was 10 cents.

All musicians except one preferred Bharata's scales to equal temperament. The tuning closest to Bharata's system was that of Bismillah Khan, who used hypojust intonation with a pramana shruti of 16 cents and a mismatch of 3 cents. The average mismatch from the equal tempered scale was 9 cents, whereas mismatches from Bharata's scales were less than 6 cents. The performance which was closest to equal temperament was the alap played by Asad Ali Khan, although, in a tuning experiment, the same musician had come closer to one of Bharata's scales. Looking at the melodic lines, we can see that Asad Ali Khan likes to move slowly in the tonal space from one shruti to the next (See Playing with intonation, infra). Averaging this kind of movement gives note positions somewhere in between, which are not necessarily significant.

Although these results suggest that Bharata's model may be a good approach to the problem of scale tuning, we think that alternate models should be studied as well. It is possible to imagine scales with several different sizes of pramana shruti or more dissonant fifths. [2] Recent experiments with the shruti harmonium, performed with the help of Kishori Amonkar, have shown that a musician of her standard is aware of deviations from Bharata's scales within less than four cents. These deviations cannot be explained by any model based on mathematical consonance. Only after having processed more MMA data and analysed the decisions musicians take in tuning experiments, can we fully elaborate a model of musical scales taking an optimal number of parameters into account.

1 It is important to consider the fact that the section of the alap selected for analysis is performed in the lowest register of the instrument.

2 Since Bharata was tuning strings by ear, and not measuring intervals, his scales may have been slightly different than the ones we obtain by calculating exact frequency ratios. His experiment with the two vinas even suggests that he felt each step of lowering the notes to be rather similar. Therefore, adjustments of Bharata's scales to the ear's preference, taking problems of pitch evaluation into account, may not be considered as a strict departure from Bharata's model.

ON A LU...

J'ai d'ailleurs remarqué une chose drôle: en Inde, les danseuses étaient des prostituées; mais aujourd'hui, depuis que ce sont les filles de ministre qui se mettent à danser le bharat-natyam, elles le dansent comme des putains. Alors que les grandes danseuses, les devadasis, les esclaves des dieux, étaient femmes d'une élégance, d'une noblesse, d'un style extraordinaire. Les devadasis ne sont pas très différentes des moines. Ce sont des femmes qui renoncent à la maternité, à continuer la race. Autrefois, elles étudiaient dans des écoles de danse qui faisaient partie des temples. Elles faisaient l'amour avec qui elles voulaient, mais ne devaient pas avoir d'enfant. La prostituée, au sens occidental, était très rare en Inde.

Alain Daniélou, interview by Paris Match, 17 May 1985.

PITCH PERCEPTION AND PITCH EXTRACTION IN MELODIC MUSIC

by Bernard Bel
ISTAR Project #1

This paper describes a few classical and contemporary models of pitch perception, and deals with techniques of pitch extraction, discussing the kind of aberrations which occur in the process of automatic transcription. There is no unambiguous understanding of the relationship between the pitch we hear and the frequency parameters of musical sound, especially in melodic music where the pitch varies continuously. There are also technical problems involved in pitch extraction, especially when the music contains a strong background 'fill' from the drone and percussion instruments. Other defects are the result of the recordings themselves, producing melodic lines which are difficult to interpret.

THE FOURIER MODEL

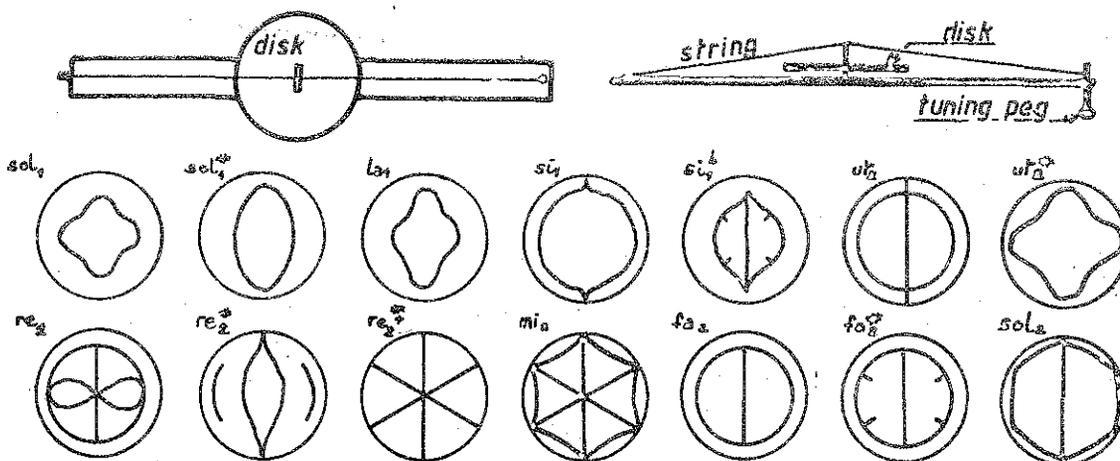
A harmonic tone is a superposition of several sine waves (the harmonics), the frequency of each one being an integer multiple of one single low frequency, called the fundamental frequency. Mathematical study of periodic functions, using the Fourier spectrum analysis, shows that each harmonic is characterised, not only by its amplitude, but also by its relative phase angle with respect to the fundamental. Nevertheless, slow changes of the phase parameter alone cannot be perceived by the ear if the other parameters remain unchanged. Studying the vibrating modes of resonating bodies reveals that the frequency ratios of harmonics versus the fundamental are not exactly integer numbers. This amounts to say that musical sound is not absolutely periodical (harmonic). Sound components which are not strictly harmonic are called 'partials.' Among the instruments which are the most inharmonic are bells and xylophones, reed instruments, trumpets, etc.

In the beginning, heard pitch was seen as the fundamental frequency, i.e. the lowest frequency of the Fourier spectrum, but later it was discovered that the perceived pitch remains identical even when the fundamental is suppressed from the original sound. This experiment, based on synthesized steady tones, led to the conclusion that the actual pitch is the 'minimum distance' (in Hertz) between two consecutive partials of the spectrum. When listening to inharmonic sounds, therefore, one may perceive several pitches since the partials are not equidistant. Which pitch the ear considers correct, mainly depends on two factors: the frequency response of the auditive system (which may focus on different ranges of the audio spectrum), and the melodic context of the tone. Such factors vary from individual to individual, so there is no unambiguous model of pitch estimation for inharmonic instruments and no objective way to determine their pitch. As far as 'harmonic' instruments are concerned, slight deviations can be related to aberrations of pitch perception. Piano tuners, for instance, tune high octaves higher, and low octaves lower, being partly influenced by the inharmonicity of strings (a few cents [1] per octave), and by the stretched 'subjective octave' which the ears prefers. [2]

THE SAVART PATTERN MODEL

The process by which the auditive system evaluates tonal intervals is highly hypothetical. First, we know that the mechanical amplification of sounds performed by the external ear is far from linear: even the ear creates new partial sounds which do not exist in the original. An obvious fact is that the auditive system does not function as a frequency counter and spectrum analyser, since it is not designed to perform physical measurements. It is, on the other hand, remarkably organised to evaluate ratios, that is, to recognise proportions, shapes and patterns.

Emile Leipp has hypothesized [3] that pitch evaluation may be the result of recognition of standing wave patterns on the basilar membrane. As early as the nineteenth century, Savart studied tonal patterns which can be generated on a circular piece of glass covered with sand and excited by the vibration of a bowed string. Below is a copy of Savart's own drawing of the type of instrument he used and the patterns he got. Evidently these patterns were a function of the dimensions and physical characteristics of the vibrating body.

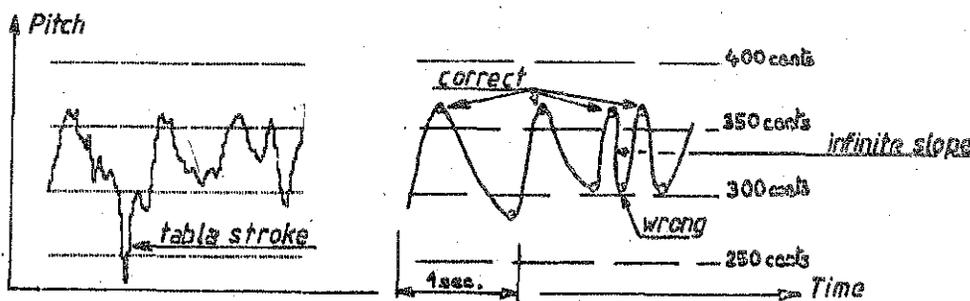


Standing wave patterns on a vibrating disk

Savart patterns today, can be observed on the ear-drum through holography (laser photography). Savart's model is interesting in that it may help us to understand how we perceive pitch, but its main defect is that it is based on a fixed correspondence between pitch and shape (which is not the case for the ear), and therefore can not be directly applied to the recognition of melodic intervals. Also one may question the existence of a simple frequency-to-pitch conversion within the auditive system. "Pitch perception by trained musicians is not a matter of simply 'placing' what is heard in a one-dimensional pitch or chroma-octave space... but rather may result from integration of differently organised modes of perception." [4]

MEASURING THE PITCH OF MOVING TONES

Before sophisticated melographs like the MMA were made available, the only way to visualise melodic lines was to use a sonograph for transcription. But this method was slow and inaccurate for measuring frequencies. Mark Levy, for instance, used a strobotuner for measuring the limits of pitch variations in an oscillating melodic pattern (andolan), and produced a visual image by interpolating the interior movements whose shape he was unable to see. Without seeing the shape of the movement, however, one cannot know which isolated measurements of pitch in moving tones are correct. Even the margin of error cannot be determined. To illustrate this, I have reproduced the graphs drawn by Levy [5] and by the MMA.



MMA graph

Graph drawn by Levy

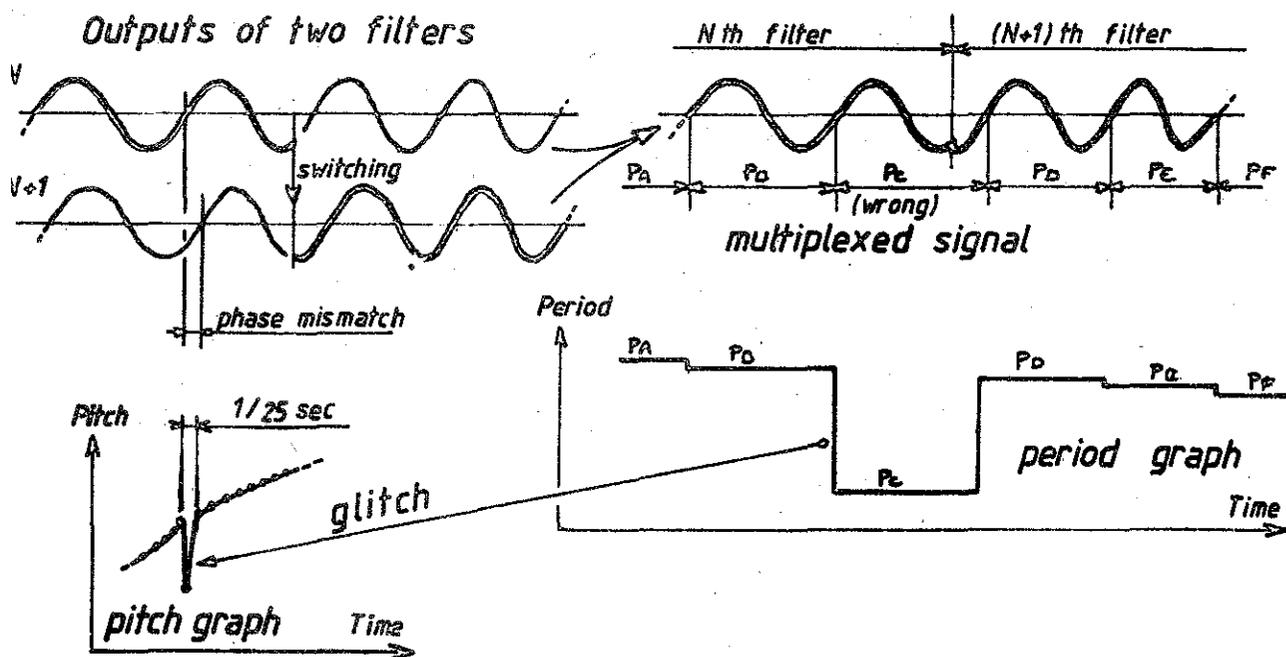
Oscillating melodic movement (Darbari Kanada, Nazakat & Salamat Ali Khan) drawn by MMA (left) and by Levy on the basis of strobotuner readings (right).

Most experiments on tonal perception have been conducted in artificial conditions, using steady tones and modifying one parameter at a time. Melodic music is, of course, a much more complex phenomenon, and the effect of simultaneous intensity, frequency and phase variations on subjective pitch is still unknown. At present, we lack a really coherent model of pitch evaluation, so that we are bound to use the real-time [6] measurement of the frequency of the fundamental as our primary factor in the estimation of pitch. The Fundamental Pitch Extractor (FPE), built for the National Centre for the Performing Arts by the author, uses bandpass filters to perform a realtime spectrum analysis. A digital-system evaluates the lowest frequency of the sound, which determines the band in which the fundamental may be captured.

The output of the correct filter is then automatically fed to the periodmeter, which gives a digital output related to the frequency of the fundamental.

SYSTEMATIC ERRORS IN MELODIC LINES DRAWN BY THE MMA

Sometimes we see a characteristic glitch in a melogram, which is caused by the pitch extraction system. As the frequency varies, the FPE switches on different consecutive bandpass filters. Their outputs have slightly different phases, so that switching from one filter to the next produces an irregularity of the output signal, resulting in an erroneous period measurement as shown below. Since measurements are averaged by the computer over 1/50 second (a typical sampling time), this wrong measurement will result in a glitch on one single dot of the melogram.



Effect of switching filters on period measurements

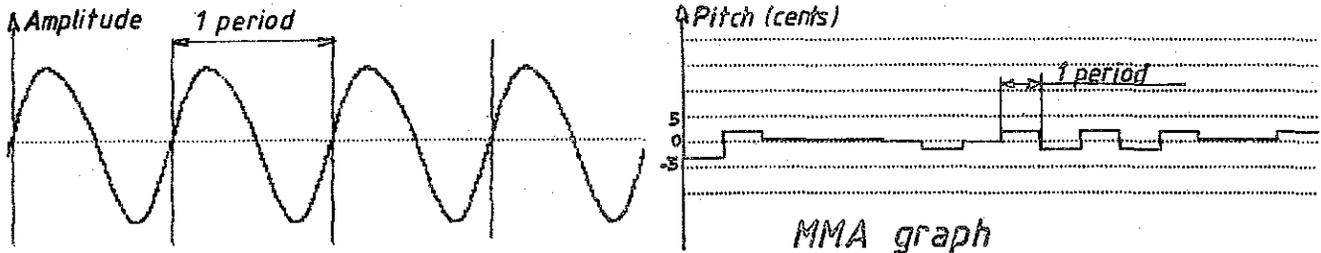
The glitches have little significance because they can easily be recognised in slow movements, and eliminated by interpolation with the computer software. F-J Electronics (Denmark) have solved this problem in their 'Pitch Computer' by modifying the phase of the outputs of all filters to bring them into line. However, this may affect the frequency measurement and eliminate significant phase-shift phenomena.

RELIABILITY OF PITCH EVALUATION WITH THE FPE

Can we take the fundamental frequency as a consistent evaluation of pitch? A shortcoming of this method can be demonstrated with the analysis of shahnai, an Indian reed instrument. (Raga Todi by Ustad Bismillah Khan, Odeon MOAE 120). Melograms reveal that when Bismillah Khan reaches P_a for the first time, its pitch starts from approximately 702 cents above S_a (a 'perfect' fifth, frequency ratio $3/2$), and rises progressively, stabilising itself around 718 cents. Surprisingly, this high P_a , which would sound out of tune if sung by a vocalist, is perfectly acceptable when played on the shahnai. The reason could be that the background shahnai drone on S_a produces an overtone P_a , the partial frequency of which is 'too high'. In the beginning we appreciate the 'low' P_a because it follows a 'low' G_a Komal (approx. 300 cents), creating an interval which is already a large major third (400 cents). But as we go on listening to P_a , we give more importance to the quality of its blending with the drone. Soon after P_a is reached, one or two of the drone players start playing P_a (at 718 cents), which then becomes the dominant note and works as a reference for Dha Komal. [7] This example shows that the particular spectrum of the shahnai provides a different reference for tonal evaluation (the scale of the instrument, which is inharmonic), showing interplay with the tonality imposed by melodic intervals. [8]

EFFECT OF PHASE AND AMPLITUDE FLUCTUATIONS OF THE SECOND PARTIAL

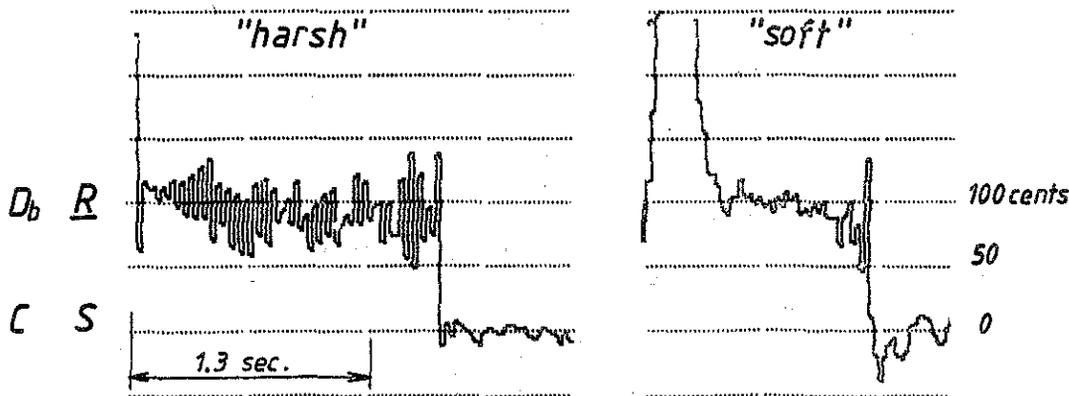
We have sometimes set up the FPE (either deliberately or accidentally) to measure the pitch of the second partial of the sound. In the case of vocal music, the melodic line of the second partial is chaotic even if the line of the fundamental is straight. This means that vocalists have little control on the phase of the second partial, resulting in a noticeable inharmonicity. How does this affect the frequency of the fundamental? The bandpass filters of the FPE are not perfect. A significant amount (6%) of the second partial will remain with the fundamental. To illustrate the effect of this distortion, I have drawn the scope pattern of a simulated signal (below, left). This signal, which looks like a pure sine wave, contains a fraction of the second partial (10% of the amplitude of the fundamental). Both the amplitude and phase of the second partial vary randomly 4 times per period within +/- 20% of the average. Below (right) is the melodic line that the MMA would draw over 16 periods, showing random deviations within a range of 6 cents.



Effect of the inharmonicity of the second partial on pitch measurements

This inharmonicity is common in recorded music. Random pitch deviations are also caused by the relative low energy level of the measured sound, its transmission to the microphone, and defects of the recording system (drop-outs, scratches, noise, etc).

Musicians playing wind or bowed instruments, and vocalists, seem to use a certain degree of inharmonicity to produce particular sound colorations. Below is an example of the same tone (Re Komal, in raga Todi) played by Ustad Bismillah Khan in different colorations. Also note the descending pattern of this 'steady' tone.

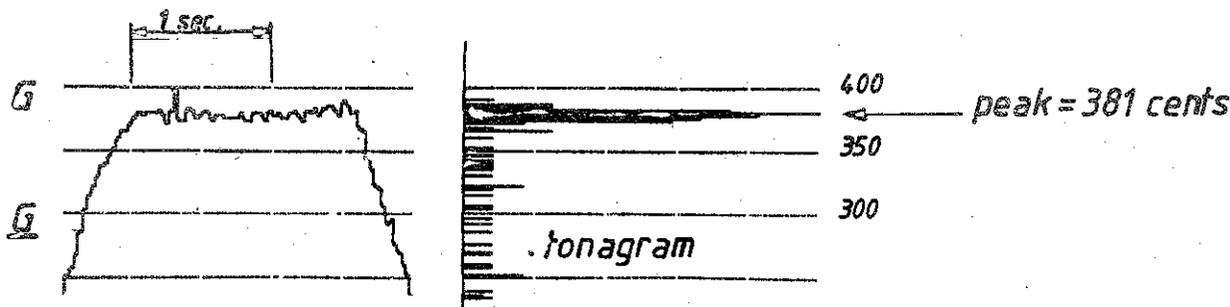


Soft and harsh tones produced by the shahnai

In recordings of bowed instruments, the amplitude of the fundamental is very low compared to the second (and other) partial(s). This is why they generally resist pitch extraction by the FPE. The chaotic aspect of Bundu Khan's rendering of andolit Ga (Levy examples 13-14) suggests that these graphs might be based on measurements of the unstable second partial.

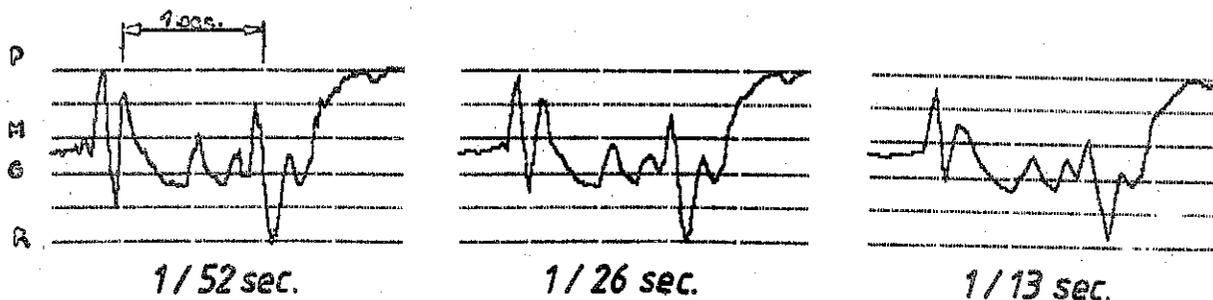
ABERRATIONS CAUSED BY INADEQUATE SAMPLING TIME

To extract a pitch where there are random fluctuations, one can work with averages (which is what the strobotuner does, in effect). For this, on the MMA we read the average value on a mini-tonagram, i.e. a display of the tonal distribution of a selected section of the melograph. [9]



Measuring a standing note with a mini-tonagram (Asad Ali Khan, raga Jaijaiivanti)

It is also possible to reduce the irregularity in melographs by increasing the sampling time, but, as shown below, using a sampling time which is too large will change pitch positions and distort the overall shape of melodic lines.



An increased sampling time distorts the shapes of melographs (Nupur Roy Chowdhury, raga Anand Kedar)

WHAT FOLLOWS

The FPE is the first link of a complete pitch estimation system which we plan to develop in the near future. In the new system, the output of the filters will be digitalised and an optimal pitch estimation will be performed by a fast arithmetic processor. "The problem is to handle a quasi-periodic signal with slowly varying waveshape including the period itself" [10]. Dynamic algorithms [11] may be the best way to do this analysis, considering the time-varying properties of music and speech signals. This technique, however, like autocorrelation and spectrum analysis, has been developed specifically for the analysis of speech, and it remains to be seen what modifications are required for music, in which the range of frequencies and spectrum envelopes is much broader. Obviously, musical analysis requires more accuracy than is needed for speech, where pitch evaluation within 1% (or 12 cents) is considered good.

The new technology (FPE and MMA) has made it possible to collect and process a large quantity of melodic data drawn from Indian music archives. However, individual melodic patterns are difficult to interpret, unless they are correlated with similar patterns in the same performance, and renderings by various artists. What effects could be observed by trained musicians if each 'ideal' pattern could be isolated, re-synthesized, distorted slightly, and next fed back to the musician for evaluation? How are scale intervals and melodic shapes related to musical context? [12] Is there a direct relation between specific intervals, melodic shapes and patterns, and aesthetic experience as expressed in the *rasa* theory? These are practical questions, the answers of which can have tremendous bearing on musical practise, theory, and pedagogy. If science has something to say to artists about their art, it should not provide merely descriptions, but also insights.

- 1 One hundred cents equal a semitone.
- 2 This is why tuning a piano with a strobotuner or frequency counter gives an abominable result. Experiments reported by Groupe d'Acoustique Musicale, Paris, revealed that a good 'average' piano tuning can be obtained with perfect fifths, and octaves stretched by approximately 3 cents. S. Makeig gives a similar value (4 cents) for the octave stretch.
- 3 Emile Leipp, La Machine à écouter, Paris 1977: Masson.
- 4 Scott Makeig, & Gerald Balzano, Octave tuning - two modes of perception, Symposium on the Psychology and Acoustic of Music, Lawrence, V. Kansas, 1982.
- 5 Mark Levy, Intonation in North Indian Music, New Delhi 1982: Biblia Impex.
- 6 Because we have hundreds of hours of recordings to process and analyse !
- 7 Perhaps the drone players who are still playing Sa also adjust their pitch to the new reference. When analysing this recording, Levy adjusted his measurements against the "last measurable occurrence of Sa." Since his measurements of Pa and Dha Komal are 10 cents lower than the absolute measurements of the MMA, I conclude that he measured a higher drone frequency in this part of the recording. He might also have been influenced by the high dominant Pa, which he had not realised was inharmonic to Sa, as he expected a "gradual rise in pitch." In fact the pitch does not rise significantly during the first six minutes of the performance: after the antara, the middle Sa is almost the same as in the beginning.
- 8 It also confirms that the position of the tonic (Sa) is debatable (see On Measuring Notes, supra). Hence, scales must be compared in terms of adjacent intervals, or fifths and thirds, and not only as sets of measurements against the Sa reference.
- 9 Tonagrams shown in ISTAR Newsletter No 2 (page 10) contain all the pitch data of the performance. The shapes of the peaks is, therefore, a function of note connections. Selective tonagrams eliminate this factor, and are more practical for scale studies.
- 10 Hermann Ney, A Time Warping Approach to Fundamental Pitch Estimation, IEE Transactions on Systems, Man & Cybernetics, May-June 82, No 3.
- 11 Hermann Ney, Dynamic Programming Algorithm for Optimal Estimation of Speech Contours, IEE Transactions on Systems, Man & Cybernetics, March-April 83, No 3.
- 12 We look forward to the empirical work which Dr J.J. Bharucha (Department of Psychology, Dartmouth College) is going to do on tonal perception, with students of Hindustani music.

Bernard Bel graduated at 'Ecole Nationale Supérieure d'Ingénieurs Arts et Métiers', Paris, in 1971. He taught mechanical engineering and theoretical mechanics for seven years, during which he specialised in electronic design. His interest in music led him to construct equipment for music research and develop new methodologies involving computer technology. In 1979, he was granted support from the International Fund for the Promotion of Culture (UNESCO), in collaboration with Jim Arnold (USA), to undertake a scientific project on Indian music. Together they founded ISTAR in 1982. Since then he was awarded the Romain Rolland scholarship (French Ministry of Education) in 1982, and a grant from the French Ministry of Culture, in 1983.

ERRATUM



The article entitled 'Linguistic Study of Rhythm: Computer Models of Tabla Language' published in ISTAR Newsletter No 2, has a few of the examples of 'computer generated variations' incorrect. All pieces, including those generated from the starting symbols V1 and V3, should end with the sequence 'DHATETEDHA TETEDHADHA TETEDHAGE DHINAGINA'.

PLAYING WITH INTONATION

by W.J. Arnold
 ISTAR Project #2

The intonation of ragas is one of the key areas of research in contemporary Indian musicology. The systematic presentation of a fully developed conceptual model for raga intonation is yet to come. What we have instead, are several approaches that have been taken to clarify particular questions involved. Models derived from scale theory suggest that raga intonation is a function of the general harmonic coherence of musical scales. There are various aesthetic models which have been proposed focusing on systematic relationships tying 'rasas' to musical scales. Finally there is a contextual model which states that the intonation of raga notes will vary according to the melodic context.

Let us focus attention on the relationship between intonation and melodic context. The commonly held idea proposed by Bhatkhande is that note positions will tend to rise or fall, as the ascending or descending context dictates. This idea supposes that there is a simple relationship between note position and context. The weakness of this idea lies in its simplicity, implying an invariable relation between melodic movement and intonation. I believe we can improve on this model by relating intonation to a 'higher' level, one which we might call a 'literary' or 'story-telling' context. According to this idea, the intonation of some notes can be expected to vary according to the character of the roles they play during the course of melodic development.

If we look at how a musician plays with intonation, then we must look at those instruments and voices that give clear melodic lines. Let us examine, for instance, how Ustad Asad Ali Khan treats the note Re, in Darbari Kanada, on the Rudra vina.

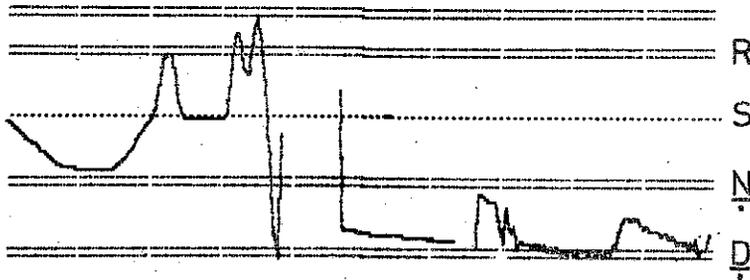
We can save space by making a few general remarks about the direction of the melodic 'story' and then single Re out, looking only at the relevant melograms. Darbari Kanada is considered a mandra pradhan raga, meaning that most of the activity is in the lower register. The alap which Asad Ali Khan recorded for the ISTAR archives, was done at our request on the first (steel) string alone, therefore it does not descend beyond the low Ma. So in the beginning of the piece, the melody lies between low Ma and middle Re. Our particular interest is in the treatment he gives to Re before its leads up to Ga Komal. Below is the melody in a simple block notation that ignores time value and melodic subtleties:

- | | |
|--------------------------------------|--|
| 1. <u>MP</u> <u>DNS</u> | 5. <u>SRRR</u> <u>NSR</u> <u>DD</u> <u>NMP</u> |
| 2. <u>SNSR</u> <u>DD</u> <u>NMP</u> | 6. <u>MPDNS</u> <u>DNSS</u> |
| 3. <u>PDNS</u> <u>SNR</u> <u>RS</u> | 7. <u>SNR</u> <u>SR</u> <u>SRRRS</u> |
| 4. <u>SR</u> <u>NSRDD</u> <u>NSS</u> | 8. <u>RR</u> <u>G....</u> |

The piece begins with an ascent to Sa in the first phrase. Then in the second, there is a turn at Sa, using Re, and the melody falls back to the mandra Pa. The third phrase brings us back again to Sa and up to Re where the aesthetic tension (and uncertainty) of the Re-Ga komal transition is played with, before the melody resolves to Sa. Re is the transition in a desire which is built for Ga Komal.

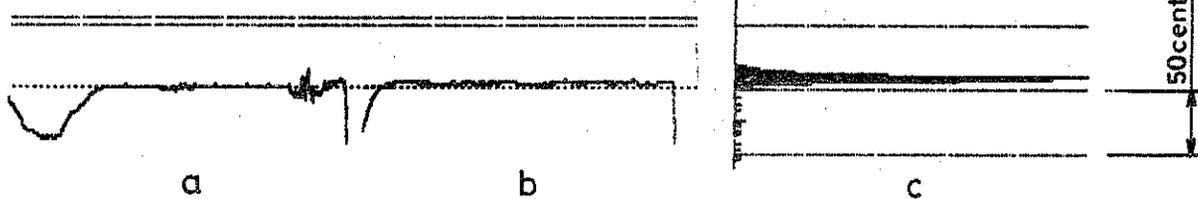
The fifth phrase shows how an instability can be introduced to weaken a melodic momentum. Phrase 6 begins a final run which succeeds in reaching the Ga Komal for the first time in phrase 8. The Re of phrase 7 interests us because it shows both the process of 'hardening' and 'softening' a note as its meaning is contextually developed.

Let us now follow in detail the evolution of Re in the opening sections of Asad Ali's alap. The piece opens with an ascent to Sa from the low register. When Re first appears (Ex. 1) it is weak and comes only as a grace. After touching Re, the melody falls back to Dha Komal using a characteristic treatment pattern shown below.



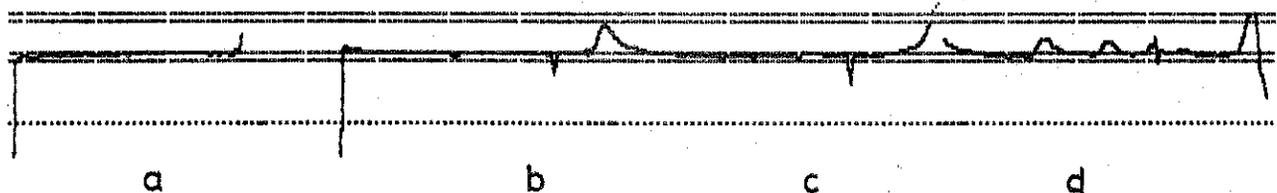
Example 1

Phrase 3 begins with a strong ascent to Sa. In Ex. 2a, Sa is taken with a quick mind from Ni and held for the full duration of the instrument's sustain (about 4.5 sec.). Compare the position of Sa here with the next one (Ex. 2b) which shows it becoming higher building the desire for Re. The mini tonagram to the right (Ex. 2c) shows that the second Sa is ten cents higher than the first.



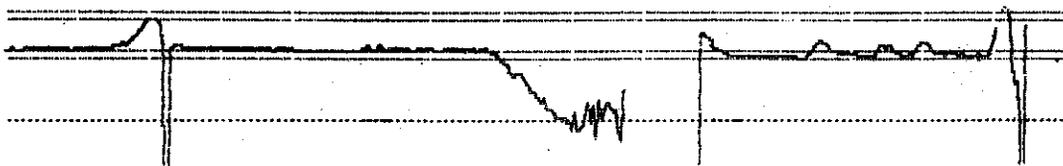
Example 2

Indeed, the next note is Re (Ex. 3a). It is first taken low, almost at the position of the harmonic Re (10/9), but it quickly increases in pitch ending with a little tail pointing to Ga Komal. Then there is a very slight fall from a higher position (Ex. 3b), holding steady to the limit of the strong Pythagorean (9/8) position. The note ends with a definite but veiled hint at Ga Komal.



Example 3

Are we going to touch Ga Komal now? The Re of Ex. 3c decides the issue negatively. It starts microtonally high, but continues to fall slowly until it is ten cents lower, intimating that there is not yet enough momentum to ascend. Proof that the momentum is failing is found in the next instance of the note Re in Ex. 3d, which reveals an instability, a shake on Re that ultimately causes the melody to fall back to Sa. Compare a similar case which occurs in Ex. 4 where the lack of momentum to carry the melody forward is shown by a Re which proves to be too unstable; so the melody again descends.



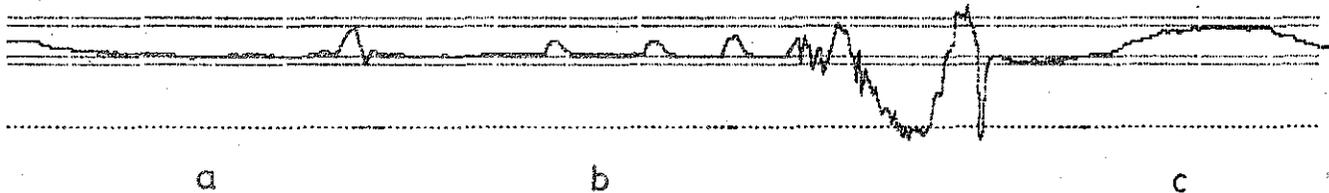
Example 4

In Ex. 5a there is a quick slide on the frets from Ni Komal to Re. Again the note is attacked low and moves up in pitch, ending with a slight shake in the direction of Ga Komal. When it is repeated, that shake becomes more pronounced (Ex. 5b), but Re of Ex. 5c still reveals the same instability, getting intoned low with a shake.



Example 5

As the next Re shows (Ex. 6a), the overall melodic momentum necessary to reach Ga Komal has finally been reached. It starts very high (Ex. 6a), descends to a position which is still quite high and ends with a strong hint of Ga Komal in the tail. Then comes a series of shakes (the highest we have seen so far, Ex. 6b) ending with a touch of Ga Komal. At this point the melody relaxes all of its tension, falling back to Sa, to begin the ascent to Ga Komal (Ex. 6c).



Example 6

An aesthetic principle which Asad Ali Khan (as well as members of the Dagar family) often cite, is that, before a note is taken, it should be made 'wanted' by the treatment given to the other notes. In creating this want, accuracy of intonation requires a precise control over pitch as notes are drawn in a moment to moment changing context. Studying the intonation of Darbari's Re, we see that several tonal positions have been used. From the story-telling point of view there is no question of which one frequency ratio is the 'right' one. Instead, we see examples of how the 'micro-evolution' of a note derives from, and influences in return, the overall literary context of what is being said in the raga development. This does not mean that a musician does not have a certain tuning scheme in mind when he plays with intonation. It is, however, relevant to point out that good reasons for employing different intonations may be related to the development of a musical message. One should be cautious in assuming that deviations in intonation may be the simple result of "Khansahib's playing out of tune" (Jairazbhoy, supra).

CONCERT REVIEWS

LOK UTSAV - A Festival of Traditional Arts presented by Sangeet Natak Akademi on the Rabindra Bhavan Lawns from 16th to 21st October, 1984.

By far the most enjoyable event in the Delhi concert scene during the last months was the 'Lok Utsav', a festival of regional performing arts organized by the Sangeet Natak Akademi. Not to speak of the extremely beautiful and simple setting of the stage amongst the trees on the Rabindra Bhavan lawns, the whole organisation and presentation was nearly perfect. Timings for individual groups - at least five of them on each of the six nights - was always kept limited, in order not to prolong the overall duration, and it made sure that the audience yearned to see more of each one. It was quite a revelation to see how many folk arts in India have been able to escape the grip of tourist schemes and are being preserved in a more or less unadulterated form. It is hard to decide which of the more than thirty presentations deserves special mention, as all of them were of high quality and full of surprises, keeping the audience in turn spellbound, or joining in on the chorus lines. My favourites were definitively Panchavadyam from Kerala which



Shri Karim Khan Langa of Jaisalmer District, playing the murla

could be easily counted among the best percussion ensembles of the world, and the enchanting dancers from Manipur. The variety of presentations was also superb, ranging from shadow-plays of Andhra Pradesh, puppet shows of Rajasthan, to ritualistic mask dances of Kerala. It seems unfair to recount all those delightful items to people who have not been able to attend the Utsav themselves. It would be good for a broader public to have access to a program like this which, with a little publicity, could be turned into an international event. A journey to India to watch this festival alone would be worthwhile, as perhaps nowhere else can folk arts be seen in such variety. The Sangeet Natak Akademi should give us a Lok Utsav of this calibre each year.

Peter Mueller

WOMEN MUSIC MAKERS OF INDIA presented by Shriram Bharatiya Kala Kendra from 6th to 9th September, 1984 at Kamani Auditorium, New Delhi.

Although every endeavour to call attention to the tradition of female singers and dancers of India must be welcomed, it remains a sad fact that all efforts in this direction seem to come too late. What is left of the much debated tradition of the songstresses - who once were among the outstanding performers of Indian music - are remnants, the last survivors. It was an excellent idea to start the programs with audio-visual presentations of the women singers of the past who were able to express themselves so clearly, within the limited time of a 3-minute recording. I hope that the beautiful collection of historical photographs which was on display during the festival will be published. It would also be very worthwhile to make a broader presentation of the historical recordings of these singers through publication on discs or tapes. In many cases, in spite of their poor technical quality, they are real jewels. Much remains to be done to correct the historical perspective of music in India. It seems likely that these ladies first gained popularity and brought wide appeal for Indian music. But if the festival should serve as more than a nostalgic revival of the past, more should be done to help contemporary performers to raise their artistic standard, as Pt Dilip Chandra VEDI remarked during the seminar which accompanied the concerts. If anything happens in this direction, the festival will have served its purpose.

'Women Music Makers of India' was a welcome break from the routine classical music performances which we hear in Delhi these days. I congratulate Shriram Bharatiya Kala Kendra, Rita Ganguly and Dr Carolyn Elliott of the Ford Foundation for accomplishing such a necessary task. Of the performers, I thought, the most outstanding was Asghari Bai with her beautiful rendering of dhrupads. She has regained much of her strength and control during the last two years. Rani Devi and Zeenat Bang of Muzaffarpur gave a charming demonstration of old kathak style. The decoration was definitely the most beautiful one has seen at Kamani in years. Sadly enough, in spite of the organizers' promise to try to avoid microphones, the second performer was stopped in the middle of a piece (!) and dragged in front of a microphone, and from that moment onwards the usual over-amplified sound was blasted into the hall. It seems obvious that a singer should sing from the front and not the back of the stage, if one wants to avoid microphones. Another disturbing factor was the pointing of glaring lights on the audience in order to film them during the concert, a habit which has come into fashion lately together with video recorders. This certainly is not conducive in "recreating the atmosphere of the old mehfil," and for the peaceful enjoyment of music altogether. It is sometimes frightening to observe that while much is said about the preservation of Indian art, actual disrespect is shown to artists and audiences as well.

Peter Mueller

INITIATION AU KATHAK

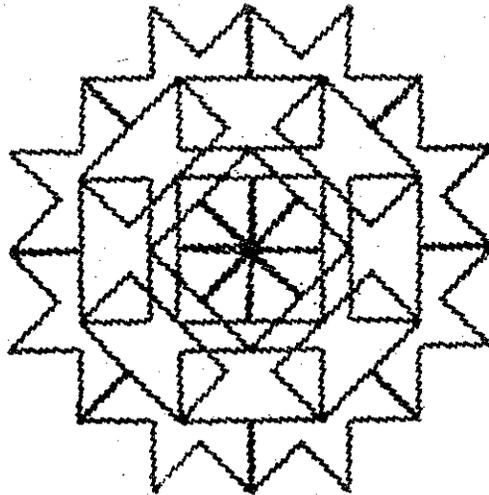
Danse traditionnelle du nord de l'Inde

Andréine Bel disciple de Pt Birju Maharaj
Egmont Grisoni percussionniste

du 19 au 20, et du 20 au 27 juillet 1985, près d'Anduze (Cévennes orientales, France)

Renseignements et inscriptions: Andréine Bel, 16, Avenue de Mondon, 43000 Le Puy-en-Velay





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Cover illustration : Girl tuning a rabab-like bowed instrument, detail of a Bundi painting, 18th century
(by courtesy of the Victoria and Albert Museum, London)

RAGA TILAK KAMOD

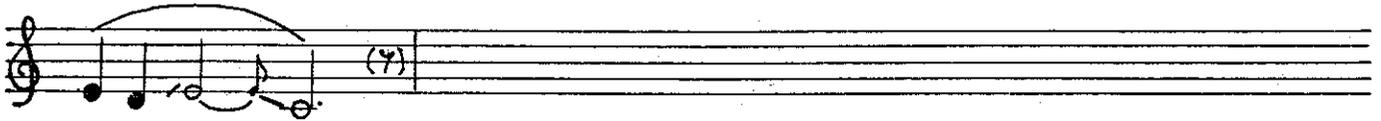
Melodic Outline

Ad. lib., ♩ = c. 96

STHAYI



S = , P N S ⁹R G S --, ⁹R G S N --, P M P N S G R P M --,



G R G S -- :

ANTARA



⁹R P M -- d P -- D M P -- ⁹S --, ⁹R G S --, G R P M --,



G R G S --, P N S -- R -- N D P --, D M P S P --,



D M --, G R P M --, G R G S --, ⁹R G S N --, P N S ⁹R G S =

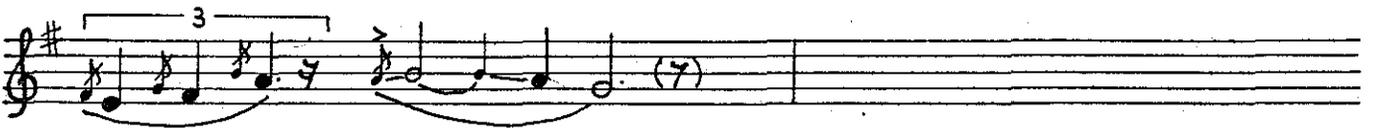
RAGA KALYAN (YAMAN)

Melodic Outline
Ad. lib., ♩ = c. 96

STHAYI



S = ; \D ^N ^R, ^G--- R 'S ---; ^N ^R ^M G M / P--M \ G--;



^M G ^M ^D---, ^N- \ D P-- :

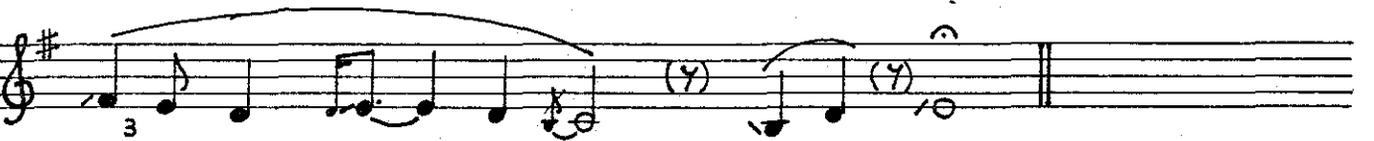
ANTARA



^M ^D ^N ^R---, ^G--- R 'S ---, ^R--^N--S-- ^N D P--



M \ G - ; ^M G ^M ^D---, ^N--- \ D P - ; \ D P - M \ G - ;



M-G R ^G--- R ^S - ; \ N R ; ^G = .

[5 sec.]

[50 sec.]

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