A CENTRE for INDIAN MUSIC In DURBAN
Towards the appropriate expression
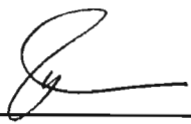## of cultural identity in the built form.

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DECLARATION

Submitted in fulfilment / partial fulfilment of the requirements for the degree
of Master of Architecture, in the Graduate Programme in
Architecture,University of KwaZulu-Natal, Durban, South Africa.

I declare that this dissertation is my own unaided work. All citations,
references and borrowed ideas have been duly acknowledged. It is being
submitted for the degree of Master of Architecture in the Faculty of
Humanities, Development and Social Science,

University of KwaZulu-Natal, Durban, South Africa. None of the presented
work has been submitted previously for any degree or examination in any
other University.

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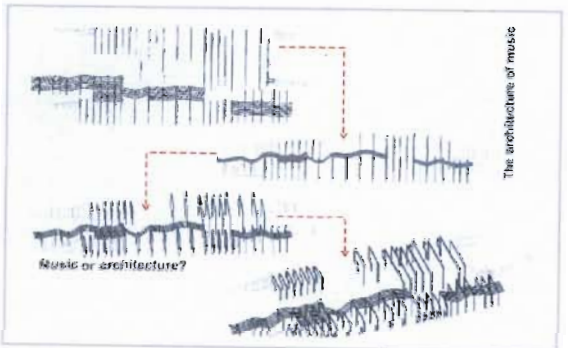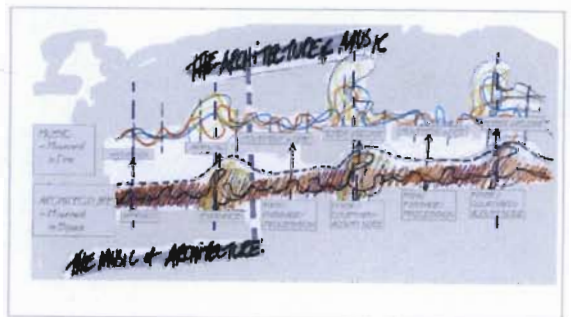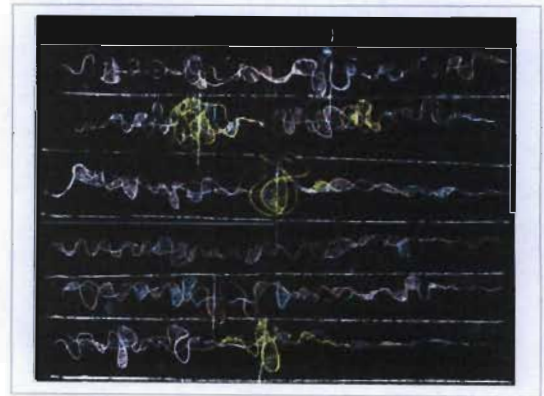10 OCTOBER 2008

Date

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Abstract:

The aim of the research is to develop a brief for the design of a proposed Centre for Indian Music in Durban. The relevance of such a centre would be established by analysing the history of music in India as compared to the Indian music evolution in South Africa. The effects of imperialism and colonisation had significant impact on the practice and learning of music in both countries. Such political institutions also had great influence on the spaces where music had been performed. Indian music is unique and differs quite significantly from Western music. A comparison of Indian music (movement through time) and the architecture of Indian music to Western music would provide valuable clues to the quality of space and movement through space in Indian architecture. The theory review analyses the integration of pragmatic functional requirements of the building program with the metaphysical and symbolic qualities of space that are characteristic of Indian traditional architecture.

Such architecture would be analysed with reference to its relevance in the context of Durban. Any cultural place ought to transcend mere functional requirements and should be rich in symbolism and metaphor. Both natural and spatial archetypes add to the symbolic quality of space and place. Critical Regionalism would hence be reviewed. Urban design theory would be essential as the Centre for Indian Music in Durban would be located adjacent to a rich cultural precinct on one end and totally vacant and abandoned sites on the other. The need for Urban design and intervention would propose appropriate development of the vacant sites whilst Linkages to other cultural facilities would be established within the city's rich cultural landscape. Acoustic principles would be analysed in order to design efficient rooms and spaces to facilitate music performance and production. Precedent studies of similar buildings by renowned architects would be critically analysed against their symbolic and contextual relevance. Case studies of South African music facilities would provide useful design and technical data. The siting of the building would be borne out of a thorough analysis of various sites against a predetermined set of site selection criteria. The resultant formulation of a brief would be the outcome of the research undertaken.

ACKNOWLEDGEMENTS

Glossary of Terms

Bhajans:	Spiritual / Religious hymns
Bhakti:	Devotion
Bollywood:	The name given to the North Indian Film Industry
Chatri :	Pergola / Awning
Gamakas:	Gracetones / ornamentation
Gandharva:	Celestial musician
Gharana:	Musical Lineage / pedigree
Ghats:	Stepped platforms at the edge of a water body usually a river
Guru:	Teacher / Master / Spiritual master
Kunds:	Scared open spaces defined by steps or terraces.
Laya:	Speed of a Rhythmic cycle.
Ragas (Singular = Raag) :	Melody set to specific notation to invoke certain moods. Each raag is associated with a particular emotional response.
Swaras:	Tone or interval, Vowel
Shrutis:	Basic ground tone of a drone.
Shishya:	Disciple / Student
Sangeet:	Music
Talas (Singular = Taal):	Rhythmic cycle of a specific number of beats performed in many variations and *Laya.*
Vaastu:	Ancient Indian architecture / art of building.
Ved Mantras:	Verses from the sacred Indian texts known as the Vedas.

Introduction

Context of the Research

S.A. Indian culture is vibrant in Durban and forms a major component of the identity of the city.

People of Indian origin in Durban have made significant impact in the city. In fact the cultural landscape of Durban is defined by a large Indian population – the largest outside India.

The Durban Indian experience is however largely confined to the trade and religious precincts. Victoria Street market, the Grey Street Mosque and the Hare Krishna Temple of understanding are some of the popular tourist hot spots. The stimulating cultural experience offered by the Indian performing arts does not feature as prominently. Indeed there is no adequate place for such an interactive experience.

Indian culture in Durban manifests, largely, as religious and matrimonial ceremonies.

More recently the *Bollywood* movie culture has made great impact on the Durban Indian cultural fraternity. Music had always formed an inseparable component of festivals albeit of a standard that lacked quality. Imitation of the original Indian film sound tracks had become the order of the day. "Playing by ear" without any formal theoretical background resulted in one positive though – a definite South African flavour.

Post–apartheid democratic South Africa saw strong ties with India being re-established. Renowned *gurus* from India and Mauritius were contracted to teach, resident in Durban. At the same time some South African musicians left to study music formally in India. They would return and set up their own schools of music in Durban.

The last decade and a half has witnessed a remarkable increase in formal Indian classical music training in Durban.

Although the problem of lack of music training has been overcome, there still is

no central physical place for accommodating congress, performance, and resources for Indian music in Durban. Indeed there is no built form to accommodate and concretise this powerful Durban identity. As *Kurula Varkey* affirms: "The value systems of a culture manifest themselves in its built form....(Varkey, 2000:98)

Music training and performance in Durban plays out in the most inappropriate of spaces. Such spaces include school multi-purpose rooms, classrooms, homes of tutors and musicians and even garages.

Music, referred to as a "contained art form" therefore has to be appropriately accommodated in order to have its desired effect and appreciation. Architecture as "frozen music" would become the medium in which music finds its expression, cultural identity and its physical manifestation in the built form.

I have a personal association with the topic as a classically trained performing and recording musician myself. I also serve an administrative role in the South African Indian music industry as Executive Secretary to Musicians United Serving Indian Culture in South Africa [MUSIC(SA)].

From my personal experience, as architectural student and musician, the practice of Indian Music in Durban is still confined within the restrictive bounds of individual learning centres, not unlike the ancient *Gharana* system in India.

Outline of the Study

Chapter One outlines the aims and objectives of the study, which gives rise to the problem statement and the hypothesis. The research question and sub-questions are identified followed by the research methodology to be implemented in resolving such questions.

Delimitations to the study are thereafter set out.

Chapter Two discusses the historical development of Indian music (literature, training and performance) as well as the spaces in which music played out. Initially Indian music focussed on the divine and was confined to spaces for spiritual activity.

The influence of political institutions such as Imperialism and Colonialism, during the various historical periods, had significant impact on Indian music and the spaces that accommodated music in India.

The independence of India realised a new freedom in musical expression, integration and the spaces that facilitated Indian music.

The political History of South Africa had significant impact on South African Indian music. Separation from the motherland, India, meant that few had musical talent and none had formal training in Indian music.

South African Indian music is referred to as the music of the working class as workers took respite from the torments and abuse of their colonialist bosses. Music became the medium to restore self esteem and dignity in society.

The spaces that accommodated Indian music in South Africa highlight the lack of adequate facilities especially with regard to rehearsal spaces.

The chapter concludes with a discussion on the pedagogy of Indian music training. A comparison of music learning in India with that of South Africa brings to light the reasons for an inferior quality of Indian music in South Africa.

Chapter Three starts off by a study of the Theory of Indian music. The particularities of Indian music become more comprehendible when compared to Western music. The architecture of Western music, likewise,

differs significantly from that of Indian music. A theoretical study of the relationship of music into architecture gives meaning to the phrase "architecture is frozen music".

Traditional Indian architecture is characterised by its sculptural expression. Sculpture in traditional Indian architecture consists largely of depictions of musicians and dancers in various poses. Architecture hence becomes a repository for music and dance.

The visual and tactile qualities of this sculptural architecture are transcended by its metaphysical, symbolic and metaphoric values. Cosmic principles relating to creation; evolution and consciousness are transformed into organisational; formal; and graphic symbols in architecture.

The impact of globalisation and technical advancement on culture, hence traditional architecture, raises questions in respect of the contemporary relevance of traditional and symbolic architecture. Critical regionalism would reveal the possibility of traditional expression in contemporary time and context. Contemporary Indian architects have similarly reinterpreted and reinvented traditional Indian archetypes to suit the requirements of time and context.

The reinterpretation of cultural symbolism in architecture would be invaluable in the creation of a Centre for Indian Music in Durban as the building ought to reflect symbolic and metaphoric cultural values whilst responding to the context and dynamics of the city of Durban.

The latter part of Chapter Three analyses theories and principles of Urban Design.

A centre for music serves a broader purpose as a symbol of cultural identity in the context of the City. Such a place therefore ought to develop and enhance the cultural landscape; afford access and opportunities to the people of the city whilst forging links and bridging the gaps in a fragmented and segregated city.

Precedent studies in the form of buildings that accommodate the performing arts.

Precedent analysis looks at buildings designed by the above architects in order to identify the theoretical principles, discussed earlier, in the built form. The precedent study would also be referred to in the design and technical report.

Chapter Four comprises case studies of buildings in South Africa that functionally accommodate the performing arts. The case studies would directly inform the brief, design and technology of the proposed centre for music. Spatial and technical data would be extracted from drawings and articles of the buildings as well as interviews with the relevant professional consultants and the users where necessary.

Chapter Five sets out site selection criteria in order to identify the appropriate site for the proposed centre. The selected site would then be analysed with regard to its history, climatic influences, noise, traffic and its urban context. The site analysis extends to a broader analysis of the surrounding precincts which informs the proposed urban design framework / proposal for the greater Block A.K. and Grey Street precincts.
All of the conclusions and recommendations arising out of the research would be utilised in the development of a brief in Chapter Six. The brief would describe the design intention of the centre as well as an assumed client

organisation. Local Authority requirements would be established.
The functional spaces would be borne out of an analysis of the needs of the users of the building whilst architectural expression would be symbolic. A detailed analysis of the various spaces would translate into spatial data as set out in a schedule of accommodation.

Chapter Seven outlines the design considerations and conceptual approach in the design of the centre for Indian music. The application of the theoretical concepts in Chapter Three are implemented in the development of the design of the building.
Technical and environmental resolution concludes Chapter Seven.

Chapter Eight reviews the research and the design development to draw conclusions with regard to the relevance and the value of the study. The need for future research would be highlighted.

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Chapter One: Research Background.

1.1. Aims and Objectives of the Study:

The primary aim and objective of the study is to extract design guidelines from the critical analysis of theory, precedent and case studies in order to develop a brief. A centre for Indian Music is a cultural building. It is also an objective of this dissertation to examine the cultural relevance of the architecture of such a centre. The role of architecture should serve a purpose greater than the functional accommodation of facilities. Architecture should reflect the cultural and traditional values associated with Indian people in South Africa. Much of these values have been inherited from India and have been adapted to suit the South African context.

Such aims and objectives raises certain key questions which would form the basis of the material researched.

1.2. Problem Statement:

To establish the design criteria for spaces that accommodate the performance and production of Indian music which transcends the pragmatic requirements of the building programme in order to symbolically express the culture of the place.

1.3. Hypothesis:

Architecture that is borne out of both the physical and symbolic (metaphysical) aspirations of the people it serves manifests as culture in the built form.

1.4. The Research Question:

How would Architecture functionally accommodate Indian music whilst serving a metaphysical purpose as a symbol of Indian cultural identity in Durban?

1.4.1. Sub-Questions:

1. How does music theory relate to architectural theory with regard to the development of the design concept?
2. What are the essential elements of Indian architecture and how are they symbolically relevant to the proposed centre?
3. How would traditional archetypes of Indian Architecture be reinterpreted to become contextually relevant in present times?
4. How would the metaphoric, cultural and symbolic qualities of the centre be architecturally expressed?
5. What are the spatial requirements for the accommodation of the various functions of the centre?
6. What are the technical requirements with regard to materials and finishes for acoustic spaces?
7. What are the technical requirements for recording and production of music?

1.5. Delimitations of Study:

The study conducted is within the context of the discipline of architecture. All research is geared towards the development of a brief for the Proposed Centre for Indian Music.

The essential elements and the metaphysical of Indian architecture would be applied as relevant to the context of Durban. Overt importation of Architectural Style would be avoided.

As most of the relevant precedent studies and architects are located abroad actual site visits would not be possible due to time and budgetary constraints.

Political and certain broader strategic issues are beyond the scope of this research.

Decisions on funding would be looked at broadly and it is not the intention of this study to delve into the specifics of issues around sources of funding.

1.6.   Research Methodology:
This section sets out the research methodology that would be implemented in finding solutions to the research questions as listed under 1.4.

PRIMARY RESEARCH:
Case Studies of existing places of music in South Africa would be recorded graphically as well as photographically. Recorded information will be subjected to qualitative analysis to identify the spatial requirements of their users (1.4.1-5). Technical data regarding materials; sizes; finishes and equipment would be obtained from the relevant measured drawings and photographs.

Semi- structured as well as open-ended interviews will be conducted with the relevant stakeholders in the South African music industry. The purpose of the interviews would be to identify possible sources of funding; determine the most suitable location of the proposed centre; functional requirements of the end users; to determine the adequacy / inadequacy of the existing music facilities in Durban and to obtain the latest technical information regarding recording and production of music. Interviews would also provide answers to broader questions such as the latest initiatives and developments in the South African Indian music industry.

Interviews would be recorded with the permission of the interviewee.

SECONDARY RESEARCH:
Literature would be reviewed in order to draw on relevant theories in response to the research questions.

Literature Review:
Analysis of theory via literature review would be aimed at finding answers to the question regarding the essential elements of Indian architecture   (1.4.1-2);   traditional

archetypes(1.4.1-3); the relationship of music with architecture (1.4.1-1)and the Metaphoric and cultural symbolism in the expression of Indian architecture (1.4.1-4)

Precedent Studies:
Precedent studies would be analysed in finding practical applications as solutions to the questions regarding the essential elements of Indian architecture (1.4.1-2.); the implementation of traditional archetypes (1.4.1-3) and the symbolic, the spatial and organisational requirements of functional spaces (1.4.1-5) and the metaphysical and metaphoric aspects of Indian architecture (1.4.1-4) . The relevant works of acclaimed architects would be analysed in order to find applied solutions towards the design of the building. Literature review at Libraries and on the Internet would be the preferred method of obtaining precedents. The study will be subjected to critical review and comparative analysis.

Document searches at the relevant Government cultural departments as well as at existing cultural centres would provide information with regard to the broader issues such as the White paper on Arts and Culture as well as Government and private funding of cultural activities in KwaZulu Natal.

Chapter Two: Literature Review.

The morning will surely come, the darkness will vanish, and the voice pour down in golden streams breaking through the sky.
When thy words will take wings in Songs from every one of my bird's nests, and thy melodies will break forth in flowers in all my forest groves (Rabindranath Tagore.)

2.1. A Brief History of Indian Music from ancient to present..

It is necessary to briefly review the history of Indian music performance and training both in India and South Africa. Religion, colonialism and politics have had significant impact on Indian music literature, training and performance. Political administration including Imperialism and colonialism had great impact on the spaces that accommodated music activities.

In South Africa Indian musicians regarded music as a means of restoring their dignity and self respect as they were degraded and humiliated by their colonialist bosses. South African Indian music is therefore referred to as the music of the working class.

The relevance of music development would be related to the developments in Indian architecture.

The Aryan Period – Vedic Period to Tenth century A.D.:
The Aryan Period in Indian history started from the Vedic Period about 1000 B.C. to the Tenth century A.D. During the Vedic period the writing of *Ved Mantras* started. These *Ved Mantras* were recited as sounds called *Swaras* (vowels) taken from the Sanskrit language. *Ved mantras* were sung ,as *Shrutis*, to a notation system of high-pitched; low-pitched and intermediate-pitched notes. People during this period sang religious hymns. At the beginning of the Classical Period (600 – 500 B.C.) *Gandharva* type of music evolved combining music with drama. The regular system of seven notes in music was established before 350 B.C.

During the Epic age of the Ramayana and Mahabharata (400B.C. – 200A.D.) these religious texts were sung with musical accompaniment which facilitated improvisation (Vir, 1980:14).

A significant moment in Indian music history and theory was the writing of the Bharat Natya Shastra in the fifth century A.D. The Bharatya Natya Shastra was considered the seminal writing on Indian music at that time. The Natya Shastra is a treatise, comprising thirty six chapters, on the Indian performing arts. The Natya Shastra was written by *Bharat Muni* sometime between 4th century B.C. and 2nd century A.D (Stevens). Stevens refers to the Natya shastra as the "artistic Bible" that informs the mainstream music and dance styles of India. This writing was in existence long before Ragas were developed.

Ragas were created in the Sixth century A.D. During the 4th century the great Indian poet, Kalidas, wrote various verses that were sung in musical rhythm. The Hindu rulers of the time gave place to musicians and dramatists in their courts. Music progressed at a rapid rate, along with the dramas of Kalidas (Vir, 1980:17).

During the *Bhakti* Period (7th century A.D.) devotional songs were sung to music by the preachers. Such renditions mainly happened at religious centres in the form of shrines at homes and temples in the villages. Indian music continued to progress and evolve. It was during the 10th century A.D., the period of the Hindu Princes that Indian music flourished. Many popular books on Indian music were written during this period. Music found a place in the courts of the Royal families (Vir, 1980:18).

The Muslim Period – Eleventh Century A.D. to Eighteenth Century A.D.:

The Muslim rulers held musicians in high esteem. Several new Ragas originated during this period. During the reign of Sultan Feroze Shah in 1237 the composer Sharangdeo wrote the *Sangeeth Ratnakar*. *Sangeeth Ratnakar* is considered the seminal writing on Indian music and dance theory (Vir, 1980:18).

During the reign of Allaudin Khilji in 14 century A.D. Indian music reached its zenith of splendour. Amir Khusro was a poet-musician and state minister of Allaudin Khijli. Amir Khusro is still regarded by many as the founder of the Indian classical music we know it today. He has been accredited with inventing the Indian music instruments such as the Sitar and Tabla. Amir Khusro invented many new Ragas (Vir, 1980:19).

Emperor Akbar (16th Century A.D.) had a keen interest in music. He kept many well reputed musicians who performed in the courts of his palace. The most famous, at that time, was Tansen. Tansen also invented many new Ragas. Akbar's son ,Jahangir, took over as leader in 1605 after Emperor Akbar's death.

Jahangeer took no interest at all in music (Vir, 1980:20). Music development therefore lost momentum and performances were rare.

During the 17th century Shah Jehan, son of Jahangir became the emperor of India. Shah Jehan was a lover of vocal and instrumental music. Shah Jehan was well versed in Urdu songs and was deeply influenced by Sufee melodies. The most important book on the system of Indian music written during this time was the Parijat by Pandit Ahobal.

In the latter half of the 17th century Indian music suffered a major setback. Emperor Aurangzeb was a despotic Mohammadan ruler who hated musical activities. He removed all the musicians from his court and ordered his police to stop all musical performances. He also ordered that all musical instruments be destroyed hence

the demise of the court musicians. Those that still had resources including instruments would perform in the village communal spaces and religious precincts.

The revival of music activities happened in the royal courts during the reign of Mohammad Shah Rangeela who was a great lover of music. The brothers, Adarang and Sadarang were two prominent musicians who wrote music and taught the music to their pupils (Vir, 1980:19).

The Mugal empire greatly contributed to the bifurcation of Indian classical music into the northern tradition of Hindustani music and the Southern tradition of Carnatic music. The two systems share much in common and the original source of both systems is the music of the Vedas (Iyer). The essential differences are that the North Indian tradition is more smooth and melodious due to Persian influence whilst South Indian music is more ornamental and melodies are much more demanding. Muslim influence was much greater on North Indian music than on South Indian music. Language also distinguished the two systems as Hindi language dominated the North Indian music whilst the Tamil language the South Indian music. Both traditions gradually shifted from a means of religious expression to performance for entertainment in the courts of the rulers.

The impact of the courts further led to development of separate pedigrees that developed within the confines of the relevant courts and palaces. This musical lineage that developed within the courts of the rulers became known as the Gharana system.

The Gharana System:

India's' *Gharana* system emanated as a result of an Imperial system of governance where musicians were confined to performance in the courts of their rulers. During and for centuries beyond the Muslim Period the court musicians passed

down their knowledge to their disciples within the palaces. As music became a matter of prestige there was intense rivalry between the courts and musicians themselves. Musical knowledge was jealously guarded and musicians passed down their knowledge within their families. *Gharana* literally translates to "of the house". Each Gharana was named after the place of its origin for example Delhi Gharana. A *gharana* therefore had its particular flavour as well as set rules for the reciting or playing of instruments. Knowledge within the *gharanas* developed along rigid confines as there was no exchange between the various *gharanas* (Vir, 1980:22).

The Gharana system has diminished significantly, but not altogether, ever since the demise of the courts of Imperial India some time during the early part of the eighteenth century. Gharanas are still referred to in present day music theory, though, as a means of indicating music pedigree and lineage.

The advent of music recording and rapid communication technology also contributed to the dying out of the Gharana system. Indian music moved out of the restrictive bounds of the court spaces and thereby became more accessible to the common man. Such freedom afforded musicians of the various *gharanas* the opportunity to collaborate with the resultant cross-fertilisation producing music of greater complexity and interest.

The English Period – Eighteenth Century to Independence of India:

After the Mughal Period the British ruled India. Indian music did not appeal to the British and the court musicians were no longer held in high esteem. This lack of appreciation of Indian music filtered down to the educated Indian people as well. At the time English musicians such as William Jones, Sir W. Austley, Captain Day and Captain Willard took keen interest in Indian music and began studying the characteristics of Indian music. Maharaja Pratap Singh (1779-1804) of Jaipur organised a conference in order to revive interest in Indian music. The subsequent development in Indian music theory and practice led to the formation of many new *ragas* and *talas* and many books on Indian music were written (Vir, 1980:25).

Towards the end of the Nineteenth century two grand personalities revolutionised Indian music – Pt. Vishnu Digamber Paluskar and Pt. Vishnu Narain Bhatkande. Paluskar laid the foundations for the Ghandharava Mahavidyalaya academy of music in Lahore in 1901. He postulated his own theory of Notation and was active in training teachers of Indian music. Paluskar's contribution to Indian music revival was most significant as today there are more than 300 branches of the Gandharava Mahavidya Laya with its own notation system all over India.
Bhatkande organised the All India Music Conference in 1916 at Baroda.
He wrote many of the most significant books on Indian music and was active in creating notation systems and new ragas. Bhatkande established many colleges of Indian music throughout India
(Vir, 1980:26).

Independent India up to present:
After independence Indian music gained in popularity and the educated society felt it necessary to educate their children in the art of Indian music. Indian music found its place in School and University curricular. Post-graduate qualifications in Indian Music may be obtained at many Schools of music in India. Regular conferences are also a feature of Indian music. A demand for performance venues grew in all parts of India (Vir, 1980:26).
In India, the contemporary schools of classical music have broken away from the *Gharana* system as a result of the demise of the great Mogul empire and the advent of recording and communication technology.

Music literacy now incorporates the rich diversities of the various *gharanas*. Indian classical music nowadays has a flavour that is contemporary, complex and exciting as traditional formality fuses with the contemporary flair of a liberated young blood. Places for dialogue and sharing of knowledge and skills have resulted in a standard of music theory, composition and performance of superior quality and broader appeal. The Indian film industry has popularised Indian music throughout the globe often with western influence, but nevertheless is composed from the basis of *Raag* and *Taal*.

2.1.1. The History of Indian Music in South Africa:

Unlike ethnomusicological and popular music which is composed and performed by the same group, South African Indians played by ear. Their music was therefore imported from the geographic, political, and social context of India (Veeran, 1999:ii). Veeran refers to South African Indian music as existing within the confines of a parasitic relationship with its host, the Indian Film industry which gained popularity in South Africa during the mid-thirties.

Veeran refers to South African Indian music as the music of the working class. Indeed the need for self respect and esteem ranked high on the endeavours of the working class. This was largely due the lack of respect and the abuse metered out to them by their bosses during an era characterised by racial segregation and White supremacy. Music therefore was a symbolic means of achieving the unattainable. As Shama Naidoo, a singer, is quoted as confirming in an Interview with Veeran:

From Monday to Friday, we were treated like dogs. Yes Sir, No Sir, Yes Madam, No Madam. On Sunday morning, when we playing at a wedding, we were the Dorehs (bosses). Young, young boys wanted to play like us. We looking smart, the audience will "look"(stare with admiration). We too, we used to 'give it' (perform well)....(Veeran, 1999:147)

The pre-1930's was characterised by religious and folk music that was brought down to South Africa by the Indian immigrants. Such music was performed at Hindu social occasions such as weddings and concerts. Weddings generally happened in marquees at homes and concerts happened at central venues such as community halls and the City Hall. Religious renditions happened at temples or homes. During the late 1930's American musicals became popular and were screened at "Indian" cinemas as well. Hence the Rock, Jazz and Pop music influence on Indian film music. Indian Cinema, apart from the Hindu social occasions was the only source of entertainment for the Indian people of Durban.

The lounge, in the home of a musician became the place for experimentation and rehearsal (Veeran, 1999:230). The home thereby transformed into performance space and therefore a place for communal meetings. Veeran refers to this disintegration of domestic space into communal space as "World in the Home". I recall from my own experience as a child a room being used as the "band room" with many famous musicians frequenting my extended family home for rehearsals.

The band room also served as a place for learning music. As the music was not formally taught an aspiring musician would have had to learn to play an instrument by watching a musician play. Youngsters who wanted to learn were often given the opportunity to perform minor roles, such as side percussion accompaniment, within the band.

2.1.2. The Pedagogy of Indian music in South Africa as compared to India:

Indian music was not formally taught in South Africa until the late 1980's.

India on the other hand had a strong tradition of Indian music knowledge dissemination from the latter years of the Muslim Period (18th century).

The Indian system of music was based on individual Tutorship and mentoring.

The guru / shishya (master / disciple) relationship was the method of Indian music education in early times. This method involved observation and imitation in the Oral tradition. The guru / shishya method is still a preferred method by many contemporary gurus. The period of independence gave rise to Indian music programmes being integrated into universities and colleges throughout India.

In South Africa popular Indian music was learnt by listening to a film song and working out the notation. This tradition of playing by ear without any formal knowledge of the Ragas generally led to music of inferior quality. As Mr Harry Somaroo (Quoted from Veeran, 1999:17) highlights:

Essential to the progress of a community's arts, in the absence of a kindly disposition by the Establishment towards its culture, is the affluence of that community and the advantages that attend such affluence. Of these patronage of the arts is invaluable. Unfortunately the local Indian community had not for the most part of its History in this country enjoyed such benefit. A community consisting largely of indentured labourers living in penury has had little time for the pursuit of higher ideals, expending its energies instead in coming to terms with the more practical issues of living. Despite these adverse circumstances, the very nature of the Indian has dictated the perpetuation of music as an inseparable aspect of his life in South Africa from the outset. However, there were no professional musicians amongst the early Indians and it is regrettable that those who initiated the local music tradition fell far below the standards of professionalism found in India.

Another important factor that transpires from Somaroo's text is that Indian people struggled to earn a living. Their focus was on trying to better the quality of their lives albeit at the expense of music education.

Musical families and The Oral Tradition:

In South Africa musical skills were learnt by observing a musician whilst he played. Children of musicians therefore were most exposed to music recital and it is therefore that the concept of "music family" exists in South Africa. These early South African Indian musicians had no formal knowledge of Indian music. They could not write their music in the form of notation or assign a music piece to any particular Raga. The musicians were therefore reluctant to teach their art to outsiders.

Recent developments in the South African Music Industry.

The earlier 1990's saw qualified tutors from overseas, mainly Mauritius, taking residence in South Africa and conducting classes. Such classes were administered by local cultural organisations such as the Hindi Shiksha Sang (SA). Some students would go on to learn under the masters In India.

The resultant effect was that the quality of Indian music started to improve. Students would have the academic and technical knowledge of music. An increase in original compositions was inevitable. The production quality of South African Indian music also improved as musicians better understand the process of recording music (Tansen Nepaul).

Nepaul further highlights the impact that the Indian Film industry has had on the broader South African community in terms of cultural awareness. Indeed many music productions consist of a fusion of Indian with African or Western music. The Indian movie tracks are however overwhelmingly imitated which actually stifles creativity and originality.

Music training has also resulted in a much more learned and edified audience.

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Performance spaces comprise a vast array of venues ranging from the traditional home marquee; temple; community hall to more upmarket venues such as the Playhouse and the I.C.C.

2.2. Conclusions

The political administration of both India and South Africa had significant impact on the development of Indian music in both countries. Music literature and even the type of music or vocal renditions were influenced by the respective rulers in India. Musicians would "belong" to the respective Emperors during their rule and therefore the spaces for performance of music mainly took the form of the courts of the emperors. Imperialism also impacted on music knowledge dissemination as knowledge then passed down within the confines of the palaces / courts, mainly to the descendents of the court musicians. Such a regime lead to the establishment of the *gharana* system of Indian music. The *gharana* system is still used today in order to define music pedigree and lineage.

From the English period onwards Indian music was freed from the confines of the courts and collaboration and cross fertilisation of styles and techniques developed complexity in Indian music. Music knowledge then started to transgress the bounds of the musicians' immediate families and became more accessible. At the same time venues for performance and academies of music started to develop in India.

So it happens that politics had great influence and determined the course of Indian music in India.

South Africa's colonial past had significant impact on Indian music in South Africa. As people of Indian descent had little or no contact with their motherland, music knowledge remained in the hands of the few who had brought down such knowledge from India. Indians in South Africa became more concerned with survival and then the quality of their lives. Music knowledge remained within families. Music had become the medium within which musicians found respect and dignity in an unjust political regime. Orchestral music was therefore regarded as the music of the working class.

The early 1990's saw an increase in Indian music education that ultimately realised a higher calibre of artist as well as a more learned audience.

Performance spaces initially consisted of religious precincts and marquees at homes. Later, with the establishment of Cultural centres, music rehearsals and performance moved out of the home. Today most performances take place at community halls and civic halls.
There still remains no central venue for Indian music in Durban.

Chapter Three: Theoretical Framework.

Indian music initially consisted of divine hymns during the Aryan Period. Hindu priests and devotees regarded music as a means of attaining spiritual salvation. This belief still holds today. Indian sculpture and paintings as well largely representative of religious beliefs. Indian music is complex in nature and encompasses the influences of the sub-cultures of the various geographic regions of India and the sub-continent.

Ragas were developed during the Sixth Century A.D. Ragas were melodies set within a structure of certain notes within the diatonic scale. Each Raga would invoke a certain mood. Indian music differs significantly from Western music. The nature of the Indian melody is analogous with a wire thin thread that rises and falls in an undulating pattern. Indian rhythm is much more complex than Western rhythm. Indian rhythm incorporates various timing changes within a rhythmic cycle resulting in overlapping layers of beats in timing. The architecture of Indian music is therefore also different to the architecture of Western music.

The influence of the mood of Ragas and the complexity of Indian rhythms results in particular sound forms. The section on Music and Architecture focuses on transforming the characteristics of music into architecture. Music is represented as colour; form which relates to the perceptual qualities of architecture. Sound, colour and visuals also produce emotive responses and therefore architecture transcends the measurable dimensions of mathematics and colour and becomes emotive and evocative – not unlike the quality of an Indian *Raag*.

Indian architecture is also largely defined by abstract and figurative symbolism. Symbolism in Indian architecture has its roots in man's relationship with the cosmos. Cosmic principles relating to creation; evolution and consciousness are transformed into organisational; formal; and graphic symbols in architecture.

The more physical and tactile elements of traditional Indian architecture takes the form of sculpture and fine detail as seen in the ancient temples of India. Sculpture largely consists of depictions of musicians and dancers hence architecture becomes a repository for music and dance.

Globalisation and technological advancement has had serious impact on cultural symbolism and tradition throughout the world. Regionalist architecture, as postulated by critical regionalism, would combine the traditional with the new and progressive. Cultural identity in contemporary time and context is therefore possible. Tradition Indian archetypes, similarly, are reinterpreted and reinvented to become relevant to the present time and context.

Various works of prominent Indian architects would be analysed in the form of analytical and qualitative precedent study with a view to analysing the application of the above theoretical concepts whilst also providing data for the design of the proposed centre for Indian music.

The chapter concludes with an analysis of urban design theory and principles. Urban design is relevant as a centre for music in the context of the City serves a broader role than merely accommodating music. The centre would enhance, integrate and revitalise a fragmented South African city such as Durban. The centre would also pick up and link to the positive dynamics of the city to enhance its dynamic cultural landscape.

3.1. Theory of Indian Music:

The Music of India is one of the oldest unbroken music traditions in the world (Courtney, 2007:1). Modern and cultural research has shown that Indian music has developed within a very complex interaction between different peoples of different races and cultures (Courtney, 2007:1).

The Art and Architecture of India were greatly influenced by religious beliefs and customs. The same is true for its Music. The first forms of Indian Music were religious hymns called *Bhajans*. *Bhajans* were stories of religion and mythology.

As there is no single Indian language there is no single entity as Indian Music. So too Indian music comprises a range of styles and systems which are spread over India, Pakistan, Bangladesh, Nepal and Sri Lanka. Folk and Tribal music therefore reflected the cultural character of their geographic region as well as population density. Such regionalist music inevitably adapted to outside influences as communication technology closed the gap between the rural village and the big cities in India.

Rapid development in communication technology has resulted in a pan-Indian popular music identity that is mostly communicated through India's film industry, the largest in the world.

In order to understand the particularities of Indian music it is necessary to compare Indian music with western music.

3.1.1. A comparison of Indian Music and Western Music:

"The world by day is like European music-a flowing concourse of vast harmony, composed of concord and discord and many disconnected fragments. And the night world is our Indian music: one purem deep and tender raga. They both stir us, yet the two are contradictory in spirit. But that cannot be helped. At the very root, nature is divided into two, day and night, unity and variety, finite and infinite. We men of India live in the realm of night; we are overpowered by the sense of the One and Infinite. Our music draws the listener away beyond the limits of every day human joys and sorrows and takes us to the lonely region of renunciation which lies at the root of the universe, while European music leads us to a variegated dance through the endless rise and fall of human grief and joy." — Dr. Rabindranath Tagore.

Indian music is referred to as *"Sangeet"* in Sanskrit. *"Sangeet"* comprises of vocal music, instrumental music and dance. Indian music is based on *Raag* and *Taal*. *Raag* is roughly similar to the Western term Mode or Scale. The principle difference between Western music and Indian Music is that the former is based on Harmony — chords played simultaneously, whilst the latter is based on melody comprised of single notes in complex combination that define a particular *Raag*. The various *Raags* invoke deep emotional responses.

Indian music is "modal"-based on the relationship between the permanent individual noted called the tonic, with the successive notes (Mansukhani, 1982:1).

Both systems are based on a scale of seven notes. Indian notes are divided into small units called *shruties* (22 microtones in all), whereas Western music has 12 semitones. The microtones are more subtle then semitones. These microtones adorned with gracetones (*gamakas*) produce a magical effect. Western music is capable of producing many moods and feelings. While Indian music has generally a principal mood or emotion in a *raag*. The Indian musician improvises according to his own creative genius within the framework of a *raag*, but in Western classical music such range of individual improvisation is inconceivable, except in jazz (Mansukhani, 1982:1).

"To appreciate Indian music, one has to adopt a completely different sense of values... one must orientate oneself and at least for the period concerned, forget there is a time-clock ticking away and merely sink into a kind of subjective, almost hypnotic trance. In that condition, the repetitive features of Indian music, both rhythmic and melodic, acquire an

extraordinary fascination and charm... despite the domination of this hypnotic mood, a characteristic of Indian music is that far from deadening the intellect, it actively liberates the mind." Yehudi Menuhin, noted composer and musicologist (from Mansukhani, 1982:1).

Although Indian melody differs significantly from Western melody Indian rhythms are vastly different and much more complex than Western rhythm. *Taal* is the term that denotes rhythm in Indian music.

Western rhythm consists of a fixed pattern of beats in time, in blocks. Indian rhythm is much more complex and consists of various combinations of beats in any set rhythm. Speed *Laya* may vary within a rhythmic cycle as in single, double or even one and half or three speed.
Indian rhythm does not merely provide timing to the melody. On the contrary Indian rhythm consists of a complex system of beats that change as the melody progresses. In fact any *Taal* (set of beats) may have hundreds of variations and modes of presentation (The Author).

In western music the composer sets music in notation. The performance of the music is controlled by the conductor. The music relies on uniformity and a predetermined conduct of tone and rhythm. Indian music is based on creative and spontaneous improvisation within a fixed set of notes and rhythm thereby revealing the mood and emotion of the *Raag*.

The structure and organisation of Indian and Western music would be referred to as the "architecture of music" in the following section. The differences in such structure and organisation in music and their impact on music would now be discussed.

3.1.2. The Architecture of Indian Music compared to the Architecture of Western Music:
"In the West, we construct solid blocks of music. After having carved out geometrically, in large sections, like building stones, the seven degrees of the diatonic scale, lined them up and placed them on top of each other according to cleverly worked out architectural laws which are called counterpoint and harmony. In this way we erected splendid edifices in sound. In the East, no one dreamed of dividing sound into blocks; instead they refined it to a wire-thin thread. They strove meticulously to stretch out the sound, to refine it to the point of extreme delicacy... No standardised materials, no building of two or six or ten floors; rather a simple variegated silk thread which unwinds and rises and falls imperceptibly, but which in every tiniest portion evokes a world of feelings and sensations." (Mansukhani, 1982:1).

Indian music cannot be contained in definite blocks of definite altitude but rather a complex system of ever-changing melody and contrasting rhythmic patterns. Indian music is characterised by improvisation. The performance of Indian music is therefore characterised by spontaneity and melodic and rhythmic dialogue between the various instruments and artists. Anticipation hence becomes a significant emotion in the mind of the listener. The structure of Indian music hence allows for the indeterminable and unpredictable.
Similarly Indian architecture is characterised by pluralistic spaces; courtyards and squares; shifting axes, internal street, changes in level and contrast in light and shadow; colour; and texture.

3.2. Music and Architecture
In architecture shifting axes heighten anticipation as one progresses along the processional street intercepted by courtyards and foyers that reveal moments of heightened activity in the form of events along the journey. Such moments provide relief from the functional spaces they serve and their functions are pluralistic, determined by the activities of their inhabitants. The interplay between determinable and indeterminable; the controlled and the uncontrollable and constriction and dilation characterises the contrasting nature of Indian music and

architecture. Constriction and dilation of open space in Indian architecture is akin to the emotional responses created by classical Indian Ragas.

The origin of the word *Raag* stems from the Sanskrit word Rasa. Rasa means colour. *Raag* therefore is much more than a Musical idea. *Raag*, when properly rendered instills a certain mood and aesthetic delight as is also associated with paintings, poetry and architecture. The basis for Indian *Raags* were musical expressions of existing Indian art and architectural depictions of the periods that they were created and developed in.

According to Arora, *Vaastu* principles suggest that sound form also has a material structure associated to it and similarly every material substance has a sound associated to it (Arora, 1998:45).

"Architecture as frozen Music" would be better understood by referring to ancient text such as *Natyashastra*. Architecture includes all other art forms in some way or another. The psychological, emotive aspects of space are affected by factors such as mathematical proportions and colour. "Hence one cannot ignore the beauty of sculpting, colours of painting, play of elements and the light of drama, the proportionate time gaps of music, when one is talking about the science of architecture"(Arora, 1998:45).

Arora has developed a system of categorization of grounds for "making music into architecture" – MIA (Fig1).
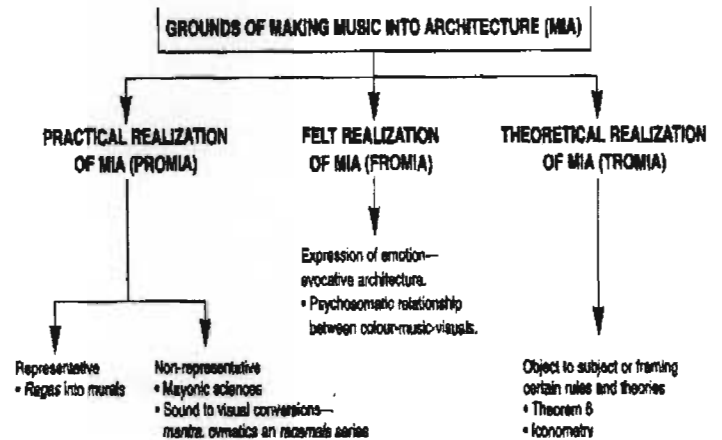
Fig1 – Grounds of making music into architecture.

PROMIA (Practical realization of music into architecture):
Conversion of the subject (inner experience or thought processes) to the object (outer experience or visual form).
PROMIA is further categorized:
PROMIA Representative: Refers to graphical representation of music to create aesthetic finishes, forms and ideologies e.g. Musical notes in pictorial art or murals of music painted onto surfaces of buildings (Fig2).
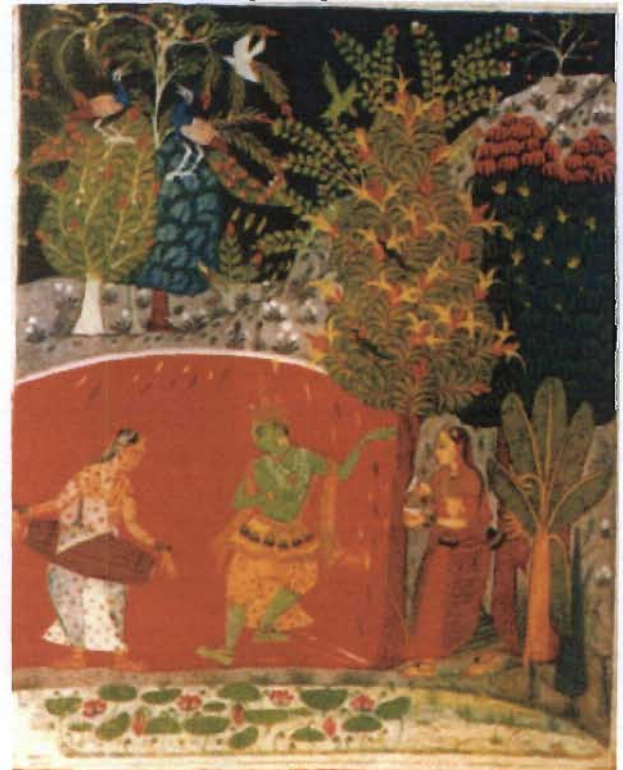

Fig2 – Mural depicting musical Raag Vasantha.
Various other Ragas may be depicted in murals thereby turning surfaces of a building into repository for music.

PROMIA Non-Representative: Refers to vibrational techniques used to transform music vibrations into physical form as in the phenomenon known as cytomatics.

FROMIA (Felt realization of music into architecture):
Refers to the psychosomatic relationship between colour, sound and visuals and how their frequencies are complimentary to each other. Architecture transcends the measurable dimensions of mathematics and colour and becomes emotive and evocative.

Research conducted on the relationship of sound, colour and vision prove that sound – colour relationships possess an emotive value and that the seven colours of the visual spectrum correspond to the diatomic scales of music (Arora, 1998:46). Colour has been associated with the seven notes on the music scale namely Sa (Do); Re (Ray); Ga (Me); Ma (Fa); Pa (So); Dha (LA); Ni (Ti) [Fig3].
These seven colours are the resultants of different vibrations and are related to the melodic types. "All the colours used in a building result in evoking emotions, which in turn is evocative architecture"(Arora, 1998:46).

COLOUR	WAVELENGTH (AU)	MUSICAL RATIOS
Red	7800 – 6400	Sa (Do)
Orange	6400 – 5900	Re (Ray)
Yellow	5900 – 5500	Ga (Me)
Green	5500 – 5000	Ma (Fa)
Blue	5000 – 4800	Pa (So)
Indigo	4800 – 4500	Dha (La)
Violet	4500 – 3800	Ni (Ti)

Fig.3 – Colour – Musical Note Relationships.

3.3. Metaphysical symbolism in Indian architecture
The fundamental attitude to traditional Indian architecture refers back to ancient Vedic Indian philosophical texts.

Traditional Indian architecture is seen as a process of evolution that is influenced by and influences the five elements and the five processes of human unit consciousness known as *Atman* .
Chhaya has developed a model that clearly shows such relationships (Fig.4).

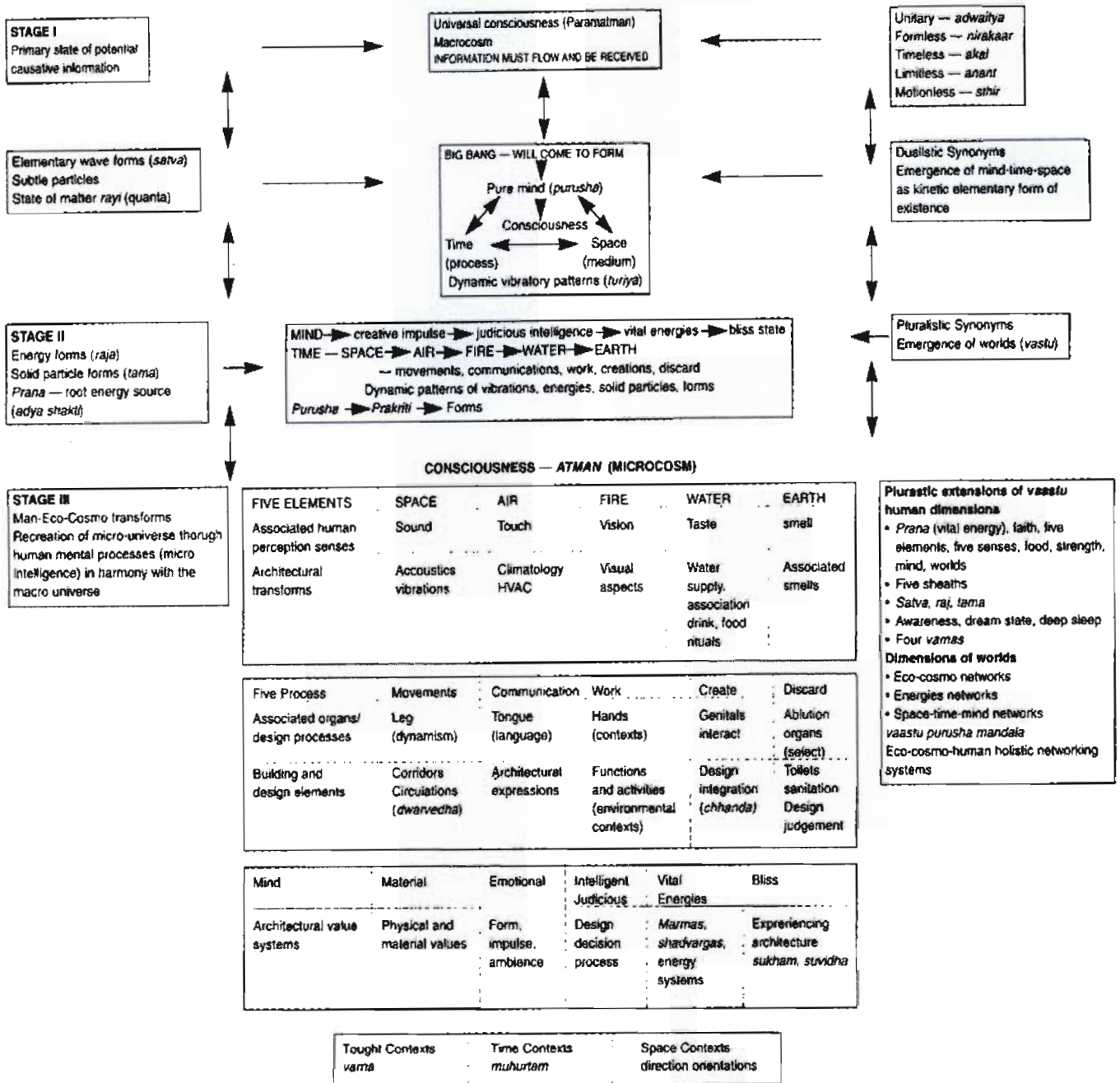## SIMPLISTIC MODEL OF ARCHITECTURE AS A PROCESS OF EVOLUTION

STAGE I
Primary state of potential causative information

Universal consciousness (Paramatman)
Macrocosm
INFORMATION MUST FLOW AND BE RECEIVED

Unitary — adwaitya
Formless — nirakaar
Timeless — akal
Limitless — anant
Motionless — sthir

Elementary wave forms (satva)
Subtle particles
State of matter rayi (quanta)

BIG BANG — WILL COME TO FORM
Pure mind (purusha)
Consciousness
Time (process) ←→ Space (medium)
Dynamic vibratory patterns (turiya)

Dualistic Synonyms
Emergence of mind-time-space as kinetic elementary form of existence

STAGE II
Energy forms (raja)
Solid particle forms (tama)
Prana — root energy source (adya shakti)

MIND → creative impulse → judicious intelligence → vital energies → bliss state
TIME — SPACE → AIR → FIRE → WATER → EARTH
— movements, communications, work, creations, discard
Dynamic patterns of vibrations, energies, solid particles, forms
Purusha → Prakriti → Forms

Pluralistic Synonyms
Emergence of worlds (vastu)

CONSCIOUSNESS — ATMAN (MICROCOSM)

STAGE III
Man-Eco-Cosmo transforms
Recreation of micro-universe thorugh human mental processes (micro intelligence) in harmony with the macro universe

FIVE ELEMENTS	SPACE	AIR	FIRE	WATER	EARTH
Associated human perception senses	Sound	Touch	Vision	Taste	smell
Architectural transforms	Accoustics vibrations	Climatology HVAC	Visual aspects	Water supply, association drink, food rituals	Associated smells

Five Process	Movements	Communication	Work	Create	Discard
Associated organs/ design processes	Leg (dynamism)	Tongue (language)	Hands (contexts)	Genitals interact	Ablution organs (select)
Building and design elements	Corridors Circulations (dwarvedha)	Architectural expressions	Functions and activities (environmental contexts)	Design integration (chhanda)	Toilets sanitation Design judgement

Mind	Material	Emotional	Intelligent Judicious	Vital Energies	Bliss
Architectural value systems	Physical and material values	Form, impulse, ambience	Design decision process	Marmas, shadvargas, energy systems	Experiencing architecture sukham, suvidha

Tought Contexts vama	Time Contexts muhurtam	Space Contexts direction orientations

Plurastic extensions of vaastu human dimensions
• Prana (vital energy), faith, five elements, five senses, food, strength, mind, worlds
• Five sheaths
• Satva, raj, tama
• Awareness, dream state, deep sleep
• Four vamas
Dimensions of worlds
• Eco-cosmo networks
• Energies networks
• Space-time-mind networks
vaastu purusha mandala
Eco-cosmo-human holistic networking systems

Fig.4 – Simplistic model of architecture as a process of evolution.

Stage III of the model is most useful in terms of the impact of consciousness, from its most subtle to its crudest state, in architectural design and expression. It is interesting to note the relationship of the five natural elements as well as the five bodily processes to architecture.

"Man's first contact with the five basic elements of nature in the infinite universe is intricately connected with the creation of space in the movement of time. Later on, forms and structures developed in this created space, representing architecture" (Dixit, 2000:114).

The Yantra

The *Yantra* represents the dynamic nature of a geometric configuration moving either away from, or towards the centre of the form. The metaphysical symbolism of such form in architecture may be explained as follows:

The centre is represented by a dot. The rest of the architectural composition extends out, horizontally and vertically, from the centre Pl.4).

The next geometric figure is the Triangle (Pl.3&5). No space in the universe can be bounded than less than three sides (Dixit, 2000:114). The triangle is thus considered the most basic form to create harmony, balance and rhythm from the chaos preceding creation. The inverted triangle represents femininity, water elements and kinetic dynamics. The stable triangle represents, masculinity, fire elements and static form (Dixit, 2000:114).

The Circle represents fullness; contraction and expansion of forces and tension (Pl. 4&6). The centre is such that nothing can enter it or escape it without destroying its rhythm and harmony (Dixit, 2000:115).

Many different combinations of the above shapes create many different *Yantras*. Once a *Yantra* is composed it is always enclosed by lotus petals on its periphery, representing the unfolding of a power or structure outwards (Pl. 4). The entire *Yantra* is finally bounded by a square which represents Order and Perfection.

The square is always penetrated by gateways at the four cardinal points (Pl. 4).

The *Yantra* could be applied to courtyard spaces or even pavilion buildings as a generator of the composition (Plates 1 &2,). The *Yantra* may also be represented as symbolic rendering in sculpture, paintings and plaster rendering (Plates 3& 4).

Plate 1 – Yantra symbolizing the Unity of Cosmic Male and Female

Plate 2- Yantra Representing dot, triangle and Petal
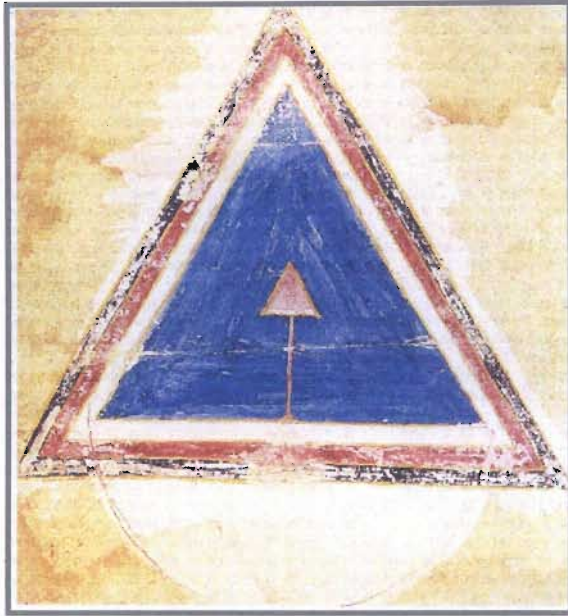
Plate 3– Rendering representing Triangle Yantra

Plate 4- Mural of Circular Yantra.

The figurative aspects of music such as structure and organization have so far been abstractly interpreted into architecture. The tactile qualities of Sculpture took the form of a more literal representation of music into architecture.

Architecture became the medium onto which music was expressed.

3.4. Sculptural expression in Indian Architecture as a repository for Dance and Music.

"In Indian art there is a competition as it were between the human artists and the divine artists" (A.K. Coomaraswamy from Nanadagopal, 1990:1). Nandagopal refers to Karnataka, in the South of India as an open air museum of sculpture and architecture as it houses hundreds of monuments and thousands of sculptures from the various schools of art in the region. Structural as well as rock cut temples in their natural surroundings are characteristic of the architecture of Karnataka.

Although iconographic texts were the basis for Indian architecture and sculpture, the artist were given the maximum freedom to create beauty and aesthetic delight. Artists created numerous sculptures in stone and metal to evoke various positive emotions in the viewer. To avoid the monotony of repeated motifs and iconography Indian artists used countless numbers of dance poses and depictions of performing musicians in their murals and sculpture. Music, dance and sculpture thereby became inseparable. Sculpture hence became repositories of Dance and Music (Nanadagopal, 1990:1).

Architecture was the medium of expression of such sculpture – Indian architectural expression was defined by sculpture. Architecture therefore becomes a repository of sculpture hence dance and music.

Traditional Indian architecture is reflected by its religious buildings namely temples. The stature of temples were emphasized by intricate detailing mainly sculptures of dancers and musicians. Door jambs; columns and even ceilings were adorned with intricate sculptural detail. Murals of deities and celestials also featured strongly on the treatment of ceilings and walls. Dance and music therefore became part of the aesthetic and tactile expression of traditional Indian architecture (Plate5 & Plate6).

Plate5 – Sculpture of Dancer on Temple Wall

Plate 6 – Sculpture of Musician on Temple Wall

3.5. The impact of Globalisation on culture and regionalist architecture.

3.5.1. Critical Regionalism.

In the opinion of Frampton universalisation, whilst perceived as progress of mankind, subtly destroys traditional cultures, hence the creative nucleus of great cultures.

Whilst a developing country looks to root itself in the soil of its past; forge a national spirit and celebrate its cultural and traditional values, it has to, on the other hand, take part in modern scientific and technological advancement. Such participation in scientific, technical and political rationality is necessary. Every

culture has to face the shock of modern civilization hence the paradox: "how to become modern and to return to sources; how to revive an old, dormant civilization and take part in universal civilization... We are in a tunnel, at the twilight of dogmatism and the dawn of real dialogues."(Ricoeur from Frampton, 1992: 314).

According to Frampton, critical regionalism is not intended to denote the vernacular however it is rather to identify those "schools" whose intention is to reflect and serve the constituencies in which they are grounded. Critical regionalism is anti-centrist and aspires to cultural, economic and political independence.

Ricoeur further states that sustaining authentic culture depends on the capacity to generate vital forms of regional culture whilst incorporating alien influences at the level of culture and civilization. Frampton concurs that a critical approach to regionalism entails combining the traditional with the new and progressive – "an architecture that resists the flattening out of cultural differences into the uniformity of a universal architecture" (Cocking,2007: 41). Frampton is critical of the modern movement's over-reliance on sight in reading

a building whilst underutilizing the other senses such as auditory, smell and touch.

Douglas Kelbaugh argues that critical regionalism is two fold. On the one hand is the particularity of a region, shaping its own environment and developing its own architecture whilst on the other hand are characteristics common to regionalist architecture elsewhere. Kelbaugh stresses the love of place as the fundamental rationale for critical regionalism.
Kelbaugh has identified five tenets that contribute to architecture of place:

1. <u>Sense of Place</u>

An architecture that honours local climate; topography; vegetation; building materials and building practices and which is critical of simple minded, excessive importation of cultures from elsewhere.

2. <u>Sense of Nature</u>

Unlike modernism which looks at physics and engineering for design inspiration, regionalism looks at environmental sciences and ecology.

3. <u>Sense of History</u>

Rather than looking to specific historical styles, design principles and time-tested typologies are of more value.

4. <u>Sense of Craft</u>

Local craftsmanship should be promoted. Modern building techniques and fast track projects has led to the demise of skilled craftsmen, so valuable to the cultural expression of place.

5. <u>Sense of Limits</u>

Human scale and psychological boundaries are essential for freedom. Physical limits can constrain one and liberate one at the same time.
Tadao Ando refers to wind and light as materials along with traditional materials such as wood and concrete (Frampton,

1992:325) Ando refers to detail, which realizes the physical composition of architecture whilst at the same time serves as a generator of an image of architecture. Light expresses the quality of detail in architecture. Ando aspires towards an architecture where senses such as hearing and tactility transcends the initial obvious perceptions of its geometric form.

Frampton has summarized the attitudes of critical regionalism as follows:
- Whilst it is critical of modern architecture it refuses to abandon the progressive aspects of modern architecture.
- Consciously bounded architecture as "place form" rather than free standing objects in space.
- Favours a tectonic realization of architecture.

- Light is regarded as a primary agent which reveals the tectonic value and volume of the work.
- Emphasis is placed on the utilization of the full range of senses in reading a building.
- Whilst opposed to the sentimental adoption of local vernacular, critical regionalism may reinterpret vernacular elements within a composition. Some elements may even be derived from foreign sources - suggesting a regionally based "world culture".

3.5.2. The contemporary relevance of traditional Archetypes: The Essence of Indian Traditional Architecture.
As Indian music has transcended the bounds of rigid formal tradition so has its architecture. As contemporary Indian music draws on its rich and complex classical roots, so does its architecture.

"nostalgia is inadequate if unaccompanied by rigorous far reaching reassessment, which alone can provide an organic creative renewal."
(Richard Lannoy from Varkey 2000:98)

Varkey states that the value systems of a culture manifest in its built form – defining cultural ethos through its idiomatic expressions. The challenge facing architecture that reflects its cultural heritage is to rediscover and redefine such architecture. Such architecture should be creatively reinterpreted to reflect the language of its present time and place – a strong reference to critical regionalism.

The essence of Indian architecture transcends religious boundaries and is defined by a set of universal principles as defined by Varkey:

a. The Sense of Centre and the Statement of Limits:
Centre in spatial terms takes on a meta-physical meaning, referring to the primordial centre of creation. The place of Brahman, in Hindu philosophy, as the source of all energy. This centre may be conceptual, ideational or manifested centre but not necessarily geometric or physical centre.
In the Islamic tradition centre is not metaphysical but symbolic of the idea of the earth and heavens and of the manifested centre as a geometric or physical centre.

b. The Attitude to Spatial Organisation:
Layering of spaces defines Indian place-making – outside to inside; profane to sacred and so on. The conjunctions between such varied elements is defined by overlaps that create multiple layers. Spatial organisation is therefore informal, defined by shifting axes; diagonal movement across spaces and the shifting route. Each segregated part is united in whole within an ideational unity.

c. Attitude to Order:
The Indian attitude to order is inclusive as it accepts diversity and unifies such diversity in vibrant resolution rather than finding the easy option of reducing the diverse parts to a singular unity. The Indian notion of order is one that accommodates contradictions. It tolerates the circumstantial and the imperfect and as such the contextual and circumstantial inform the ideational and

unifying conception of order - a vibrant whole resulting from a bringing together of imperfect parts.

d.   Attitude to Form:
Similar to the attitude to space and spatial order, form is also a conglomeration of diverse parts into a complex unity. Forms are additive and are flexible in arrangement and composition.

e.   Attitude to Light:
Indian architectural form constantly strives to break up the sun into shadow. This contrasting play of light and shadow heightens the metaphysical quality of spaces. Architecture of deep recession; the use of pergolas and overhead planting all serve to manipulate light to create different moods and experiences in space.

f.   Attitude to Symbols and Meanings:
Symbols in architecture serve as metaphors for cultural ethos.
Landscape symbols and spatial symbols comprise the design Archetypes of Indian architecture.

As Sinha affirms, natural and spatial archetypes acquire many layers of cultural meanings and patterns of use over time (Sinha, 2000:33). Sinha discusses natural and spatial archetypes expressed as symbols:

Natural Archetypes.
Trees: Trees act as nodes in both the rural and urban landscape. They provide relief from the sun in hot climates, giving shade and shelter. Trees also define zones of public outdoor spaces around themselves. The zone below the circumference of a tree is usually occupied by either benches for relaxation; a water feature or well or even an outdoor stage for performance or lessons. In fact the symbol for education in Indian culture is actually the figure of a guru teaching a group of disciples under a tree (Fig5).
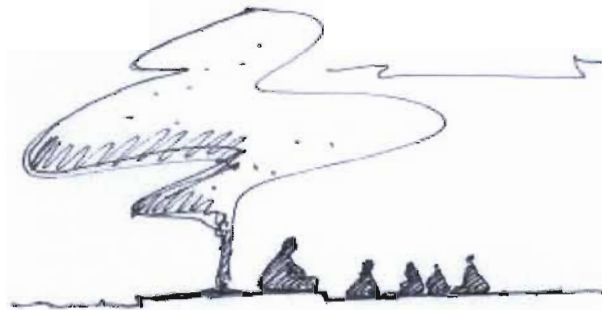
Fig.5: Guru under a tree - Symbol for enlightenment and education, Author 2007

The zone defined by a tree becomes an important accommodating outdoor room. In a dense urban mass, trees act as neighbourhood courtyards.

Water: Water is the most important of the natural elements in the urban landscape.
The tree-water dyad brings life to public space. Ghats, kunds and deep wells have evolved over time and give access to water for religious and pragmatic use. Ghats are stepped platforms at the edge of a water body usually a river (Fig6). Ghats allow people to draw water, wash, bathe, worship and even cremate the dead and dispose of their ashes.
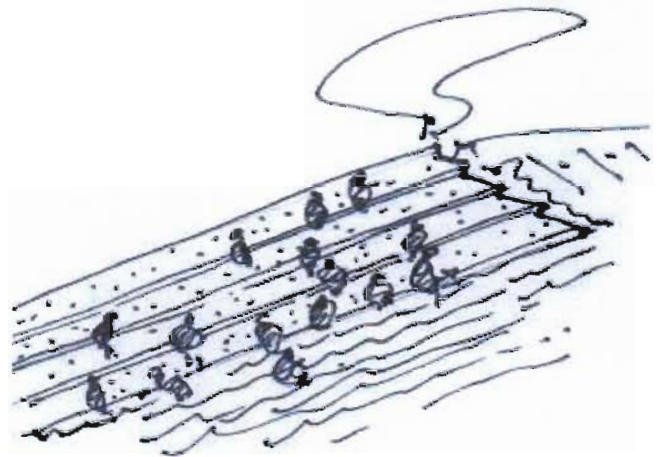
Fig.6: Ghat at water's edge. Author 2007.

Kunds are scared open spaces defined by steps or terraces. Kunds form the centre of may settlements and building complexes. Kunds may assume a square, rectangle, polygonal or even circular plan shape.

Natural archetypes are used by many renowned architects. Charles Correa's

Surya Kund makes direct reference to natural landscape symbols.

Joseph Allen Stein's memorial plaza dedicated to Mahatma Gandhi and Martin Luther King Jr. is another concept around the natural landscape. Stein simply placed four granite blocks, inscribed with quotations of the two leaders, between two large ficus trees. The ficusses lends authority to the composition in the manner of *akshaya vats* or "eternal trees".

Architects have used trees and water to give life to public space water in the form of a horizontal sheet is of more value to society. Such containment of water does not suffer the unsightly fate of clogged fountains but rather provides an amenity for children to splash in or may even serve as a reflecting pool for contemplation.

Spatial Archetypes.

Natural archetypes are generators of architectural form and may be incorporated meaningfully in landscape design. Spatial archetypes, on the other hand, are generators of space (Sinha, 2000:35). The symbol of the four quarters archetype and the cross in a square form the basic units of traditional Indian architectural language.

Courtyards are a powerful archetype in the hot Indian climate and serves both pragmatic and symbolic purposes. The courtyards as outdoor rooms, in both public buildings and private dwellings, are usually dominated by a tree and water, which creates a comfortable micro-climate providing relief from the hot climate(Fig7).
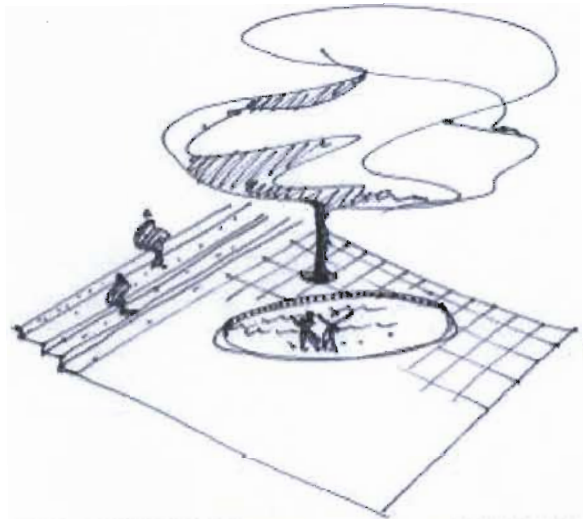
Fig.7: Courtyard dominated by tree and water pan. (Author)

Courtyards are also introverted, defensible outdoor rooms. They provide a high degree of visual surveillance, enclosure and territoriality – vital to the requirements of extended family living. In public buildings courtyards soften the boundaries between the external and the internal spaces. A gradual transition from outside to inside is provided by a layering of transitional spaces such as foyers, verandahs and terraces.

Hence the courtyard becomes a powerful social, climatic and symbolic archetype.

In the Urban landscape the courtyard is referred to as Square and reflects possesses similar pragmatic and symbolic value as the courtyard.

Contemporary Indian architects reinterpret traditional Indian architecture to become contextually relevant, making use of the new materials and methods available.

3.6. Traditional reference in contemporary Indian architecture.

The architects of post-independent India have fused the teachings of their Western masters with the indigenous knowledge of the Vedic shastras in their buildings – buildings that appropriately respond to multiple contextual layers viz. physical; environmental; socio-economic, political as well as cultural that meets the functional requirements of their programmes and elevates the spirit of their users, asserting a firm representation of Identity, in built form.

Such architecture resents pastiche and stereotyping and is borne out of the physical and metaphysical needs of the people it serves. The design solutions by contemporary Indian architects to the pragmatic requirements of functional space and the spiritual need for the metaphysical experience manifests in architecture that is symbolic of cultural Identity.

Precedent studies of some of India's leading architect's are hereafter analysed in order to identify the contemporary application of traditional Indian architecture. The precedent analyses would also provide useful spatial and technical data for the design of the proposed centre for Indian music.

Charles Correa in his discourse stresses the need to reinterpret tradition or in his words *"Reinvent myth each time"* (Architectural Review, 1987). Correa goes on to say that *"It is necessary to have a resonance with the past – as Corb, Aalto, and Frank Lloyd Wright had with theirs. They were artists, with no direct one-to-one relationship with the past. The images worked like depth charges – they sank to the bottom of the consciousness, exploded, and re-emerged in a different form."*
Charles Correa's work clearly illustrates essential elements of Indian architecture albeit in a contemporary application:-
Low-scale built form; Shifting axes; Linear Ordering; Open to Sky Spaces; Platforms; *Chatri* (awning; Pergola) and Disaggregation of Form. Correa uses deep recession in order to provide shade in hot climates but also to emphasise the contrast between light and shadow.

Sensitivity to the site is also a characteristic of Correa's buildings. Emphasis is on designing the site rather than just the building.

The following precedents illustrate the above theoretical principles in the built form.

KALA AKADEMI
CENTRE FOR PERFORMING ARTS
Location: Panaji, Goa
Architect: Charles Correa
Date: 1973 - 1983

Plate7: Low scale built form emphasising
Horizontality and terraced platforms.

Relevance:
An Indian centre for Performing arts.
Accommodates various functions such as Auditorium, amphitheatre; black box for experimental productions, teaching spaces, exhibition spaces and visiting artists accommodation.
Low scale built form.
Environmentally responsive using courtyards and pergolas to facilitate air flow in a hot climate

Siting:
The site faces the historic Mandovi River in Panaji, the capital city
of Goa. Access to the site happens off the Campal, a wide tree-lined road that runs on the South East boundary.
The River defines the North Western boundary of the site. Such arrangement allows for views to the river whilst maximising sun gain in winter.

Accommodation:
The centre accommodates various functions such as a 1000-seater Auditorium, amphitheatre; black box for experimental productions; teaching spaces that are hired by schools of Music and Dance; exhibition spaces, restaurant and leisure spaces as well as visiting artists accommodation.

Built Form and Architectural Expression:

The built form is low key and unobtrusive (plate7). Horizontal emphasis is accentuated by horizontal floor and roof planes defined by deep plastered beams. The red brick walls are mostly set back from the beams creating deep shadows. The Entrance Plaza is defined by a large pergola (plate4). Deep overhangs and sky lit courtyards result in a dramatic play of light and shadow, enhancing the recessive

quality of space. The connection to the sky within the building complex and the dramatic play of ever-changing light and shadow reveals the meta-physical dimensions of the architecture.

Technology:

The main structural system is a concrete frame composed of column grid, beams and slabs.(Fig17) Few walls serve a structural purpose. The red brick walls clad and insulate the various functional

spaces. The structural arrangement is environmentally responsive by making use of planted pergolas to shade open spaces. The South West to North East orientation of the Internal street creates a natural draught aiding in ventilation and cooling.

Plate8: Large pergola over Entrance.

Spatial Organisation:

Floor plan (Fig!6) characterised by a series of fragmented functional spaces linked by pathways that connect a series of foyers and courtyards. This "internal street in the form of shifting axes leads to the waterfront.

Defined by the built form, the street becomes a breezeway providing relief from the heat.The auditorium forms the hub of the complex and is accessed off the Main foyer off the Entrance Plaza. A transverse axis connects the Foyer to the amphitheatre. Display of exhibits happen along a system of shifting axes' in the form of an internal street.

24

RIVER MANDOVI

LIBRARY

RESTAURANT

MAIN AUDITORIUM

BLACK BOX

AMPHI - THEATRE

ART GALLERY

ENTRANCE PLAZA

ROAD

INTERNAL STREET
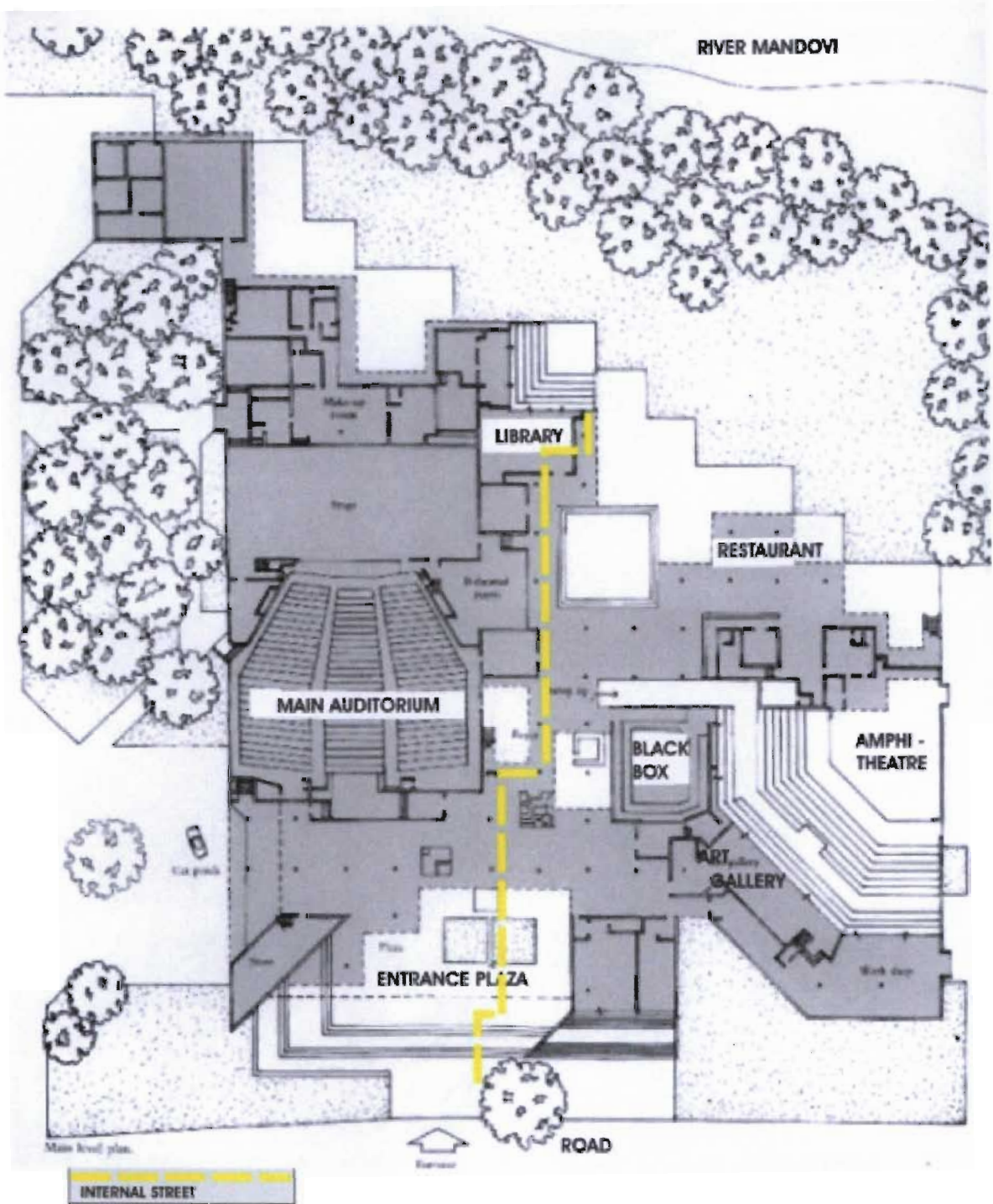
Fig. 8: Ground Floor Plan

Fig.8: Longitudinal Section showing breezeway and internal courtyard.
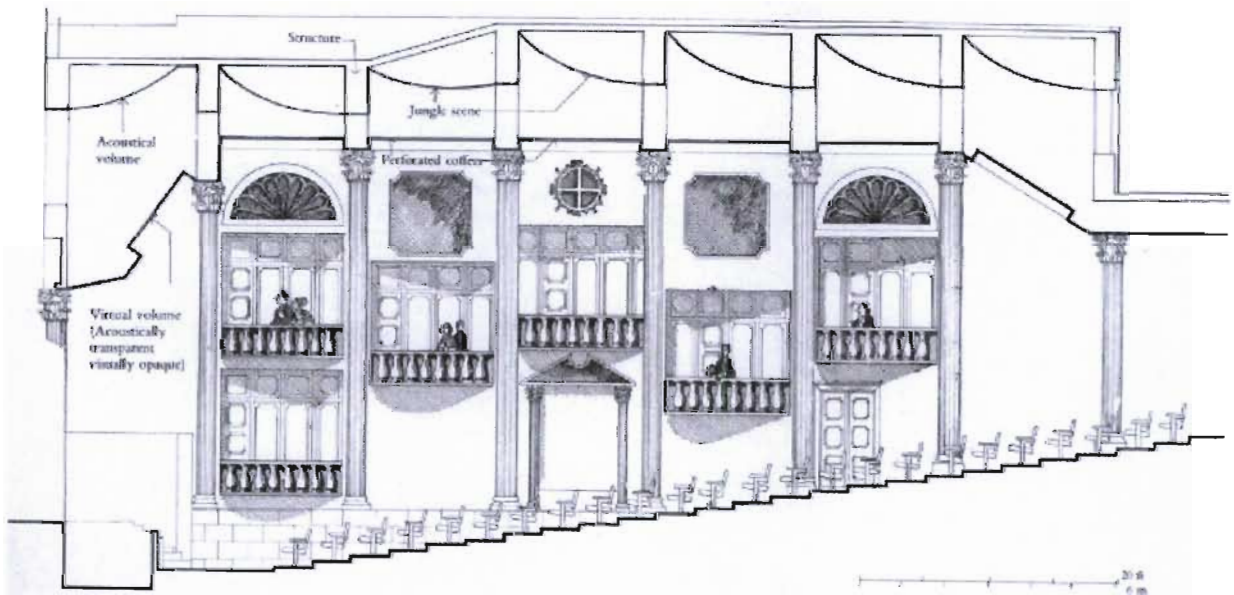
Fig.10: Section through the Auditorium

The auditorium is designed as a volume that accommodates a variety of acoustic conditions ranging from Sitar and flute recitals to Western orchestra to speeches and plays (Fig 18 & Plate9).

Variations in acoustic conditions is made possible by the manipulation of materials on the vertical surfaces and the dynamic ceiling technology. The ceiling is referred to as acoustically transparent whilst visually opaque. A system of perforated coffers conceals the metaphoric jungle painted on the acoustic ceiling of the auditorium.
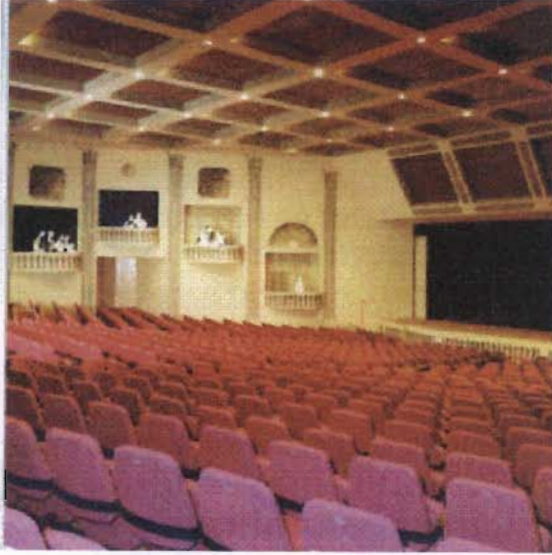
Plate 9: Auditorium Interior

BHARAT BHAVAN - ARTS CENTRE

Location: Bhopal
Architect: Charles Correa
Date: 1981

Relevance:
An arts centre accommodating a variety of performance spaces; museum; library; enclosed and open amphitheatres; workshops as well as accommodation for artists in residence.
Low key built form terraced to the natural contours of the site with planted roof gardens – environmental response.

Siting:
The site is located on a gently sloping plateau that overlooks the lake at Bhopal.
The cultural facilities are located around a series of courtyards and terraced gardens that are sunken into the ground. Access to the Centre is off a street situated on the
South East boundary. The lake defines the North West boundary.

Accommodation:
The arts centre accommodates a variety of performance spaces; museum; library; workshops; accommodation for artists in residence and an indoor Auditorium as well as an outdoor Auditorium (Fig.19). Terraces and courtyards emphasises Correa's concern with processional movement through open space.

Built Form and Architectural Expression:
The Low key built form is terraced to the natural contours of the site (Fig20). Planted roof gardens suggest a definite environmental response (Plate10). The exterior of the building is defined by hard edges of red brick walls strategically punctuated for access and light and ventilation. The building opens up to the waterfront and is scaled down in the form of an open-air theatre (Plates12&13).
Internally the building disintegrates into a series of functional spaces linked by Courtyards. Hard courtyard spaces are softened by overhead planting.

The dramatic play of light and shadow animates the hard surfaces of the courtyards (Plate 11).

Plate 10: Planted roof gardens over

Plate 11: Open to sky courtyards as foyers

Spatial Organisation:
The plan indicates segregation of various functional zones via interconnected courtyards of varying size all of which are square in proportion (Fig19). Entrance to the centre is defined by the Court of the Fountain.
Performance spaces are flanked by exhibition and service spaces thereby mitigating possible acoustic interference between performance spaces. Unlike the case of the Kala Akademi precedent the axial internal street at Bharat Bhavan does not exist.

Processional movement does happen though via the system of interconnected courtyards. A general movement from street on the South East to Waterfront on the North West is interrupted by a series of transverse axes allowing for flexibility of

movement between the courtyards. The terrace accommodates leisure activities and relates to the outdoor auditorium. Both these facilities enjoy views to the lake that defines the North West boundary of the site.

Technology:

The structural system is a composition of reinforced concrete and red face brick (Plate 11 & Fig.20). Columns are arranged in a varying structural grid. Columns serve Structural as well as space defining functions.

The red brick structural walls clad and insulate the various functional spaces.

The planted roof suggests a strong environmental response and provides relief to the otherwise hard architectural expression (Plate 10). Internal courtyards facilitate ventilation and cooling. Natural lighting is incorporated into the building via open to sky courtyards as well as conical form skylights to the exhibition spaces. Courtyards and non-performance spaces act as acoustic buffers to the performance spaces.
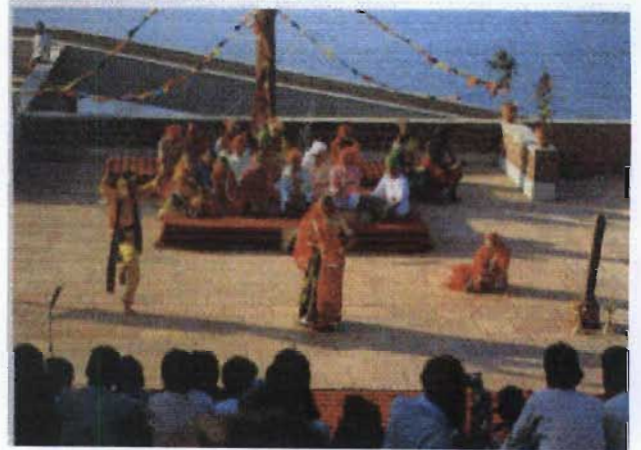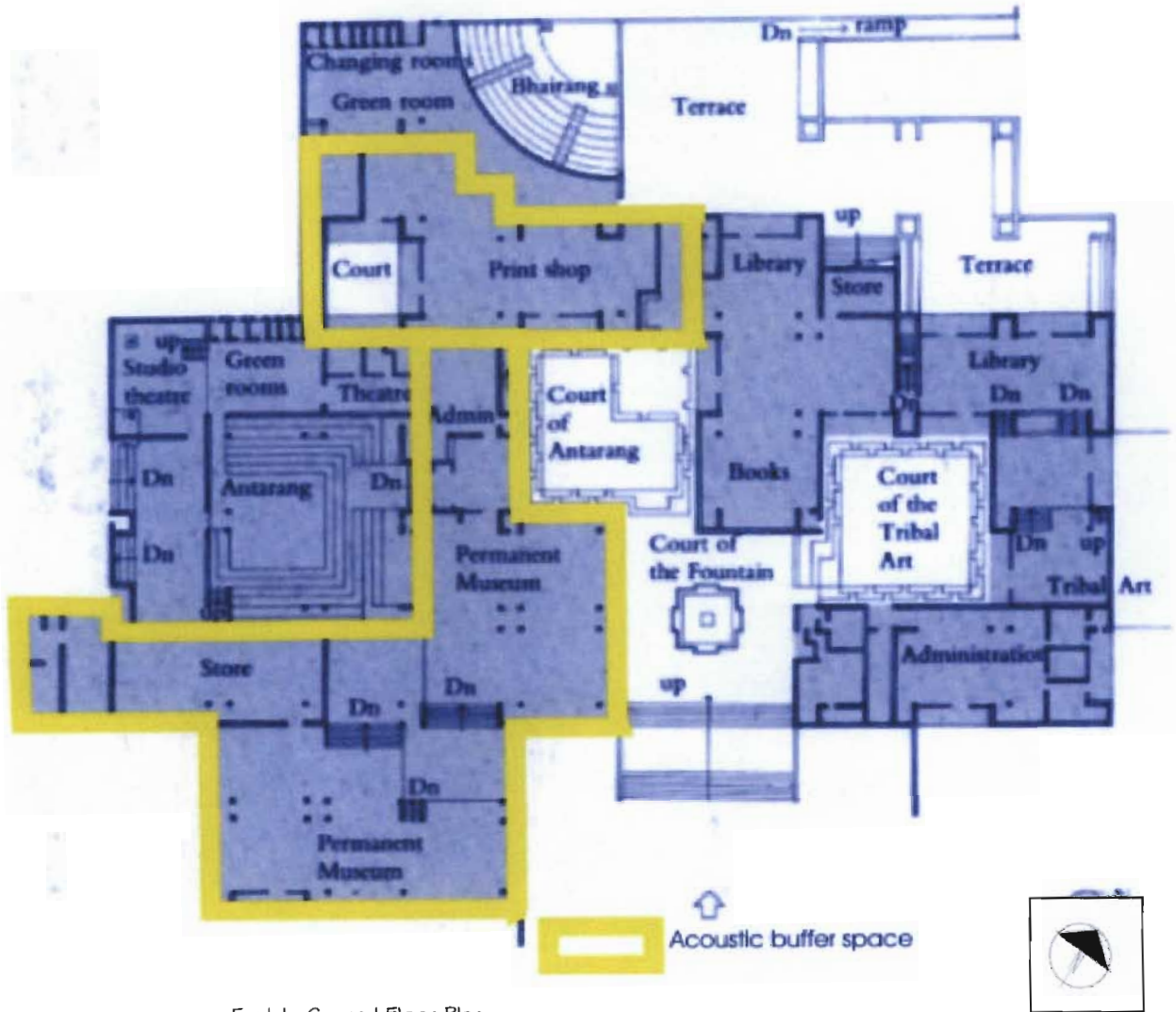
Fig 1 1: Ground Floor Plan

Fig 1 2: Section showing building terraced to Site slope and the installation of Roof to admit natural light into the functional spacesLights.

Balakrishna Doshi's architecture is sensitive. He strives to maintain harmony between Individual, Community and Nature. Low–tech solutions and local materials feature prominently in his architecture. Doshi's open spaces are characterised by ambiguity – pluralistic spaces that always possess more than a singular narrative. Shaded courts and pergola serve both the pragmatic, environmental purpose and their symbolic significance as spatial archetypes. Cross ventilation and soft natural lighting further illustrates Doshi's concern for energy efficiency.

The shifting axis is another essential reference to tradition in Doshi's architecture. Doshi emphasises the role of the street in architecture and urban design as is affirmed in the following quotation: *"Everything in architecture is temporary except one... buildings come and go, but the only constant is the street."* (Doshi, 2006:

ARYANA COMMUNITY HOUSING
Ahmedabad, India
Architect: Balkrishna Doshi

Plate.14: Street and Squares as communal space

Plate.15: Street as place for trade and economic opportunity.

Plate.16: Street as Pluralistic spaces / outdoor rooms
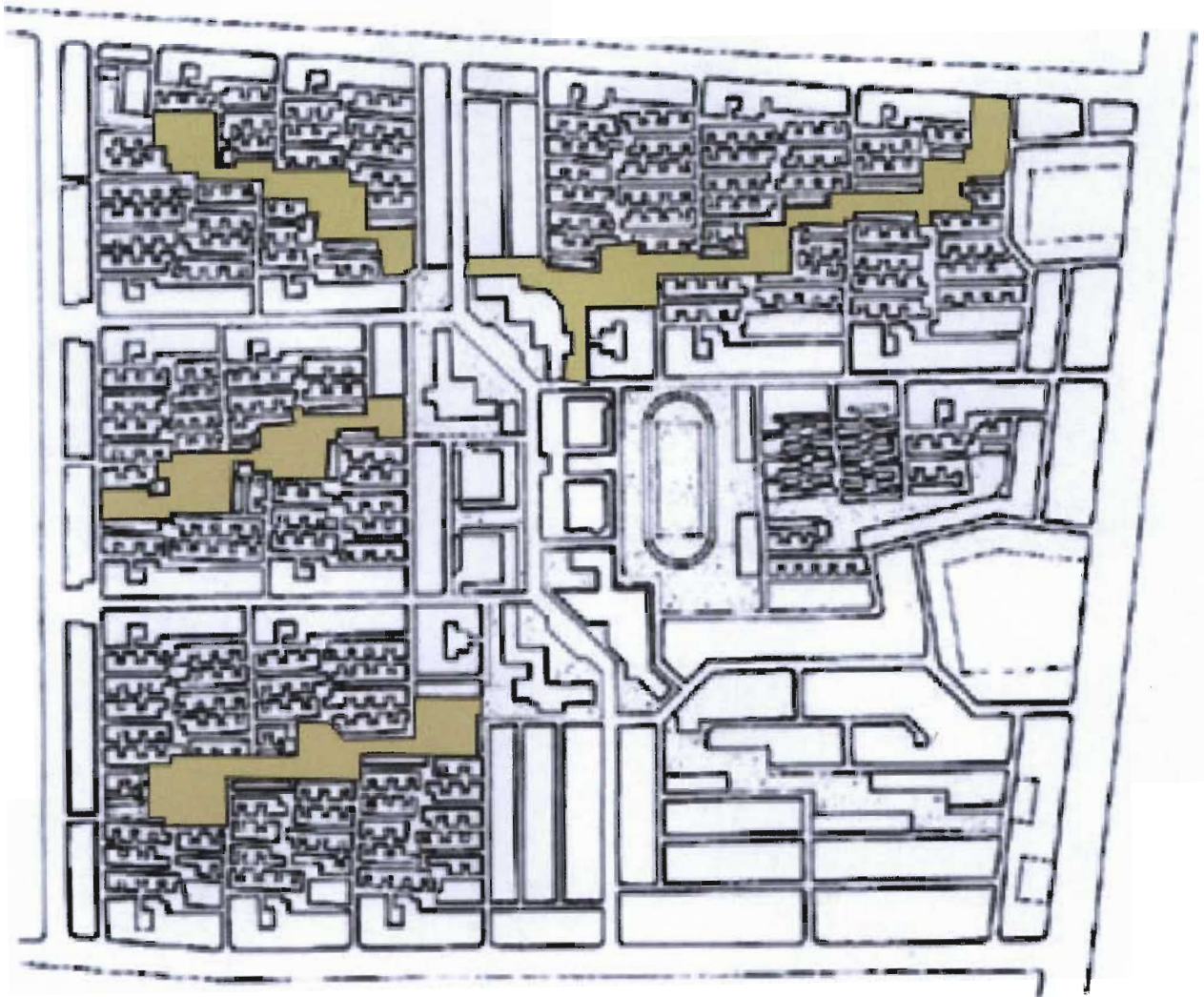
Fig 13: Aryana Community Housing Layout, Ahmedabad, India

Fig. 13 clearly illustrates Doshi's emphasis on the street as pluralistic place. The constriction and dilation of the street affords opportunities for trade and social interaction. Such organisation of the street creates a series of neighbourhood courtyards as pauses along the journey. The concept of the shifting axis reads strongly in Doshi's plan for the Aryana Community Housing Project.

The layout is some-what radial in that all residential streets emanate from a central public / communal space.

ASIAN GAMES VILLAGE – Raj Rewal

Raj Rewal's architecture is analogous to Traditional City design. Courts, galleries, terraces, platforms, steps and landscape feature in all of Rewal's work (Pl. 17 -20). The use of primary and secondary axes intersecting at nodes in the form of courtyards feature strongly in his work. Outdoor rooms, shifting vistas and framed views are also characteristic of Rewal's work.

Plate.17: Elements of Traditional City design.

Plate.18: Shifting axes intersecting at courtyards

Plate.20: Landscaped Courtyards at Parliament Library Building

Plate.19   Framed   Views

Although the three architects above incorporate the same essential design elements of Indian architecture their physical manifestation is vastly different.

The architectural character and expression of Correa, Rewal and Doshi all reflect a hybrid fusion of eastern traditional and western pragmatic considerations however each architect's work has a unique interpretation and therefore aesthetic expression

3.7. Urban Design Theory.

Urban design analysis is based on the three fundamental contemporary theories of urban design viz. Figure ground theory, Linkage theory, and Place theory.

Through the process of analysis of historic precedent and the evolution of modern space three such approaches to urban design theory could be identified (Fig8).
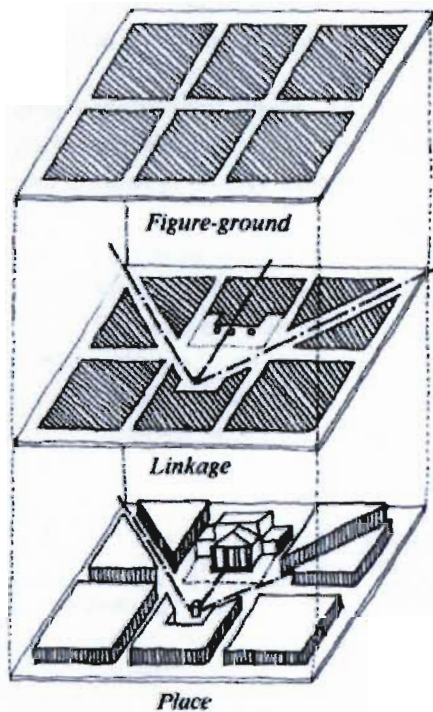
Fig. 14 : The three fundamental Approaches to Urban design Theory and analysis. (Trancik, 1986)

Linkage theory and Place theory would be discussed as they are most relevant to this dissertation.

3.7.1. Linkage Theory

Linkage theory analyses and is derived from the study of connecting lines that connect various parts of the city. These connections may take the form of roads, paths or even linear open spaces, activity streets and water.

Fumihiko Maki address linkage as the most important characteristic of urban exterior space. Maki states that linkage is the glue of the city, uniting all layers of activity within the city. Maki defines three types of spatial linkage viz.: Compositional form, Megaform, and group form (Fig.9).

Fig. 15: Fumihiko Maki- Three types of spatial linkage:

Compositional Form: Spatial linkage is implied, rather than overt, by the composition of individual buildings in a two-dimensional plane. - Typical of functionalist planning.

Megaform: Linkage is superimposed, connecting structures to an open ended linear framework with a hierarchical system. - Popular in 1950 to 1960's. Trancick, 1986

Group form: An incremental accumulation of structures along communal open space naturally and organically evolved. Traditional cities adopted this approach

3.8. Conclusions

The theory review answers all of the questions, as set out in Chapter One, relating to the pragmatic as well as symbolic relevance of the architecture.

A building such as the proposed Centre for Indian Music in Durban ought to express symbolic and metaphoric qualities in its spacial organisation and architecture. Indian music particularities that were compared to Western music provided cues for the type of metaphoric expression of the architecture of the building.

The architecture of music hence became a basis for the music of the architecture.

Grounds for making music into architecture highlighted certain unique psychological conditions in the human psyche in the translation of sound into visual images which then become expressed in architecture. Architecture hence became a repository for music. The transformation of musical annotation into colour is especially useful in the treatment of surfaces within the proposed building.

Indian philosophy views architecture as a process of evolution. Interesting relationships between human consciousness and architecture are established.

In the spirit of critical regionalism the architectural language and expression would reflect the particularities of its context in

Durban whilst being rich in (Indian) cultural symbolism and metaphor. The works of the relevant theorists and architects reveal that architecture can be symbolic whilst it serves the pragmatic requirements of its users. Such architectural symbolism is devoid of pastiche.

Urban design principles would be essential in establishing linkages to adjacent cultural precincts. As the adjacent sites are largely undeveloped urban intervention and design is necessary and such proposal would form part of the design document.

Chapter Four: Case Studies:

The purpose of the case studies is to extract spatial and technical data for use in the design and detailing of the proposed building. There is no single building in South Africa, that houses all of the functional spaces and facilities that would be required in the centre for Indian music. It would therefore be necessary to to analyse the relevant functional components of various buildings as case studies (Table 1).

Delimitations:

The statistic details of the economic sustainability, funding and management of the various case studies is beyond the scope of this research.

Table 1: Cases relevant to the Building Components.

FUNCTION	CASE STUDY	ARCHITECT
PERFORMANCE	The KZN Playhouse	Small, Petit and Robson Claude & Broadhurst,
TEACHING	UKZN School of Music	Architects CNN, D.J. Claude
RECORDING/ BROADCAST	SABC M1 Studio RBF- Digital Studio.	
RESOURCE/ ARCHIVE	UKZN School of Music Library	Architects CNN, D.J. Claude

4.1. THE KZN PLAYHOUSE — Durban City Centre.

Architects: Small, Petit and Robinson

Plate 21: The Natal Playhouse Principle Façade to Smith Street

4.1.1.   Relevance:

Durban's finest centre for the performing arts. The Natal Playhouse is a near perfect venue for hosting music concerts as determined by interviews with various artists. Many Indian concerts happen at the playhouse.

The performance spaces at the Playhouse are all acoustically designed allowing for both natural, unamplified sound (to varying extents) as well as electro –aided sound amplification. Such setup affords a wide range of performance genres ranging from pure classical to folk to contemporary fusion music. The dimensional sizes of the various performance spaces also impacts on the type of performance within the space e.g. the large Opera auditorium is conducive to focus on the artists on stage with little opportunity for verbal interaction whilst the intimate arrangement of the Drama theatre fosters interaction with the performing artists.

Economic sustainability, funding and management:

The "Playhouse Company" is responsible for the day to day running of the KZN Playhouse. The playhouse company generates its own income in the hire of facilities to the public and the hosting of various functions. Further funding is obtained in the form of an annual grant from the Department of Arts and Culture, as confirmed in the interview with Mr. Lenny Appalsamy, as well as public donations.

4.1.2.   The Site:

The site is located on Smith Street in the City Centre. The building faces the Durban City Hall to the North defining a rich cultural zone in the city centre.

The main public access to the playhouse happens in the form of a multifunctional foyer that off a public square that engages with Smith Street.
Secondary access to the Grand Foyer is off Acutt Street on the East boundary.
Back-stage access to performers happens off Albany Grove to the West.
There is no parking available on site. This poses a problem as patrons have to park either at parkades some distance away or

on the street. The security and safety of patrons and their possessions has been compromised as a result.

4.1.3. Built Form and Architectural Expression:

The architects, Small Petit and Robinson made a concerted effort to restore cultural values and tradition in the architecture of the Playhouse. The facades facing Smith Street have been restored to their original state (Plate21).

The original Tudor style façade of the old Playhouse as well as the Neo-Spanish façade of the old Colosseum Cinema were successfully restored by adapting the application of contemporary finishes. The resultant architecture elegantly responds to the Streetscape at human scale whilst concealing the mass of its accommodation.

4.1.4. Accommodation:

4.1.4.1. THE OPERA THEATRE

late 22: The Playhouse Opera Theatre Interior.

The "OPERA" (Plate22).- The Main Auditorium accommodates a large audience of about 1300 people. The space is acoustically designed (Fig.17) to facilitate a wide range of performance styles ranging from Sitar and Tabla recitals to Classical dance and contemporary music. This has established the Opera as a popular choice of venue for the Indian performing arts in Durban. Refer also to Fig.21 for spatial and acoustic qualities of the Opera auditorium.

4.1.4.2. THE DRAMA THEATRE
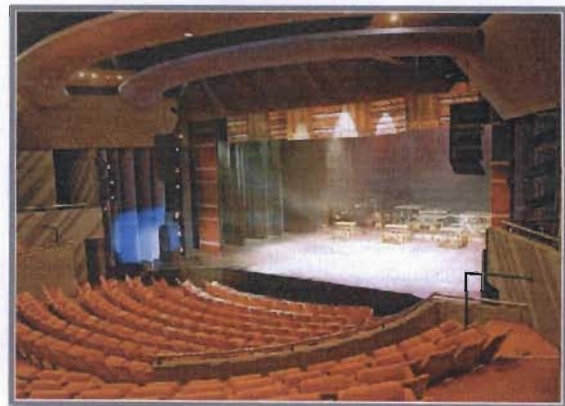
Plate23: The Playhouse Drama Theatre Interior

The DRAMA (Pl.23) has a more intimate seating arrangement of up to 500 patrons which makes it conducive to interaction between artist and audience. The Drama theatre also functions effectively as a music venue. The acoustic design of the theatre (Figs.22&23) allows for both natural unaided sound as well as electro acoustic amplified sound.

4.1.4.3. THE GRAND FOYER

Plate24: The Playhouse Grand Foyer Interior.

Other relevant spaces include:

Recital Rooms at basement level
A Bar and Coffee Shop at Ground Floor
level. A Restaurant at First floor level.
Ancillary spaces to the Auditoriums
Services Plant Rooms.

The GRAND FOYER (Plate24) is a flexible space that accommodates a variety of functions ranging from Exhibitions, to Lunchtime concerts to Dance - School graduation ceremonies.

4.1.4.4. THE LOFT THEATRE

Plate25: The Playhouse Loft Theatre Interior

THE LOFT THEATRE STUDIO – The Loft Studio is also referred to as The Attic Studio due to its location (Plate25). The Loft Studio is a Flexible Recital space with retractable seating accommodating up to 200 people.

Fig. 17: Playhouse Ground Floor Plan (Peters, 1983)
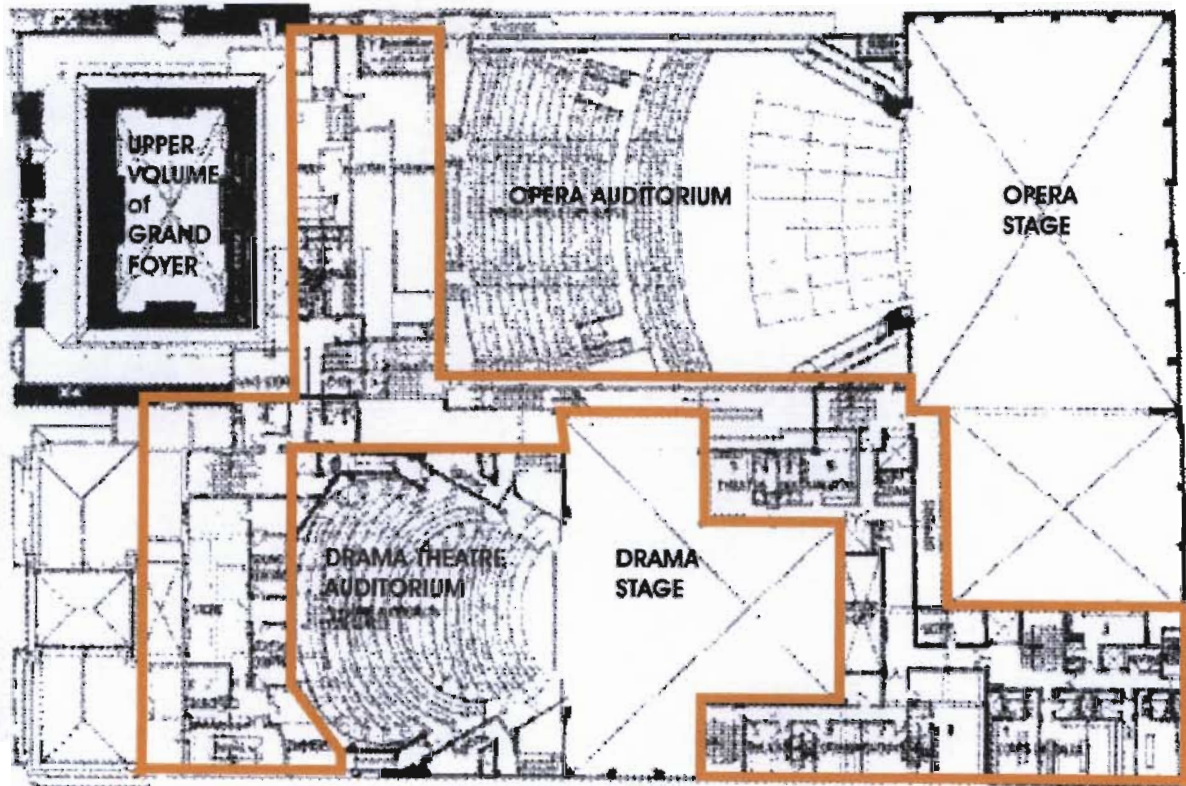
Fig. 18: Playhouse First Floor Plan (Peters, 1983)
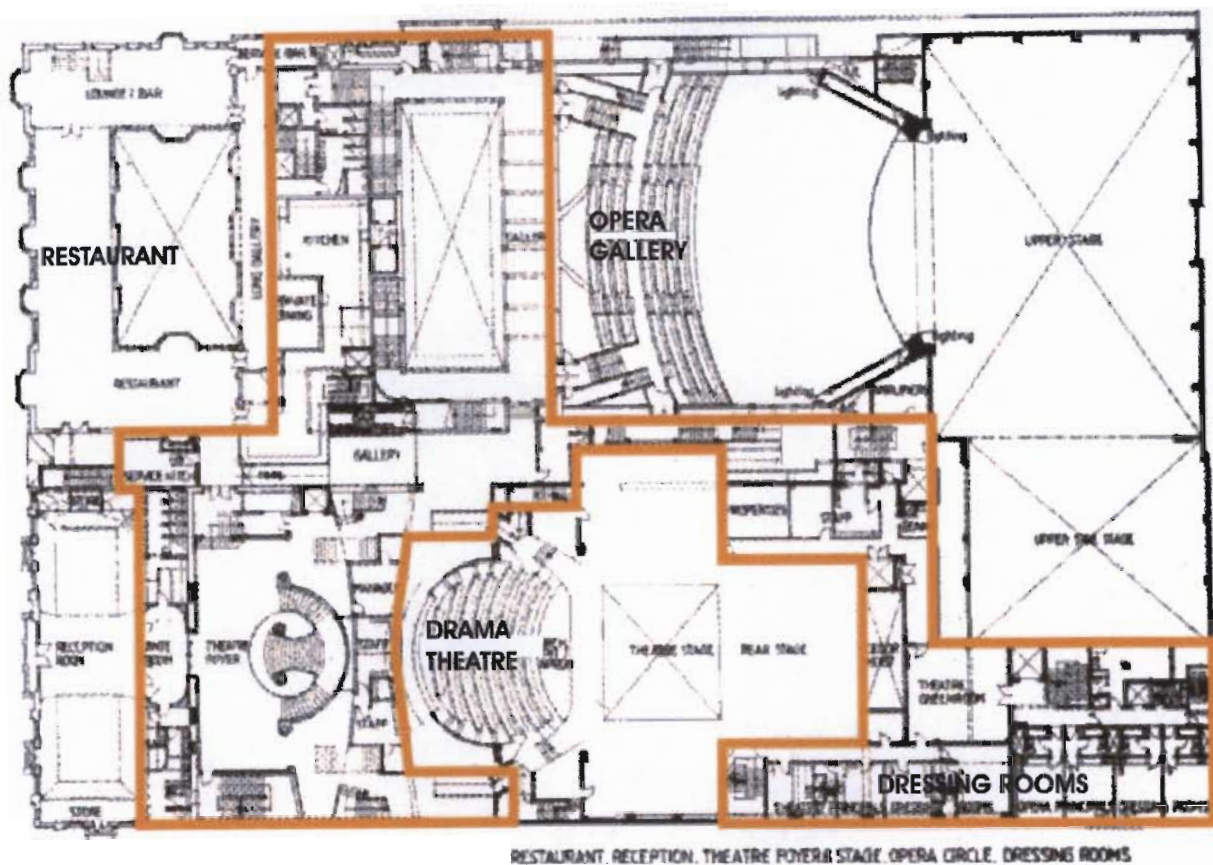
Fig. 19: Playhouse Second Floor Plan (Peters, 1983)

Accommodation:

The plan layout provides valuable information on the spatial relationships between the various primary functional zones.

The location of the Playhouse in the City centre meant that ground space was of prime value. Foyers therefore always serve more than a single narrative e.g. Coffee shop; restaurant; functions room (Grand Foyer, lounge etc. Furthermore foyers have been used as effective acoustic buffers between the performance spaces as clearly illustrated by the thick orange outlines in Figs 17, 18, 19. Services and escape routes form an essential component of any public building. They are effectively concealed by making use of levels in section. Escape routes also serve as acoustic buffers to aid with the attenuation of intrusive noise.
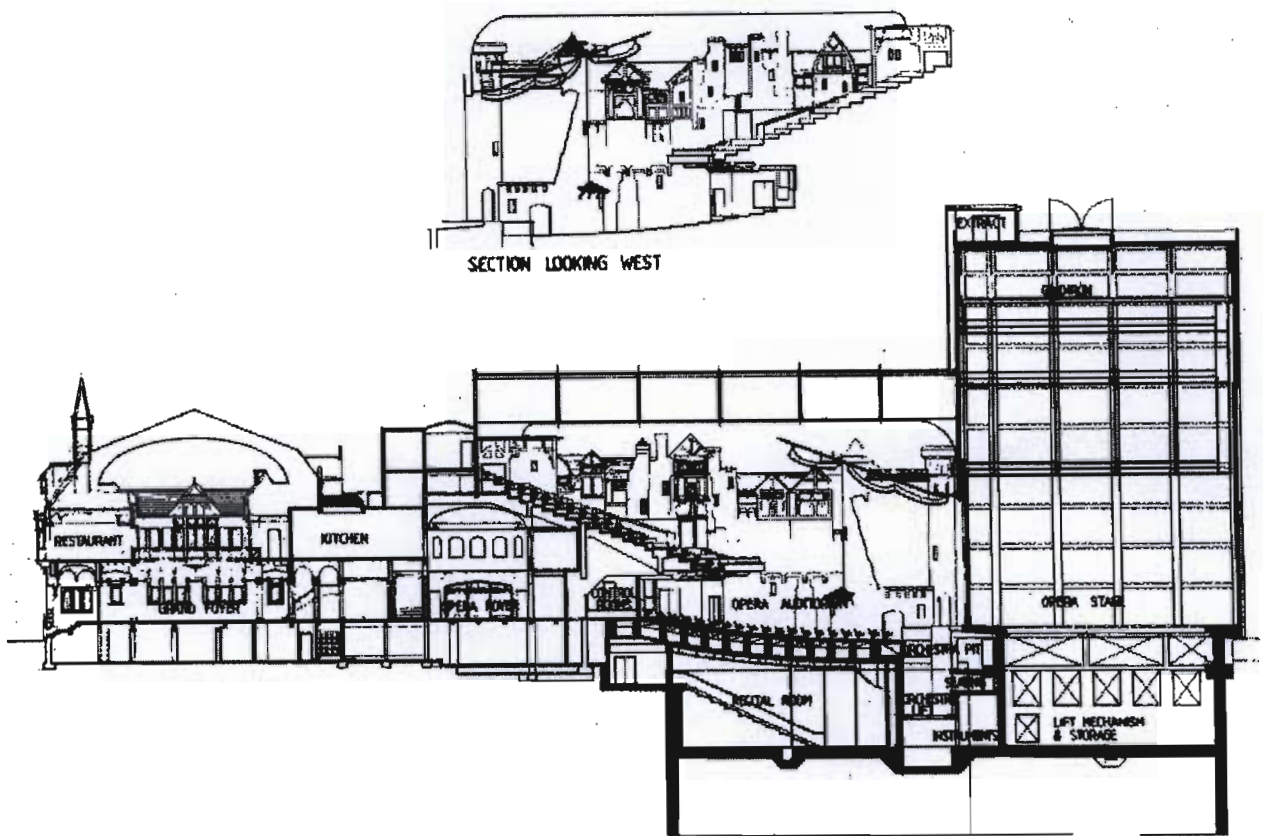
Fig.20: Playhouse Longitudinal Section (Peters, 1983)

Another design response to the lack of valuable ground area was to stack spaces in vertical organisation as indicated by the longitudinal section (Fig.20). The Loft Studio and basement level recital rooms work effectively as spaces for more private use. The artists change rooms and offices are stacked above the utility rooms as smaller volumes annexed to the massive volume of the Opera auditorium (Figs.18&19) The basement also accommodates various service rooms such as airconditioning plantrooms. The basement provides effective attenuation of the noise generated by such machinery.

The section looking West reveals the aesthetic of the auditorium interior. The Neo-classical facades of the flanking walls serve both as a symbol of theatre culture but also as effective reverberation control devices.
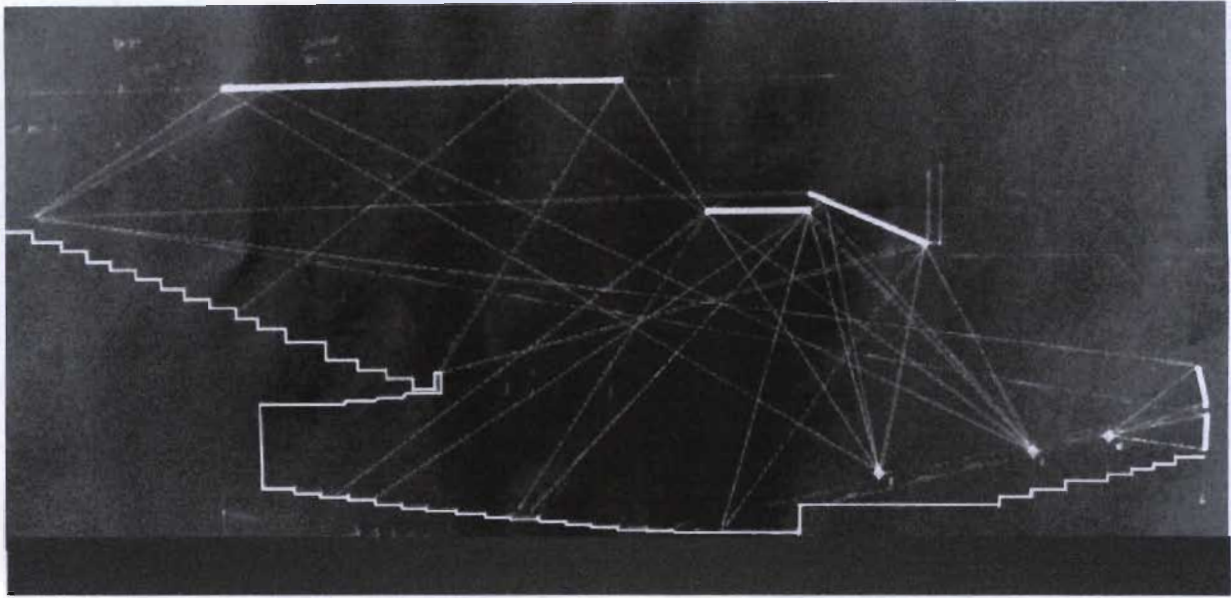
Fig2 I: Section through Opera Theatre – Reflected Sound Study by Claude & Broadhurst

Fig.2 I illustrates geometrically the behaviour of sound within the Opera auditorium volume by plotting the reflections of incident sound energy. Acoustic reflector screens are positioned to ensure even distribution of sound to the rear of the auditorium. An even distribution of sound has been achieved except for the acoustic shadow below the soffit of the gallery seating. The use of reflection devices against the flanking walls would solve such problem.

Figs.22 and 23 illustrate the geometric study of sound within the Drama Theatre space. The acoustic reflectors are extended much deeper over the audience seating area as the drama studio often facilitates non acoustic performances. The audibility and purity of natural sound is therefore maintained. Lighting is effectively concealed in the staggered ceiling form as a result of the acoustic reflectors.

The technical section (Fig.24) provides valuable technical data that would be used in the design and technical detailing of the proposed centre for Indian music. Sizes; levels; clearances; materials and finishes of the various components are specified. The author has sourced more technical drawings of the spaces within the Playhouse. Such drawings are not appended to this document as reproduction to a smaller scale results in lack of quality and legibility.
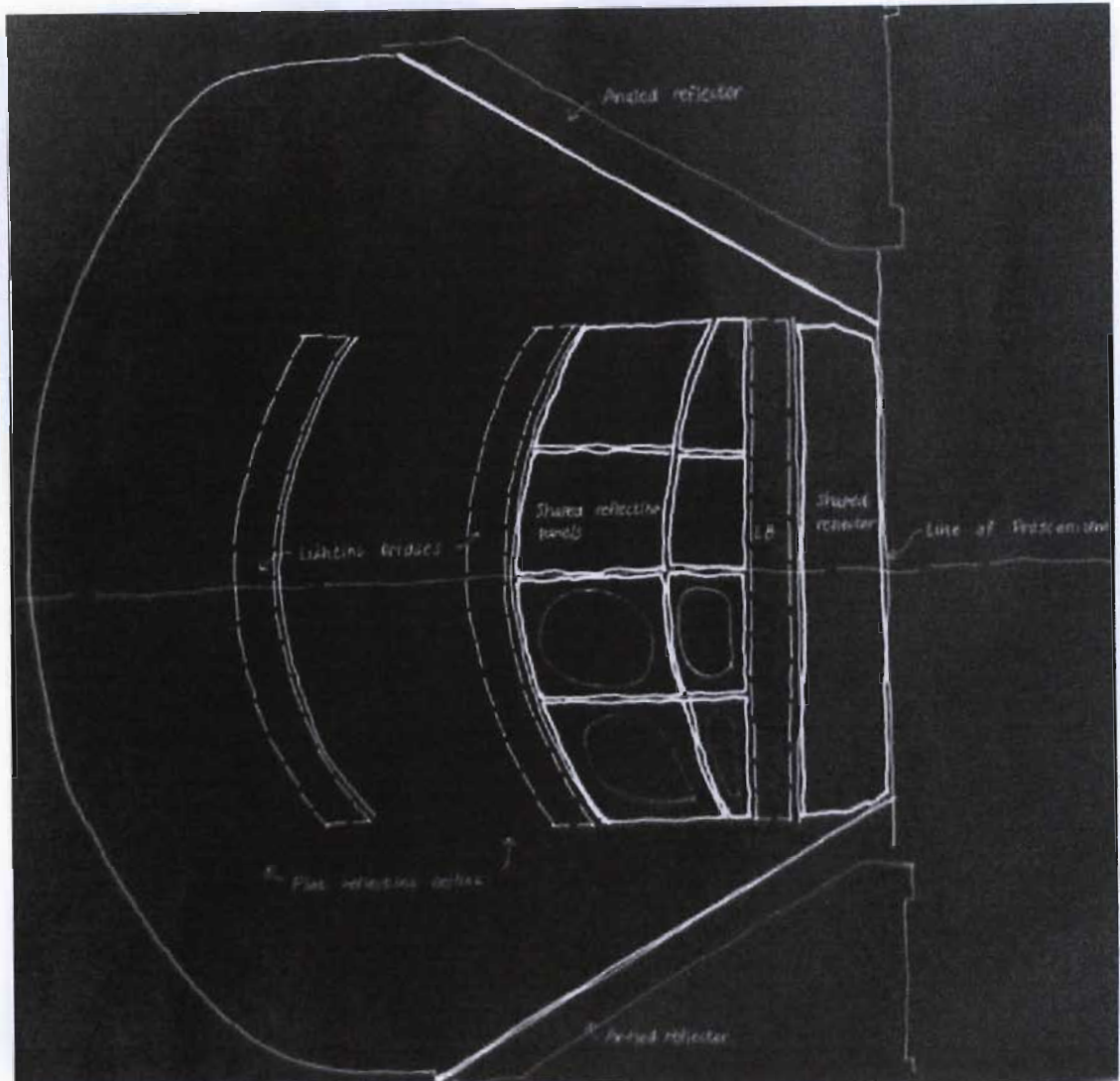
Fig.22: Drama Theatre Plan showing Acoustic Reflectors.
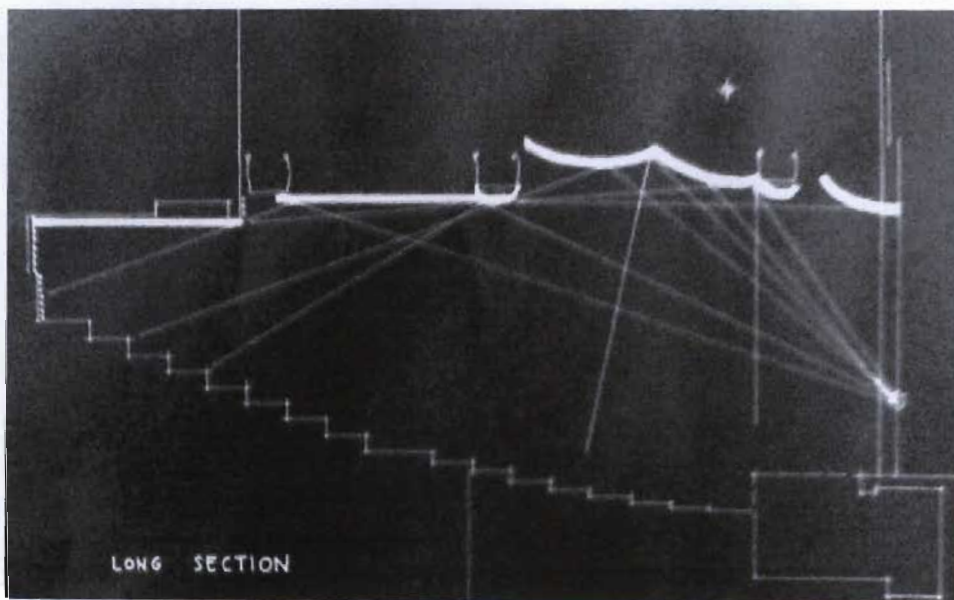
Fig.23: Longitudinal Section Through Drama Theater – Geometric Study of Sound paths.
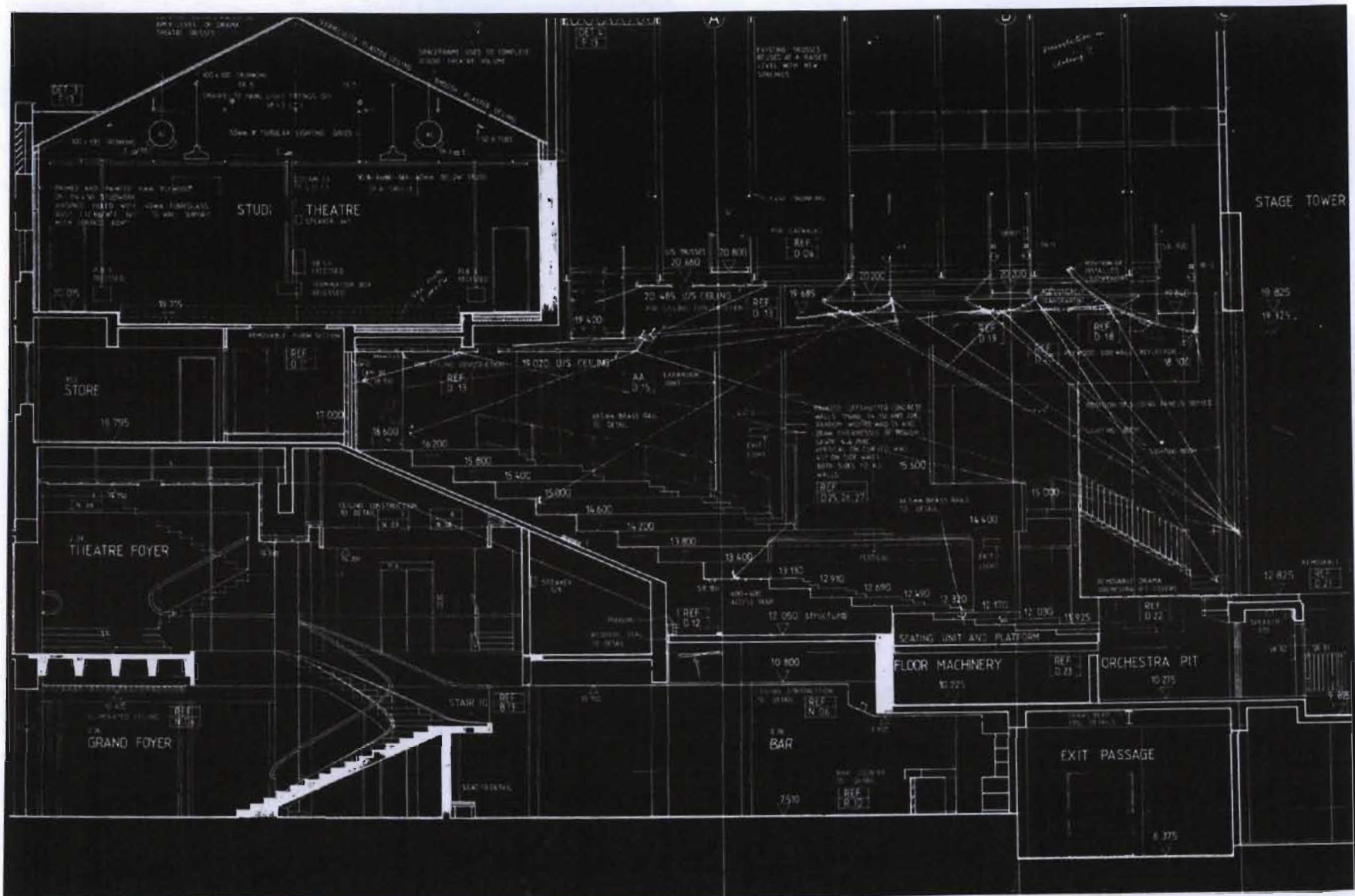
Fig.24: Technical Section through Drama Theatre – Small, Petit & Robson

4.2. UKZN – SCHOOL OF MUSIC

4.2.1. Relevance:

The new premises for the UKZN Music School is accommodated within an existing building. This case study analyses the spatial implications of various functions and the technology of the facilities that accommodate music rehearsal, teaching, performance and resource. Technology therefore becomes the focus rather than architectural expression.

The study would reveal contemporary methods of construction and materials that are used to acoustically enhance and insulate spaces.

4.2.2. Accommodation:

The most relevant spaces consist of Recording Studios on the First Floor Plan (Fig.25) and the Music Library on the Second Floor (Fig.26).

The Floor Plans clearly illustrate that acoustic spaces with angled walls can be accommodated within a rectangular / framed superstructure (Fig.25). Such a setup although acoustically efficient results in awkward spatial organisation and furnishing problems. Furthermore the flexibility of arrangement within such spaces are compromised. The walls consist of double skinned cavity. Sound insulation material is installed in the cavity wall (Fig.25 & 28).

The music library space is a much more successful arrangement. Note the angular arrangement of listening booths as an organiser of circulation within the library.

A significant amount of area is taken up by listening booths equipped with C.D. players and headphones. A double-banked arrangement of listening booths is economical as the services and connection points run back-to-back along a central power hub.

The section on construction methods and materials provides details of recent acoustic building technology and would be most relevant in the design of the proposed centre for music.
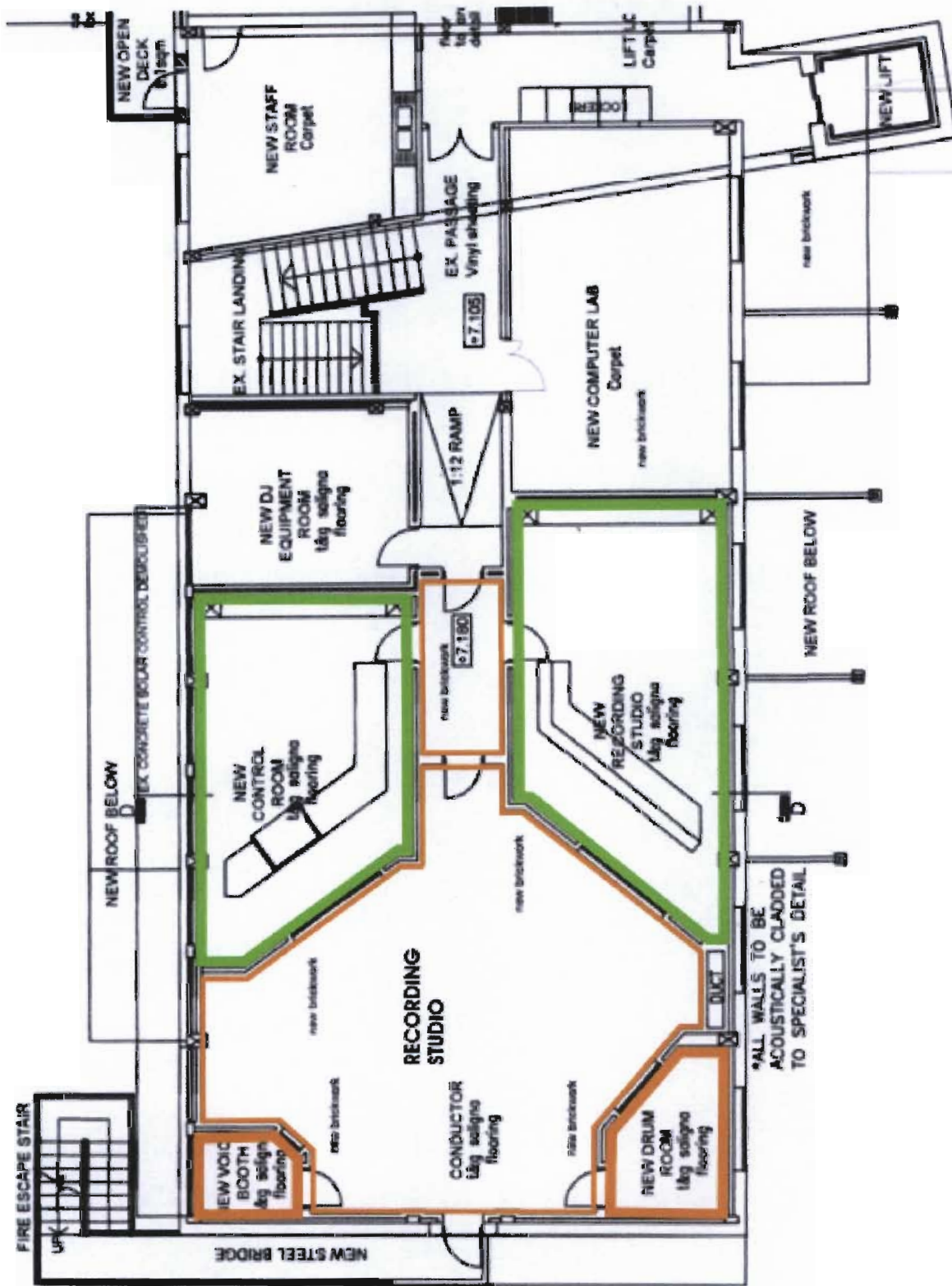
Fig. 25: Recording Studio Plan
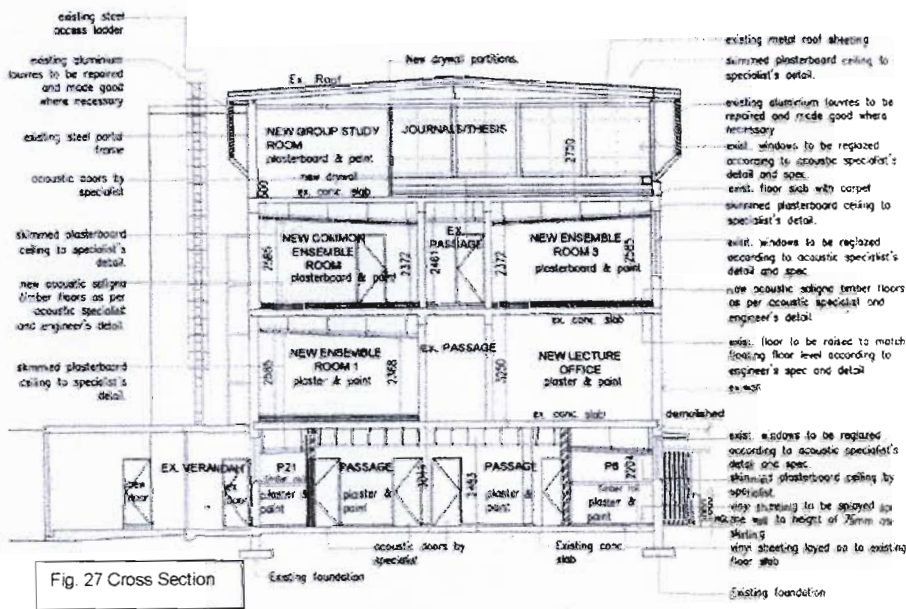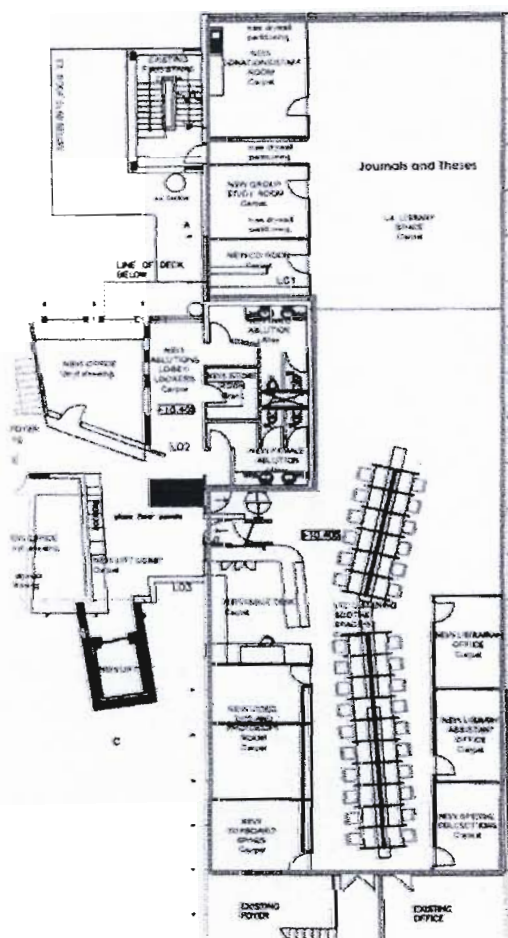
Fig. 27 Cross Section

The cross section (Fig.27) illustrates wall and floor sound attenuation and insulation.

Suspended ceilings conceal services to the spaces below. Note that the ceilings are raked to serve as reflectors within the acoustic spaces. Special acoustic doors have been installed off foyers and passages to negate intrusive noises.

4.2.3. Construction Methods and Materials:
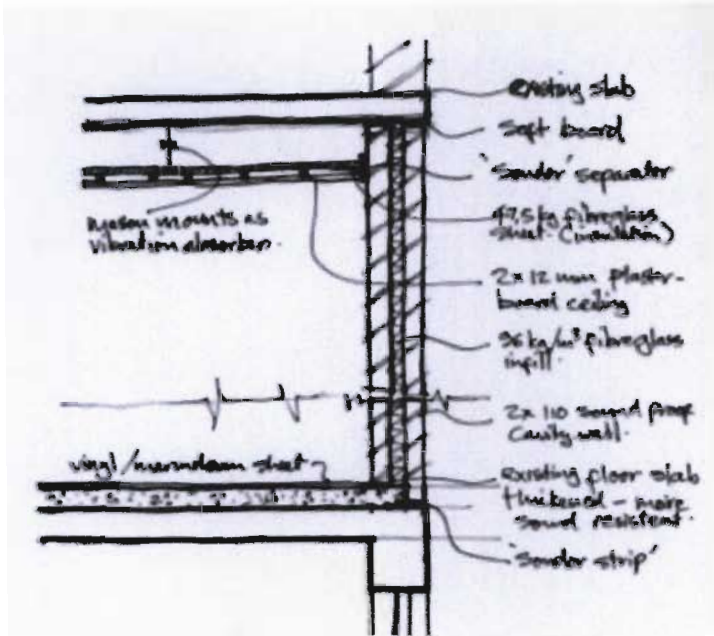
Fig.28: Section through Acoustic Space (Author)

Plate27: Floor Construction Detail

Note that there are no rigid joints.
Soft material such as sondor strips at all
joints and between structural skins
 prevent the transmission of sound
and   vibrations.

Plate26: Materials in Circulation spaces
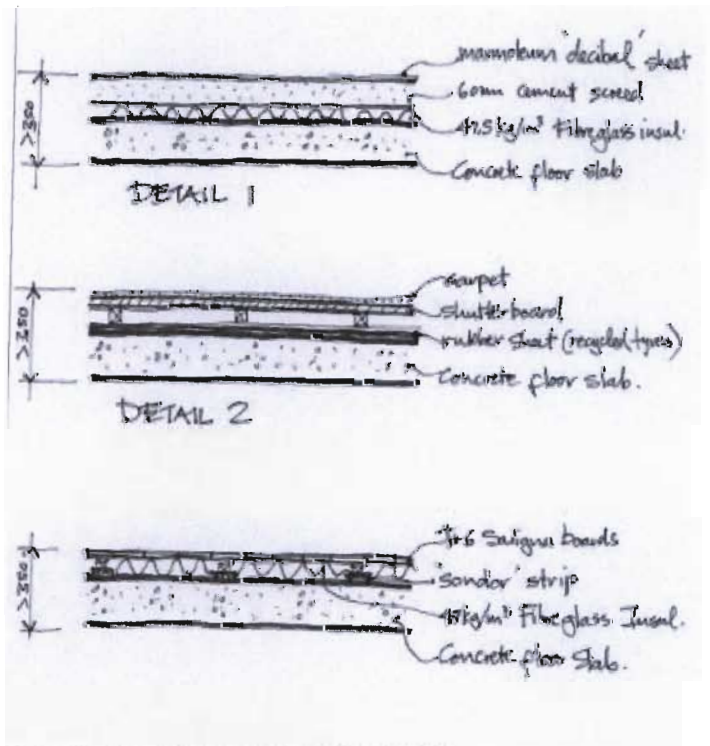
Fig.29: Floor Construction Detail (Author)
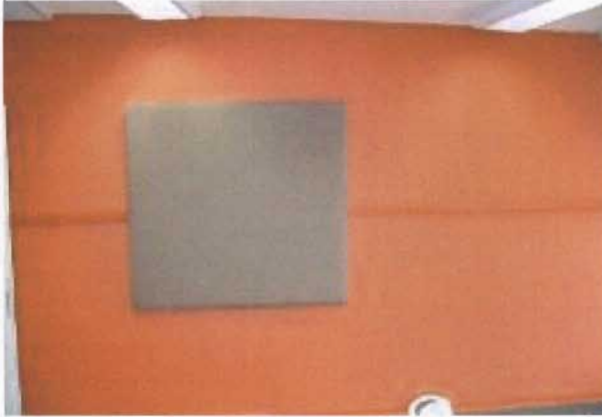
Plate28: Sliding Acoustic Panel

Fig.30: Sliding Acoustic Panel Details (Author)

Sliding acoustic panels allow for flexibility In the acoustics of a space. Reverberation can thereby be controlled to achieve the desired sound quality.

Plate29: Interior showing triple glazed Panel and Sliding acoustic panels

Fig.31: Detail of Triple Glazed Panel (Author)

Triple glazing affords visual permeability to and from acoustic spaces whilst providing effective sound insulation. The varying angles of the plane ensure effective attenuation of sounds of varying wavelengths and frequencies.

Although essentially a renovation and alteration to an existing building, the UKZN school of music has provided useful technical information for the design and detailing of the proposed centre for Indian music. Such acoustic detailing is contemporary, making use of the latest available technology.

4.3. SABC STUDIOS – 100 Old Fort Rd, Durban

The main aim of the case study is to find information regarding the design of recording spaces. Technical requirements with reference to acoustics; services and spatial requirements would be extracted from the study.

The impact of digital technology on the spatial and technical requirements for recording would be analysed. Useful comparisons would therefore be made between the old and the new.

SABC has recently undergone renovations and upgrading. Work in progress would provide useful insight into those components such as the interior layers of acoustic walls that would otherwise not be visible.

The one feature of the SABC that sets it apart from the smaller recording studios is a recital hall that is equipped for live recording and broadcast. The SABC recital hall / live recording studio is referred to as the M1 Studio.

4.3.1. The SABC M1 Studio

The M1 Studio consists of a large, 200 seater, recital / live performance hall (Fig. 32) with a stage that is linked to a recording control room.

The control room is a back to back facility linked to the recital hall on one side and a recording studio on the other (Fig.32). Visual access to both spaces is via triple glazed viewing panels (Pl.30).

The seating in the recital hall is not fixed and therefore facilitates a number of layout options. The flexibility in arrangement extends to the use of the hall for various functions ranging from music workshops to live recordings to various music - related launches.

The stage is large enough to accommodate a sixty - member orchestra.

The walls of this rectangular shaped hall are clad with timber slats (Pl.32) in order to mitigate echo and flutter echoes. Splayed slatted timber panels to the flanking walls (Pl.35) serve to evenly distribute sound whilst omitting flutter echoes. Such wall articulation also allows for speakers and other services to be concealed. The resultant acoustic quality of the hall is near that of a recording studio.

Plate 30: Viewing Panel between Control Room and Recital Hall

Plate 31: Artists recording traditional Indian music

Plate 32: Stage; Flexible Seating Acoustic panels on flanking walls

Plate 33: Analogue Mixing desk in Control room
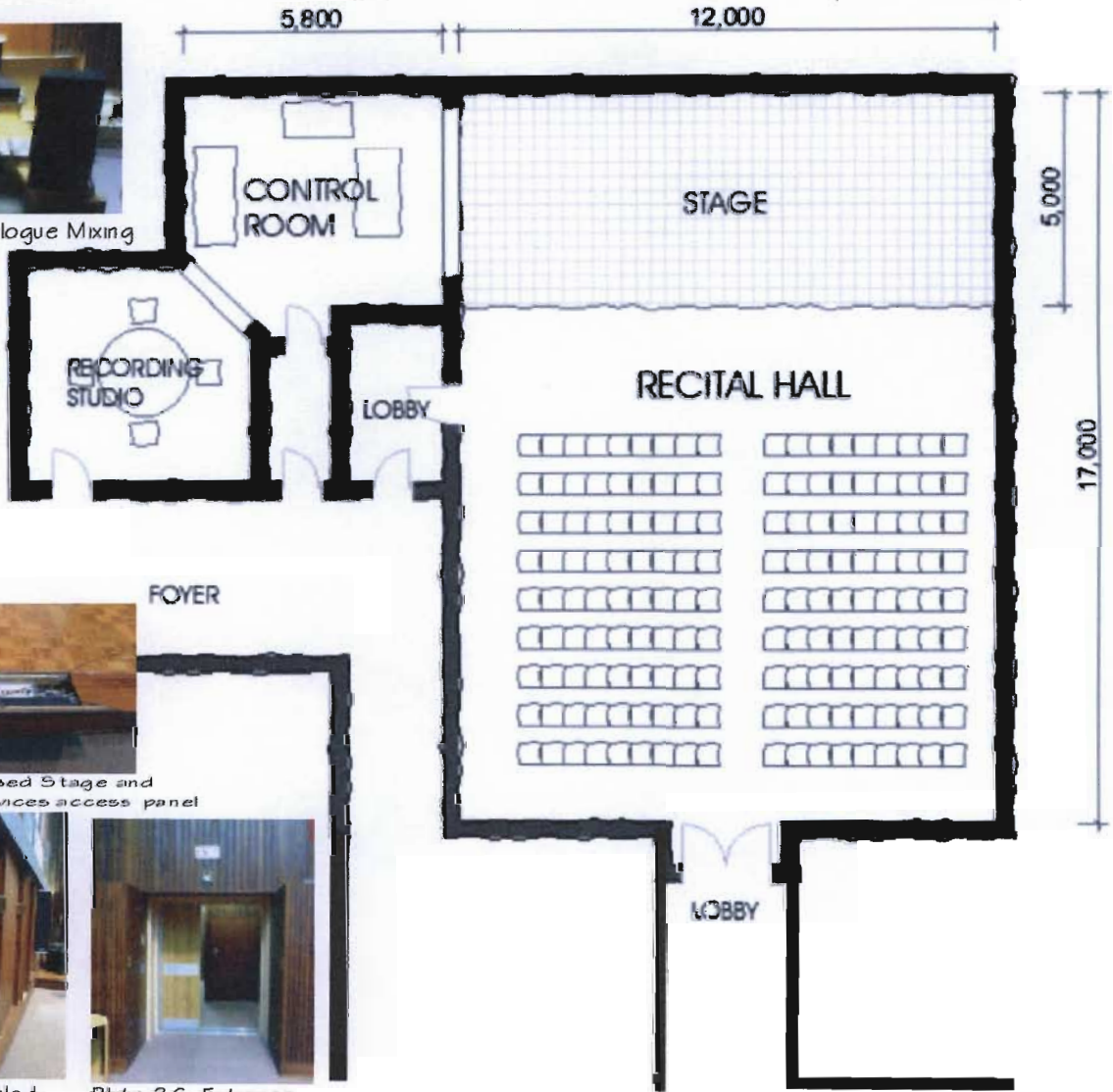
Plate 34: Raised Stage and Electrical Services access panel

Plate 35: Angled Acoustic Panels on flanking walls

Plate 36: Entrance-Sound Proof Lobby

Fig.32: M1 Recital Hall Plan (Author)

5,800

12,000

5,000

17,000

CONTROL ROOM

RECORDING STUDIO

LOBBY

STAGE

RECITAL HALL

FOYER

LOBBY

Plate 37: Digital Studio

Plate 38: Analogue Mixing Desk compared to Digital Mixing Desk

The digital studio (Pl.37) consumes much less floor area than the analogue studio. The digital studio also allows for multiple tasks, such as recording and playing in effects and even live broadcast, to be run simultaneously by separate operators on individual p.c's. (Pl.37).

All recording studios and control rooms have suspended acoustic ceilings. Services such as airconditioning ducts run with the ceiling space and any noise therefrom is absorbed within the ceiling void.

4.3.2. Acoustic cladding to Studio Walls.

A layered method of acoustic cladding (plates 39 to 42) to recording and other acoustic spaces, as seen during renovation work in progress, is described hereafter.

The first layer of sound insulation is a dense; massive brick wall.

A layer of soft board is then fixed to the wall followed by a skin of fibrous wool insulation material (Pl.39).

The fibrous wool is then protected by a fabric cover sheet over another layer of soft board may be attached or otherwise a sub frame for fixing acoustic cladding panels onto (PL.40 &41).

The final layer consists of an exterior aesthetic and acoustic skin made up of acoustic cladding (Pl.42).

The layered wall allows for all cabling and conduiting to be concealed behind the exterior skin.

Plate 39: Refurbishment in progress at Studio

Plate 40: Fibrous Insulation Material with Fabric cover

Plate 41: Softboard Paneling

Plate 42: Finished Studio

4.4. Conclusions:

The relevant case studies of buildings in South Africa provide useful pragmatic design guidelines for the proposed Centre for Indian music in Durban. The case of the KZN Playhouse analyses various pragmatic spatial and qualitative issues:

Response to Site: The KZN playhouse situated within the city centre is a compact built-form that relates to and defines the busy street edges at its boundaries.

Building Form and Architectural Expression:

The Playhouse complex is rich in cultural symbolism, be it historic or metaphoric, whilst efficiently accommodating the various functions it serves.

The UKZN Music School has been relocated in an existing building on campus. The case study therefore focuses on the acoustic qualities of the various functional spaces and the use of acoustic materials and technology.

Such information would be useful in the technical resolution of the design of the proposed Centre of Indian Music.

The SABC M1 Studio provided valuable spatial and technical data towards the design of the Recital Hall in the proposed Centre for Indian music. Acoustic treatment of surfaces and acoustic glazing would be useful to the proposed design. The comparison between old (analogue) and new (digital) highlights the impact of digital technology on spatial requirements for recording and broadcast of music.

The data extracted from above case studies would be synthesised and interpreted to suit the design of the proposed centre for Indian music in Durban.

Chapter Five: Site Selection

The selection of a site for the proposed music centre has to respond to the pragmatic as well as the symbolic aspirations of its users. The proposed site for development ought to reflect the history and culture of Indians in Durban whilst, at the same time, being integrated into the broader Durban Cultural landscape, serving all people of the city. The language of music crosses cultural and racial barriers and is an ideal mechanism to bring different cultures together. The City centre has therefore been the focus area for site selection. The selection criteria were determined from various sources such as interviews with stakeholders in the South African music industry; the criteria for public buildings as set out in other theses; the preceding theoretical discourse and my personal experience as a musician and student of architecture.

5.1. Site Selection Criteria:

- Accessibility to Public Transport: The Site should be accessible to or in reasonably close proximity to all modes of road transport within the City (Fig.33).

- Centrally Located: The Indian Music Centre should serve the broader Durban Community and should therefore be located to foster cross-cultural patronage (Fig.33).

- Visual Prominence: The Centre for Indian Music should be clearly visible, firmly establishing Indian Identity in the Durban cultural landscape.

- Proximity to other Cultural precincts: Integration within an existing cultural fabric would enhance Cultural Identity (Figs.33& 34).

- Historic Value: The Site should ideally have a link to early Indian heritage in Durban (Plate 43).

- Parking: There should be sufficient and secure parking on site or parking maybe shared with adjacent public buildings.

- Future Expansion: The site should be large enough to accommodate future expansion.
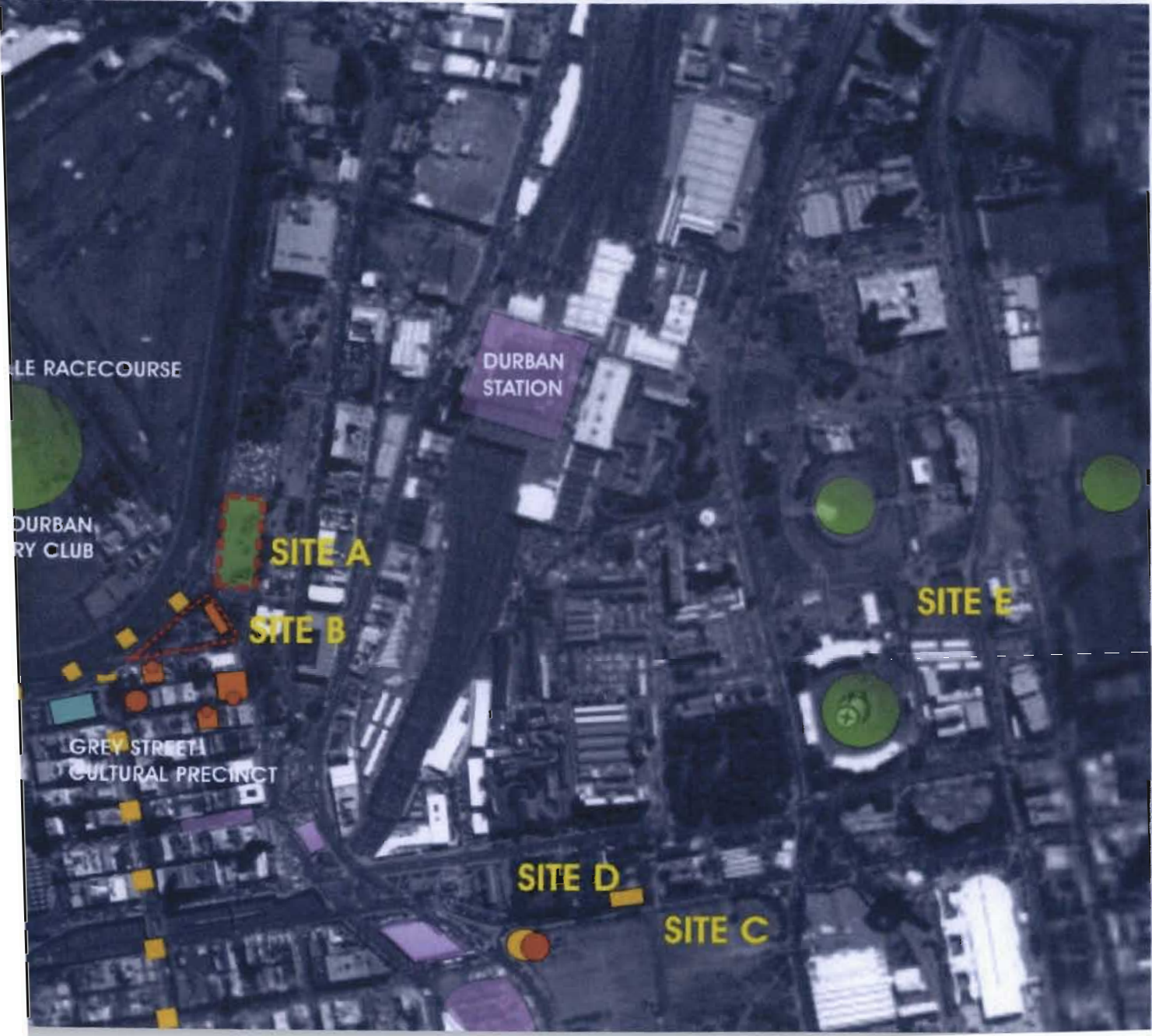
LE RACECOURSE

DURBAN
STATION

DURBAN
RY CLUB

SITE A

SITE B

SITE E

GREY STREET
CULTURAL PRECINCT

SITE D

SITE C

Indian Cultural
Places

Other Cultural
Places

Apparent Cultural
Routes

Public Transport
Nodes

Educational

5.2.1. SITE A

- <u>Access to Public Transport:</u>
  > Situated along major routes into the City. Accessible to all modes of road transport and is situated within walking distance of the Durban Railway Station.

- <u>Location within the City:</u>
  > The site is within the Durban City centre and would be accessible to all cultures.

- <u>Visual Prominence:</u>
  > The Site is located on the corner of two major routes into the City and enjoys unhindered visual prominence.

- <u>Proximity to other Cultural precincts:</u>
  > Close proximity to many cultural facilities including: The Durban Cultural and Documentation Centre which houses the KZN Department of Arts and Culture; The Aryan Hall / Swami Dayanand Building; The Tamil Vedic Society; The Saiva Sitanda Sangam/ 1860 Settlers Memorial Hall; The Kendra Hall. Other popular functions venues in the precinct include Orient Hall; D.L.I. Hall; M.L. Sultan Campus.

- <u>Historic Value:</u>
  > Block A.K. is rich in History of Indian settlement in Durban. A Centre for Indian Music hence Culture, would reestablish Durban Indian Identity at Block A.K.

- <u>Parking:</u>
  > The Site is large enough to accommodate sufficient parking on site. There is also plenty of parking off Mitchell Road.

- <u>Future expansion:</u>
-
  > The site area is sufficient for horizontal expansion. Vertical expansion is also possible as the buildings on adjacent sites are generally three to four storeys in height.

Negatives: Traffic on the roads would pose an acoustic challenge during peak hours.

5.2.2. SITE B:

- <u>Access to Public Transport:</u>
  > Situated along major routes into the City. Accessible to all modes of road transport including rail.

- <u>Location within the City:</u>
  > The site is within the Durban City centre and would be accessible to all cultures.

- <u>Visual Prominence:</u>
  > The Site is located on a major route into the City and enjoys visual prominence.

- <u>Proximity to other Cultural precincts:</u>
  > Close proximity to many cultural facilities including: The Durban Cultural and Documentation Centre which houses the KZN Department of Arts and Culture; The Aryan Hall / Swami Dayanand Building; The Tamil Vedic Society; The Saiva Sitanda Sangam/ 1860 Settlers Memorial Hall; The Kendra Hall. Other popular functions venues in the precinct include Orient Hall; D.L.I. Hall; M.L. Sultan Campus.

- Historic Value:

   Block A.K. is rich in History of Indian settlement in Durban. A Centre for Indian Music hence Culture, would reestablish Durban Indian Identity at Block A.K.

   The Site is large enough to accommodate sufficient parking on site.

- Parking:

   There is also plenty of parking off Mitchell Road.

- Future expansion

   The site area is sufficient for horizontal expansion. Vertical expansion is also possible as the buildings on adjacent sites are generally three to four storeys in height.

Negatives: Traffic on the roads would pose an acoustic challenge during peak hours.

   On site parking would be limited and there may be a need for multi-level basement parking on a site with a high water table.

   The shape and area of the site may not be adequate to optimally accommodate all the functions of the proposed centre.

   Future expansion would therefore also not be possible.

5.2.3. Site C

- Access to Public Transport:

   Situated along major routes into the City. Accessible to all modes of road transport.

- Location within the City:

   The site is within the Durban City centre and would be accessible to all cultures.

- Visual Prominence:

   The Site is located on the corner of two major routes into the City and enjoys unhindered visual prominence.

- Proximity to other Cultural precincts:

   Reasonably close to the Indian Consulate and Cultural Centre.

   Opposite the ICC.

   No significant Historic value to Indians in Durban.

- Parking:

   The Site is large enough to accommodate sufficient parking on site.

- Future expansion

   The site area is sufficient for horizontal expansion. Vertical expansion is also possible as the buildings on adjacent sites are generally three to four storeys in height.

Negatives: Traffic on the roads would pose an acoustic challenge during peak hours.

   The site is somewhat isolated from the other cultural facilities in the city.

   Unlike at Site A the history of the site does not reflect Indian Cultural heritage in Durban.

5.2.4. Site D

- Access to Public Transport:
  Situated along a busy route within the city. Accessible to all modes of road transport.
- Location within the City:
  The site is within the Durban City centre and would be accessible to all cultures.
- Visual Prominence:
  The Site is located on a major route into the City and enjoys visual prominence.
- Proximity to other Cultural precincts:
  Situated opposite Kwa–Muhle Museum and within walking distance
  To the Indian Cultural Centre located within the Old Station Building.

Negatives: Traffic on the roads would pose an acoustic challenge during peak hours.
On site parking would be limited and there may be a need for multi-level basement parking on a site with a high water table.
The area of the site may not be adequate to optimally accommodate all the functions of the proposed centre.
Future expansion would therefore also not be possible without severely Compromising the theoretical intentions of the design of the Centre.

5.2.5.   A comparison of Alternate sites against the site selection criteria

SITE	A	B	C	D
Accessibility to Public Transport	3	3	3	3
Centrally Located	4	4	4	4
Visual Prominence	4	3	4	3
Proximity to other Cultural precincts	4	4	2	2
Parking	3	2	3	2
Future Expansion	4	3	4	2
Historical Value	4	4	1	1
TOTALS	**26**	**23**	**21**	**17**

Legend:

4 = exellent
3 = Good
2 = Adequate
1 = Poor

Table2: A comparison of Alternate sites against the site selection criteria.

5.2.6. Conclusions and Recommendations:

The various sites relate to different and dynamic contexts and were therefore subject to evaluation against a predetermined set of criteria for selection.

Site A responds to all of the requirements outlined in Table 2:

Accessibility:

The site is situated at the junction of two major Streets into the City. It is accessible by all modes of road transport including rail as it is in reasonably close proximity to the Durban Station.

Central Location:

The Site is situated in the City centre and would therefore be accessible to all people – a fundamental requirement in the facilitation of cross-cultural awareness.

Visual Prominence:

The visual prominence of the site would afford the creation and establishment of a strong cultural landmark. Such landmark would compliment and reinforce the other cultural land marks thereby defining a rich cultural precinct.

Historic Value:

The site is situated at the South Western edge of Block A.K. Resident Indians were forcefully removed from their homes at Block A.K. by application of the Group Areas Act. Their homes were destroyed and nothing has become of the precinct ever since. A centre for Indian music would restore some Indian identity at Block A.K.

Parking & Future Expansion:

The site is large enough to accommodate the required number of parking bays without having to resort to deep basements – below the water table.

The large site also makes future expansion possible.

As the Site meets all of the requirements set out in the site selection criteria it is recommended that Site A be selected as the location of the proposed Centre for Indian Music in Durban.

1. Durban Cultural & Documentation Centre
Office of the KZN Dept. Of Arts & Culture, Popular Venue for small concerts and music workshops.

2. Kendra Temple and Functions Hall
Popular Venue for Indian weddings and music concerts both local and international.

3. Vedic Temple & Aryan Hall
Hall facilitates small concerts and music eisteddfods.

4. Natal Tamil Vedic Society
Hall facilitates small concerts and music eisteddfods.
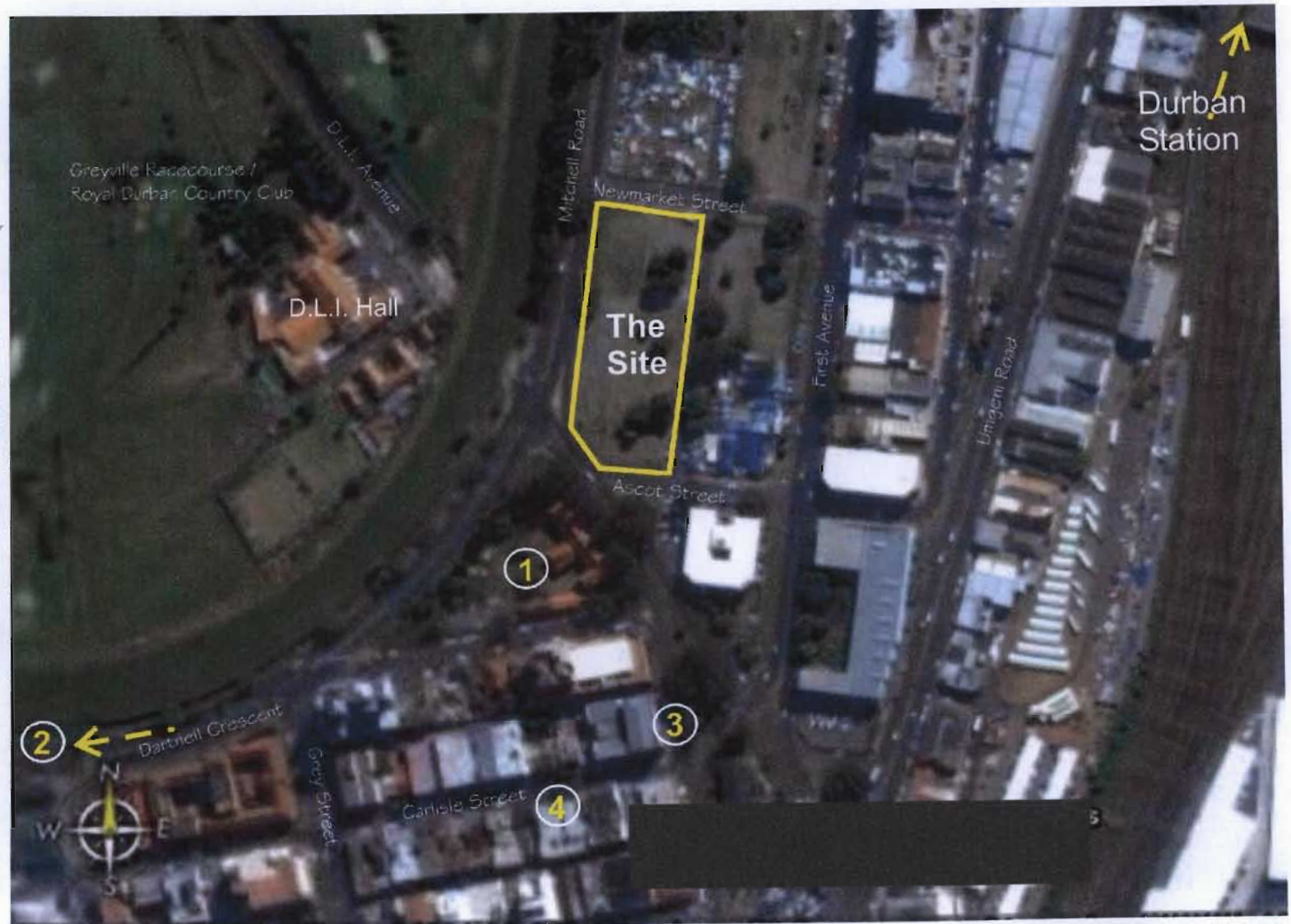
Fig.34: The Site and its proximity to other Cultural centres (Author).

GREYVILLE RACECOURSE

ROYAL DURBAN
COUNTRY CLUB

MITCHELL ROAD

FIRST AVENUE

GREY STREET

CARLISLE STREET

DURBAN
CULTURAL
& DOCUMENTATION
CENTRE

E View along Service Street
looking South

D View from Newmarket Street
end of Site looking South

J View along Mitchell Road
looking South

C View along Newmarket
Street looking West

South West corner of Site

A South of Site

F View along Newmarket
Street looking East

G View along First Avenue
looking South

South East corner of Site

H View along Service Street
looking North

South of Site

Fig.35: Visual linkages to the surrounding Context.
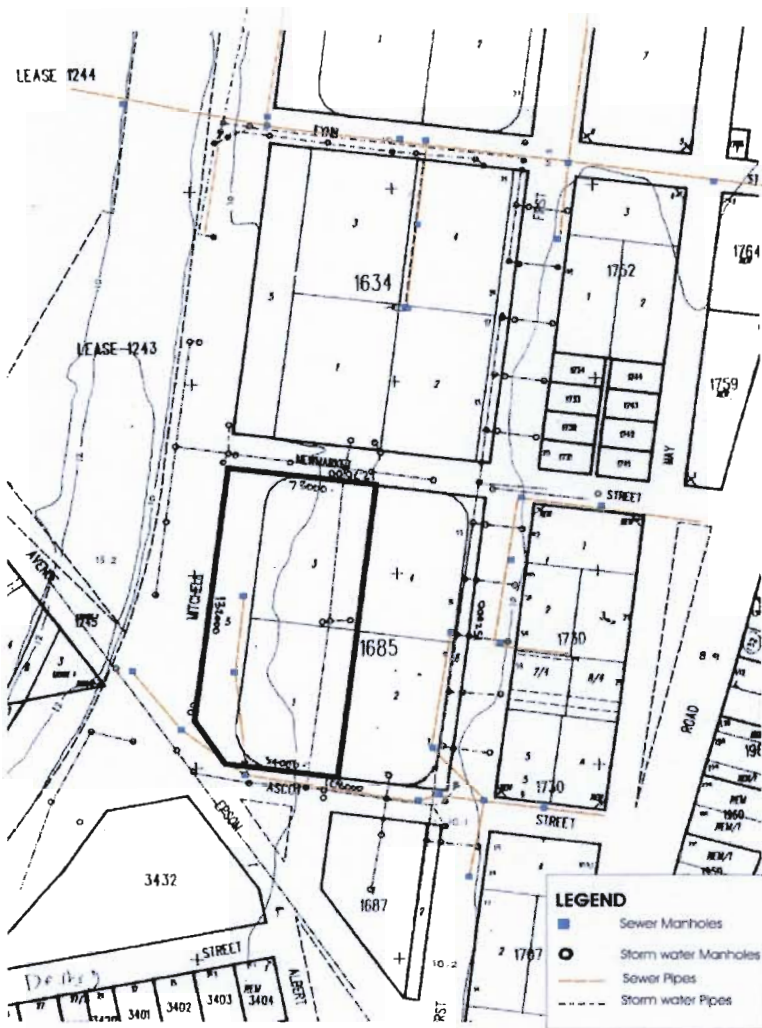
Fig.36: Cadastral Map showing services –
N.T.S.

Proposed: A Special Zone would have to be established as suggested by Arthur Gammage of the Ethekwini Municipality.
The proposed special zone would pi up on the Grey Street City grid and as well as the surrounding context.

Gammage also suggested that a bulk of 0,8 would be reasonable.

Building lines would be relaxed as m. be necessary.

A height not exceeding four storeys would fit in with the immediate context whilst also alleviating the need for elevators to residential / mixed use blocks that may be proposed.

Property Description: Portions 1 & # of ERF 1685, Durban

Street Address: 7 First Avenue.
*N.B.: The address pertains to the entire ERF 1685. The New Address for Portions 1 & # of ERF 1685 has to be established.

66

A brief Historic Overview of the Site and Precinct

The site is located at the South west corner of Block A.K. in Greyville.

Indentured Indian traders settled at Block A.K. from 1873. The indentured Indians were followed by passenger Indians from India and Mauritius. By the mid 1880's a substantial number of Indians were resident at Block A.K (Chetty, 1998: 54).

The Group Areas Act promulgated in 1950 devised mechanisms to displace people of colour from areas proclaimed fro White ownership, Block A.K. being one such area. On 4 October 1963 Block A.K. was proclaimed for White ownership. At that time there were approximately 5000 Indian families living there (Plate36). The area was subsequently earmarked for Urban Renewal and in 1968 was "frozen" for two decades. By 1980 the Indian population resident in the city diminished from 21,43% to 2,24% as a result of removals (Chetty, 1998: 55). Land and houses at Block A.K. were left to deteriorate. Houses stood there bare and vandalized. During the 1970,s the process of expropriation was almost complete and the only factor impeding development of the area was the proposed Umgeni-Umbilo Freeway. In 1983 the last few Indian families were forcefully removed from the precinct. The only relics of what was once are the fruit trees and the bare earth itself.

The East of the Site was zoned for Business purposes whilst the West boundary was zoned General Residential 2 (flats). A number of high quality business premises were developed in the business zone. Some of the more prominent business are Standard Bank; The Independent Newspapers (formerly Natal Newspapers, relocated from the CBD) and Doves Funeral Parlour. The sites zoned for residential development remained vacant as there was no demand from the White community for the type of housing proposed (GR2 – Flats) (Chetty, 1998:56).

The Durban municipality purchased Block AK from the State during its 1992/93 financial year.

At an EXCO meeting on20 February 2003 it was agreed to that 5.5 hectares be sold to the Commission on Restitution of Land Rights (also referred to as The Land Claims Commission) at a price based on the current zoning (GR2). In August 2003 the Ethekwini Municipality EXCO approved the sale of the 5.5 hectares of Block AK to the Land Claims Commission. The activity regarding Block AK seems to have halted at that point. According to an article in *The Mercury* Newspaper dated 12 November 2003 (Eprop) claimants have been frustrated by the municipality's lack of progress. The nature of the claims vary from the demand to return the land in its original state to Renumerating claimants for land that has been developed. Some claimants were keen on entering into joint ventures to develop mixed use buildings on the site (Eprop).

Despite many development initiatives the Site remains undeveloped and no recent initiatives from the municipality have been made public.

Plate 43 Block A.K. 1960 – 1970

The Historic relevance of the site at Block A.K. is, in the opinion of the author, conducive to the creation of a building that commemorates and celebrates Indian cultural heritage.

The symbolic role of the building as a cultural landmark would serve as an icon for Indian Identity that once defined Block A.K. such building would be appropriately located in the Southern end of Block AK – strong linkage to cultural and economic precincts. The author proposes mixed – use development for the remainder of the site. Although the zoning was originally GR2 (flats) the zoning can be changed in accordance with requirements (Chetty, 1998: 57)

Urban Analysis.

The proposed Site "A" is located within the city of Durban. The site is defined as a node created by the convergence of three major routes into the City namely: Mitchell Road; D.L.I. Avenue and First avenue. Such location offers prominence to the site and would be conducive to the development of a landmark building (Fig.37&38). The site is serviced by all modes of road transport as well as rail.

A centre for Indian music would enhance an already rich cultural and economic precinct (Fig.37. The Grey Street Precinct has an established Indian identity. Grey Street consists mainly of trade concerns. The precinct is rich in cultural activities, located on the streets that intersect Grey Street (Fig.37). The Durban Cultural and Documentation Centre (formerly known as The Indian Documentation Centre) houses the KZN Department of Arts and Culture. Such location affords synergy between the Documentation Centre and the proposed Centre for Indian Music.

The Eastern precincts consist largely of Business and Transport facilities characterized by high quality buildings. The stands that join the Site for the proposed building are all barren as a result of the Group Areas Act.

Therefore lies a great opportunity to bring identity back to the Block A.K. – an identity that would be reminiscent of the past history, in the form of the Centre for Indian Music, but also to create a new identity defined by the post-apartheid dynamics of the city. The design of the Centre for Indian Music would form part of a greater Urban intervention and Design proposal that would bring vitality back to a neglected precinct and which will serve all the people of the City. An urban design proposal will be discussed later in Chapter Seven.
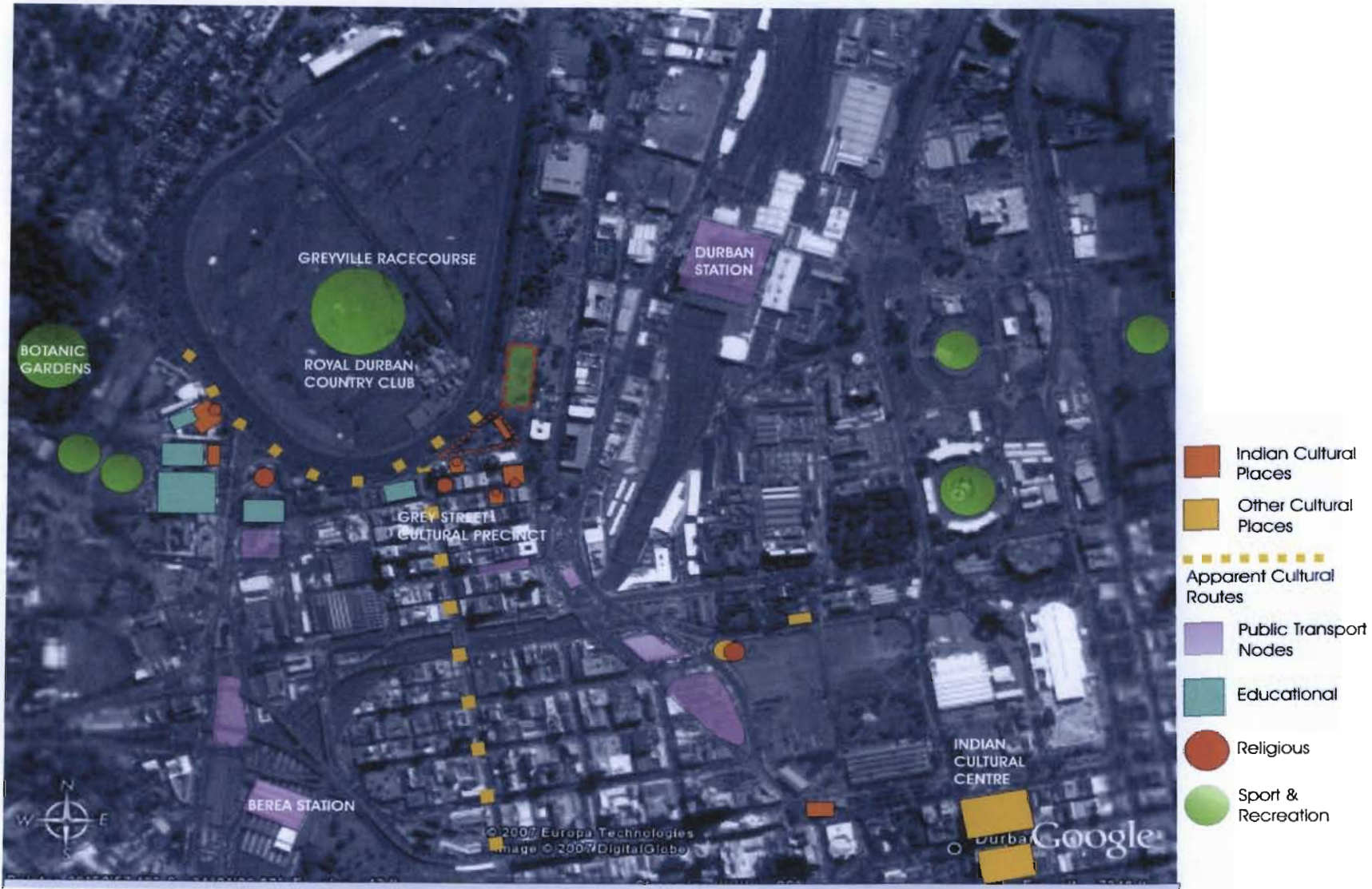
Fig.37: The Site within the broader Urban context

Legend:
- Indian Cultural Places
- Other Cultural Places
- Apparent Cultural Routes
- Public Transport Nodes
- Educational
- Religious
- Sport & Recreation

Map labels:
- GREYVILLE RACECOURSE
- DURBAN STATION
- BOTANIC GARDENS
- ROYAL DURBAN COUNTRY CLUB
- GREY STREET CULTURAL PRECINCT
- INDIAN CULTURAL CENTRE
- BEREA STATION
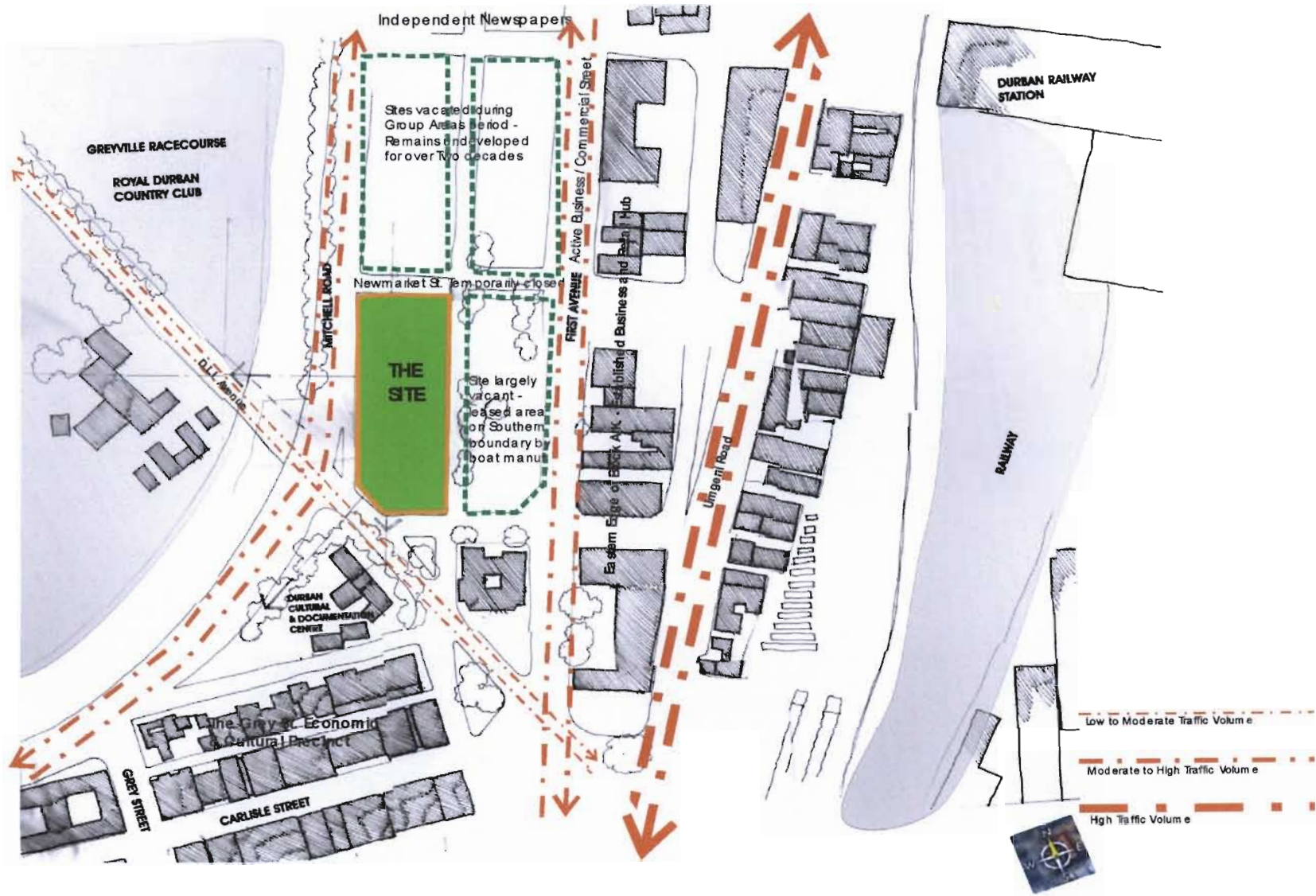
Fig.38: The existing Context and Vehicular movement systems (N.T.S.)

Independent Newspapers

GREYVILLE RACECOURSE

ROYAL DURBAN
COUNTRY CLUB

DURBAN RAILWAY
STATION

MITCHELL ROAD

D.I.T Avenue

Sites vacated during
Group Areas Period -
Remains undeveloped
for over Two decades

Newmarket St. Temporarily closed

THE
SITE

Site largely
vacant -
leased area
on Southern
boundary by
boat manuf

FIRST AVENUE - Active Business / Commercial Street

Eastern Edge of Block A/K - Established Business and Retail Hub

Umgeni Road

RAILWAY

DURBAN
CULTURAL
& DOCUMENTATION
CENTRE

The Grey St. Economic
& Cultural Precinct

GREY STREET

CARLISLE STREET

Low to Moderate Traffic Volume

Moderate to High Traffic Volume

High Traffic Volume

Chapter SIX: Development of the Brief.

The Centre for Indian Music in Durban aspires to be a central place where Musicians and music listeners can engage in the culture of Indian music in Durban.

Such place would cater, primarily, for the Performance; Production; Training; Resources; Congress and Administration of Indian music.

The centre would draw on the rich Durban cultural landscape whilst enhancing it. The building would therefore become a symbol of Indian identity in Durban.

Whilst aspiring to create identity in the built form it is not the intention of the design of such building to resort to literal, superficial symbolism or "facial ornamentation". A rather subtle, abstract approach would reveal the essence of Indian identity through architecture in the organisation of its spaces, its massing and its perceptual qualities. Reference to the chapter on precedent would inform the design of the building.

A fragmented building would diminish site boundaries in the form of public squares and open to sky internal streets which would become the main ordering elements in the functional organisation of the programme as well as to serve as a strong symbolic reference to traditional Indian spatial archetypes. The building would therefore easily define a hierarchical order of privacy from the most public to the most private zones. Internal street and squares would also serve as acoustic ordering elements.

The site situated at the South end of Block AK is rich in history and is in itself symbolic of Indian settlement in Durban and the injustices of the Group Areas Act. The centre for Indian music would re-establish Durban Indian identity at Block AK, albeit only a portion, and would be accessible to the greater Durban community.

6.1. The Client Organisation:

Ideally, a centre for Indian Music would be the joint responsibility of many stakeholders. Such responsibilities would either be in the form of Capital Funding; Management of the Centre or both.

The National Arts and Culture Council as well as the KZN Department of Arts, Culture and Tourism, as suggested by Mr Lenny Appalsamy in an interview, could be responsible for the funding of projects hosted by the proposed Centre for Indian Music in Durban. Mr Appalsamy indicated that the Department of Arts & Culture fund Art and culture projects and that Capital funding for buildings ought to be the responsibility of the Ethekwini Municipality.

Mrs Nella De Waal, in an interview, also mentioned that the Indian High Commissioner could be a possible Donor.

The National Lottery; Wealthy Businessmen; Enterprises and Commercial Financial Organisations would be other potential sources of funding for the Centre.

NGO's and Cultural Organisations may contribute to part of the funding and would be responsible for the ongoing management of the Centre.

The functional and accommodation requirements of the Centre for Indian Music has been determined from various sources including Interviews with stake-holders in the South African Indian music industry; analysis of precedent and case studies and the Author's personal

experience as a performing and recording artist.

In addition to the primary functions of the centre, as stated in the second paragraph, the building would also incorporate various ancillary facilities as listed below:

- Public Amenities:
  Restaurants/ Food Court;
  Conference / Functions Spaces;
  Specialist Music shops and other culture specific shops.
  Such spaces would be leased to tenants thereby providing valuable funding to the operations budget of the centre.

- Museum / Galleries:
  Museum and gallery spaces would comprise part permanent and part temporary exhibition spaces. The exhibition spaces would facilitate various theme exhibitions or a combination of themes such as:

  The History of South African Indian music;
  The History of Indian Instruments;
  The History of production and broadcast technology and
  Contemporary displays of music and art related works.

  Museum / Gallery spaces would happen along circulation streets and ramps enhancing the pluralistic and perceptual qualities of the spaces.

- Resources and Archives
  The need for safe – keeping of valuable cultural and historical material and artefacts has been identified due to the inadequacy of the present Documentation centre as revealed in the *Sunday Times extra, December 9, 2007.*

- Temporary exhibition
  Spaces:
  Temporary exhibitions other than those within the gallery / museum space would occur in courtyard and foyer spaces as well as the external gallery.
  Temporary exhibition space would also serve as space for cultural and economic engagement such as Music and cultural trade fairs; Indian art and craft work and outdoor theatrical performances.

- Visiting artists' accommodation
  Visiting artists residences would cater for both local and international artists. The arrangement of Communal areas would encourage dialogue between artists in residence. Catering to the residence would be provided by the Restaurant / Café thereby increasing the sustainability of those facilities. Sleeping spaces would be flexible ranging from single rooms to dormitories. Male and female residences may be separated depending on the requirements of the patrons. The residences would also be rented out on an ad-hoc basis to the general public. Night racing at the racecourse would be a draw-card for temporary residence at the Centre.

- On site parking:
  Parking for a 120 cars would be provided on site. Semi-Basement level parking level would free up the ground level for pedestrian public interaction

and positive overlaps of boundaries at ground level. A smaller parking lot would be provided on the North end of the site closer to the anticipated positions of the Residences and teaching spaces. Disabled parking would be provided at ground floor level.

- Bus and Taxi   Drop –off points:

Taxi and Bus bays would be accessed of a public square. The square would foster social interaction as well as space for trade.

- Services and Maintenance Facilities:

Service and maintenance rooms would largely be located at basement level in order to mitigate the effects of vibration and noise. Services spaces would generally comprise:

> Cleaners stores;
> Cleaners restrooms
> Ablutions
> Plant rooms
> Transformer room;
> Meter Room
> Refuse Yards
> Airconditioning plant room for
> Concert Hall and Recital Hall.

6.2.   USERS of the BUILDING:

• Performing Artists:	Local and International. Musicians, Dancers and Actors. Smaller performances would happen weekly and would be facilitated by the Centre management. Larger concerts would happen more infrequently depending on demand. The performance promoters for larger concerts would hire the relevant facilities.
• Teachers and : Students.	Requirement for music classroom; workshop and seminar spaces. Music classes would happen every day of the week as there is a demand for such space. Various music schools would hire the spaces from the Centre management offices.
Music Producers: And Recording Artists	Music recording and production spaces that would be hired from the Centre management offices.
• Music Administrators: Such as MUSIC(SA)	Meeting, communication, record keeping.
• The general Public:	Audience, shoppers, researchers, visitors.

6.3. Functional Zones:
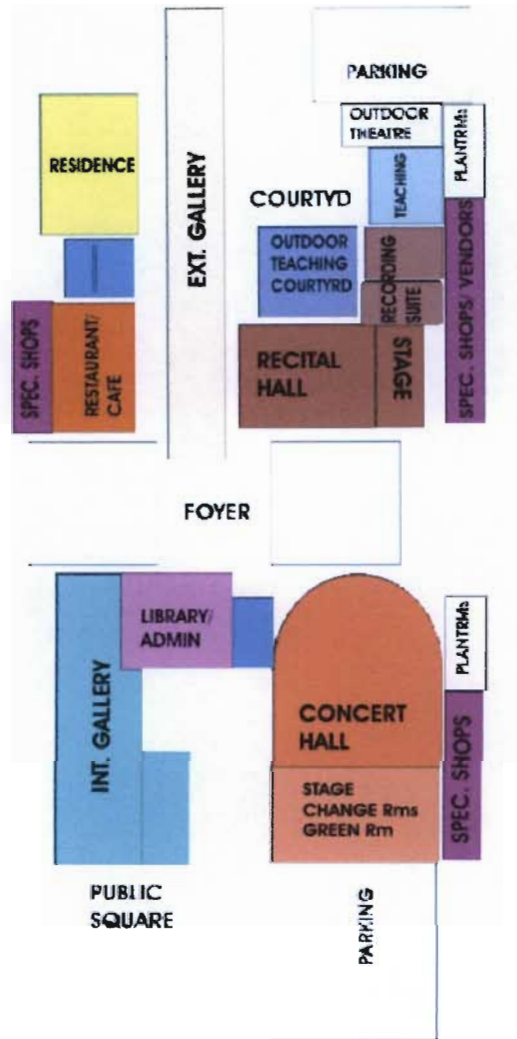
Fig.39: Accommodation Zoning
        Diagram

Fig.40: Privacy Gradient Diagram

ZONE 1:   PUBLIC STREET EDGE:
Presently the site edges are sterile, defined by fast moving traffic. The centre for music aspires to activate the Ascot Street edge by diminishing the apparent boundary between street and site. Positive overlaps between the street edge and the centre would reinforce the centre as an activity node.

ZONE 2:   PUBLIC INTERNAL STREET:
The Skylit Internal street functions as a flexible Museum /Gallery space. The internal street opens up to the multi-volume Main Foyer space and thereafter transforms into a bamboo pergola covered external Gallery that extends to the North boundary of the site.

ZONE 3:   RESOURCE CENTRE:
The resource centre would be used by music students, researchers and the public at large. The documentation of Indian music in South Africa has thus far been confined to individual artists and small organisations. Valuable archival information has been misplaced due to the lack of a documentation facility. The resource centre would compliment the *Cultural and Documentation Centre* across Ascot Street and would accommodate Music archives in the form of recorded music as well as writings and media articles, biographies etc. The Indian Music Centre aspires to build a library of literature on Indian Music theory and history. The resource centre would have to be able to expand as collection of material increases. Digital archiving has obvious space saving advantages. The Resource centre would facilitate reading as well as listening to recordings. As an extension to information gathering the library will be networked with Internet facilities.

ZONE 4:   PRODUCTION
The production component comprises two studios that share a common control room, lounge and restrooms. The first studio is specifically for recording. This studio accommodates a maximum of ten musicians, complete with individual voice and drums booths. The second studio functions as an experimental "black box" which has its own recording equipment.
On the other side of the back to back control room is the recital hall. The control room allows for live recording and broadcast of the renditions in the Recital Hall. Visual contact with the recital hall is achieved by means of a triple glazed acoustic panel to the control room. The recital hall accommodates a much larger group of musicians and is equipped for live broadcast whilst accommodating and audience of 200 people. All seats are movable. The hall may also serve as workshop/seminar, lecture and multimedia presentation space as well.
A Functions Room is located at the Mezzanine level of the Recital Hall.

ZONE 5:   PERFORMANCE:
The performance zone consists of a network of spaces some contained within buildings and others defined by buildings as courtyards. Such an arrangement allows for flexibility with regard to the style or genre of performance. Indian music differs significantly between its genres. Outdoor courts become symbolic of the village squares in India where most folk music and dance happens to this day.

Outdoor performance further affords crowd participation as people are unrestricted as they would be in an auditorium. The warm Durban climate is conducive to outdoor performances. Overhead retractable "chatri" would serve both as sun screen as well as protection from rain. The landscaped open-air theatre seating may serve an audience of 300, looking onto the main courtyard(stage) or this condition may be inverted where the seating becomes a stepped stage with the audience at the courtyard level —the courtyard would then become a dance arena. Furthermore outdoor performance enhances the vibrancy of the Centre.

The more intricate music such as classical and semi-classical will be within auditorium / hall spaces as the acoustic conditions would enhance the purity of such music. Classical and semi-classical music is "listening music" — minimal audience participation. Such halls would be accessible from the Foyer.

The Auditorium would accommodate larger audiences of up to 550. Each of these spaces would be constructed in order to be acoustically flexible allowing for a range of acoustic conditions — movable wall panels.

The Main Foyer would accommodate an enquiries office and ticket sales office which would serve the entire centre. The foyer would act as the main control for queuing and entry. Foyers would serve as temporary exhibition space for the respective performance programmes.

ZONE 6:   TEACHING and LEARNING
Teaching/learning space may also serve as rehearsal rooms for visiting artists. the space would be flexible in arrangement by means of acoustic screens that slide and stack to the sides so that individual smaller rooms may be created. The teaching / rehearsal facility opens up to the landscaped North courtyard with perimeter raked seating. The courtyard hence becomes an outdoor teaching and demonstration space. Traditional Indian academic theory draws inspiration from nature. The symbol for education in India is a Guru sitting under a tree. The courtyard hence becomes a symbolic space.

ZONE 7:   RETAIL AND FOOD SHOPS:

The external gallery would run along the edge of the North Courtyard.

At ground level Food vendor outlets would be located along the gallery.

A Restaurant and a Music Café would be located off the Main Foyer at the upper levels.

Retail Shops would form a permeable edge to Mitchell Road.

The new Street on the East boundary would be activated by small shops and vendors kiosks that would provide economic opportunities to the residents of the proposed adjacent mixed – use development.

ZONE 8:   VISITING ARTIST'S ACCOMMODATION

Residential Quarters would cater primarily for teachers and performing artists. Visiting troops would be accommodated and would offer development workshops to students, teachers and recording personnel. During congress the residential quarters would accommodate staff and senior students/facilitators. Furthermore, camping would happen in the landscaped North Courtyard. The Communal Lounges and Open Deck s of the Residential quarters are North facing. Bedrooms face West to the View of the Racecourse and the Morningside Hill beyond. and would be no more than two storeys in height so as to allow maximum winter sunshine in the courtyards and internal street. Male and female accommodation would be separate. Flexibility in sleeping spaces would be achieved by providing individual room accommodation as well as sub-divisible dormitory spaces.

Views to the Racecourse and Country Club are maximised. Residential Quarters would be rented out to earn income for the Centre.

ZONE 9:   ADMINISTRATION

The administration facilities would cater for organisations such as Music(SA) who would rent the space for their committee meetings and would pay levies for filing space and communication services. Full time staff would consist of a Secretary and a Centre Manager. The committee/ meeting rooms would be fully serviced with multimedia presentation facilities.

ZONE 10:   PARKING / LOADING / SERVICES

Parking for approximately 120 cars would be located largely in the basement. Ground level parking would be confined to the edges of the site to the East and North – out of sight from main public areas and streets. Such parking arrangement would allow for free and unhindered public squares and courtyards at ground level. Excess parking may be accommodated in bays marked along Mitchell Road.

Mechanical Plantrooms would be accommodated in the Basement- better noise insulation.

THE SCHEDULE of ACCOMMODATION

ZONE 1:   PUBLIC STREET EDGE

COMPONENT	REQUIREMENTS	AREA
Public Square / Piazza	Public / Street interface allowing easy and active Progression between street and the centre.	980sqm

ZONE 2:   GALLERY / INTERNAL STREET:

COMPONENT	REQUIREMENTS	AREA
Internal Street/ Gallery	Raised triple-volume space allows for hanging banners and artworks. Display Units for sculpture and Wall Space for Murals.	290sqm
External Gallery	Colonade of Concrete frames with plinths for Sculpture display.	590sqm
	_____ Sub TOTAL	_____ 880sqm

ZONE 3:   RESOURCE CENTRE:

COMPONENT	REQUIREMENTS	AREA
Music literature library	Shelves for books and journals. Tables for reading and discussion	102sqm
C.D., DVD and Cassette library including Reading and Listening Booths	Filing Racks of recorded music. Cubicles with work surface for reading and note-taking. CD/DVD player installed in each cubicle.	110sqm
Music archives	Recorded music, media articles and artist biographies – separate secure area as such material will not be loaned out.	40sqm
Issue Desk/ Office	Library management and loans	15sqm
	Sub TOTAL:	267sqm

ZONE 4:   PRODUCTION

COMPONENT	REQUIREMENTS	AREA
Recording Studio	Open plan with peripheral enclosed booths for drum and voice recording. Visual access to control room via triple glazed glass panel. Acoustically clad surfaces. Raised timber floor to accommodate sub-floor services.	40sqm
Control Room	Two back to back control Desks equipped with computer and multi-track recording facility. The control room houses all the necessary production equipment.	30sqm
Lounge / Restroom	A linear, Gallery space for access to both the first Studio and the black box as well as the Control Room. The lounge is serviced with vending machines.	60sqm
	Sub TOTAL	130sqm

ZONE 5:   PERFORMANCE:

COMPONENT	REQUIREMENTS	AREA
Main Concert Hall:	Accommodates an audience of up to 550 - acoustically flexible. Airconditioned	400sqm
Enquiries/ Ticket Sales	Central enquiries and ticket sales for all performance venues. May also serve as security office.	50sqm
Stage	Performance stage – Raised for sub-floor services and for visibility.	140sqm
	Lighting located at service catwalk in roof space	60sqm
	Change rooms, ablutions.	40sqm
	Green room	160sqm
Rehearsal Studio	Acoustically insulated. Well ventilated and naturally lit.	180sqm
V.I.P. Balconies	Private access. Catered space	30sqm
V.I.P. Lounge	Private Bar and Catering facilities. Views out.	90sqm
	Sub TOTAL	1150sqm

Multi –Volume Main Foyers	Pluralistic - Exhibition, Queuing, Social. Overflow space to restaurant and café. Planted Pergola for solar control.	3200sqm
Recital Hall:	Accommodates an audience of up to 200. acoustically flexible. Airconditioned.	225sqm
Stage	Electroncally and visually linked to Control Room	75sqm
Functions Room	Mezzanine Level flexible arrangement. Allow for catering	110sqm
North Courtyard Open-air theatre	Looking onto main courtyard activities which consist primarily of music and dance performances: 300-seater stepped pavillion.	720sqm
	Sub TOTAL	4330

ZONE 6:   TEACHING and LEARNING

COMPONENT	REQUIREMENTS	AREA
Teaching /Rehearsal Room	Flexible in arrangement. Acoustically treated. Portable platform for teacher. Indian music education happens whilst students sit on the floor. Spatial requirements are therefore derived from anthropometric data. On average a classroom should accommodate a maximum of 20 drum(tabla/mridangam) or wind instrument(flute/ harmonium) during a session. String instruments(sitar/guitar) take up more space and class number would not exceed 11 students.	180sqm
Teachers Office/ Tea Kitchen	Open plan general office with Tea Kitchen for Admin and rest.	20sqm
	Sub TOTAL	200sqm

ZONE 7: RETAIL AND FOOD SHOPS:

COMPONENT	REQUIREMENTS	AREA
Fast Food Kiosks	Basic food preparation. Work surfaces to be installed.	70sqm
Retail Shops	Specialist shops that sell recorded music and literature; Indian garments and accessories and instrument sales and repair shops. – Rental income.	270sqm
Restaurant	Fully serviced for catering. Seats 100 additional outdoor seating in Main Foyer	220sqm
Music Café'	Movable Stage / Platform. Fully serviced for catering. Seats 80 additional outdoor seating in Main Foyer	220sqm
Street Shops	Lettable Retail space – Permeable edge to Mitchell Road. Smaller shops and vendors kiosks to new East Street.	180sqm
	Sub TOTAL	960sqm

ZONE 8: VISITING ARTIST'S ACCOMMODATION

COMPONENT	REQUIREMENTS	AREA
Communal Kitchen	Fully equipped and serviced kitchen as the residential quarters will be on a self catering basis.	30sqm
Female Residence: Single Rooms	Single rooms would cater for sleeping a maximum of three guests.	35sqm
Dormitories	Cluster of sleeping spaces - flexibility of layout as well as number of beds. Maximum of 8 beds.	60sqm
Male Residence: Single Rooms	Single rooms would cater for sleeping a maximum of three guests.	35sqm
Dormitories	Cluster of sleeping spaces - flexibility of layout as well as number of beds. Maximum of 10 beds.	60sqm
Ablutions	Individual Showers, Paraplegic toilets, Toilets	80sqm
Outdoor space	Deck with Pergola over – outdoor meeting and dining	120sqm
	Sub TOTAL	420sqm

ZONE 9:   ADMINISTRATION

COMPONENT	REQUIREMENTS	AREA
Committee / Meeting Room	Sub-divisible to accommodate two smaller meetings at one time.	45sqm
Library / Workroom	Indian music journals and most highly acclaimed literature. Work surface for discussion, preparation etc.	60sqm
Reception and Secretary's Office	Permanent full-time secretary — all correspondence, filing, bookings etc.	25sqm
Manager's Office	Large enough for small meetings	20sqm
Waiting Room		35sqm
Kitchenette	Sink and Cupboard. Light meal and beverage preparation	4sqm
	Sub TOTAL	189sqm

ZONE 10: PARKING / LOADING / SERVICES

COMPONENT	REQUIREMENTS	AREA
Semi Basement Parking	100 bays. Ramps for vehicular and pedestrian access. Pedestrian ramps, Elevator and stairs lead to the main public foyers at ground level.	2500sqm
North Open Parking	30 Bays	720sqm
Off Street Parking	Along Mitchell Road – 10 bays	800sqm
Loading /bays	Along Mitchell Rd	140sqm
Bus / Taxi Drop-off	Sheltered seating built into boundary wall on North West corner of Site.	180sqm
Mechanical Plant rooms / Store Rooms	Located at Basement level- noise insulation Large open sub-divisible space to suit the particular requirements of each function.	840sqm
Transformer / Meter Roo	Located along new East Street.	40sqm
	Sub TOTAL	5220sqm

Total Area   18286sqm

Total Area of Buildings   Less Open

Including Basement   Spaces/   -11000sqm

Parking and Service   Circulation

Rooms   7286 sqm

This chapter focuses on the application of the research undertaken in this document towards the design of the Centre for Indian Music in Durban.

Any cultural centre set within a multicultural City such as Durban faces the challenges of integrating and responding to the multi-facetted dynamics of its context whilst symbolically representing culture and tradition.

Theoretical aspects of music into architecture as well as the essence of Indian architecture and archetypes requires reinterpretation to suit the context of the site in the city of Durban.

The selected site, although physically isolated in a "vacated" micro-context, has strong linkages with the dynamic mixed use cultural and economic hub of the Grey Street precinct. Visual links to leisure and recreation facilities such as the Greyville racecourse / Royal Durban country club and the hill to the West would determine to some extent the spatial zoning of leisure spaces within the proposed centre for music.

The subtropical climatic and environmental particularities of Durban need also be considered towards an energy efficient design resolution.

The impact of globalisation and the rapid development of building technology poses additional challenges whilst affording numerous opportunities at the same time. The tenets of critical regionalism hence become indispensable.

The theoretical and conceptual derivation; application of concept; evolution of the design and ultimately realisation of the design would be set out. The author's proposed urban design framework would also be discussed here.

7.1.   Urban Design Intentions
   • Reinforcement of the positive aspects of the City by picking up on the dynamic socio-economic City grid in the Grey Street / Carlisle Street Precinct.

   • Reinterpret such dynamics to respond to the Block A.K. context.

   • The integration and positive contribution to the greater cultural; social and economic dynamics of the City.

   • Foster connections between the economic and social divides within the City.

   • The creation of a people / pedestrian orientated environment of high quality pluralistic that offers opportunities to the aspirations and expressions of its inhabitants.

   • An environmentally; socially and economically sustainable environment of high quality and value.

7.2. Urban Design Realisation

Figs. 41&42 illustrate the proposed urban development of the site and the adjacent sites. The existing streets bounding the site would be engaged with by the Proposed Centre for Music.

The adjacent vacant sites would be developed – Mixed –use.

This creates opportunities along the narrow street defining the Eastern boundary of the site.

The linkages to the Southern Grey St. precinct and the proposed mixed use development to the East would take the form of both physical linkage as well as visual linkage.

The linkage to the West is only visual.

The Proposed music centre would create an extension of the dynamic cultural ethos of the Southern Grey St. precinct.
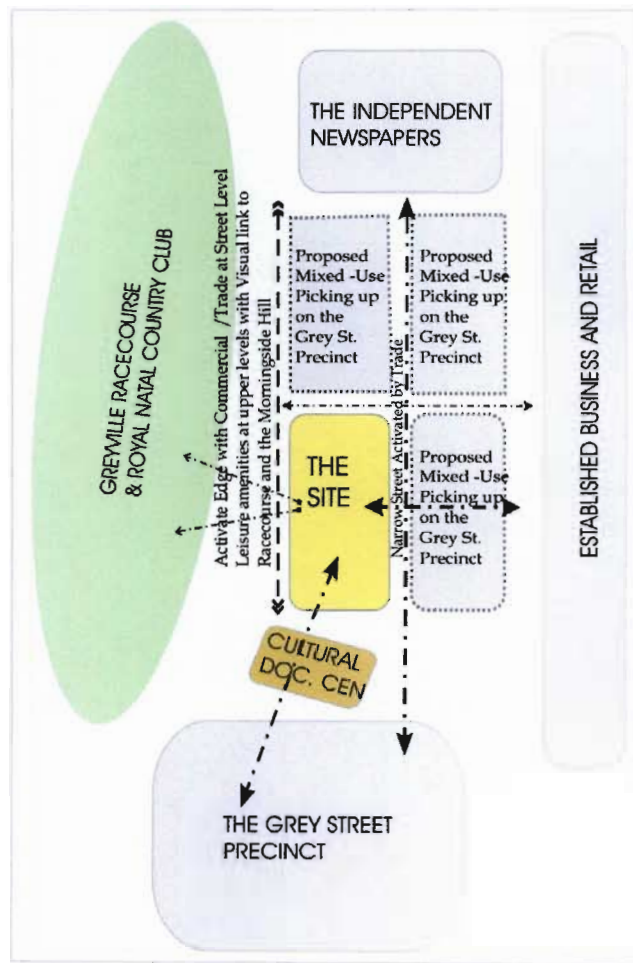
Fig.41 Urban Design Ideas

GREYVILLE RACECOURSE

ROYAL DURBAN
COUNTRY CLUB

DURBAN RAILWAY
STATION

PROPOSED
MIXED USE
DEV.

PROPOSED
MIXED USE
DEV.

D.L.I. AVENUE

MITCHELL ROAD

FIRST AVENUE

D.L.I. HALL

THE
SITE

PROPOSED
MIXED USE
DEV.

RAISED PAVED SURFACE
AS TRAFFIC CALMING
DEVICE - SERVES AS
EXTENDED PUBLIC
SQUARE

ASCOT STREET

EXISTING BUSINESS AND COMMERCE

UMGENI ROAD - MAJOR MULTI-MODAL TRANSPORT ROUTE INTO THE CITY

RAILWAY

DURBAN
CULTURAL
& DOCUMENTATION
CENTRE

EXISTING PARKING AT DOC.
CENTRE TO SERVE THE
PROPOSED CENTRE FOR I
NDIAN MUSIC + 60 CARS

GREY STREET

EXISTING GREY ST. PRECINCT
MIXED-USE

CARLISLE STREET

Existing & Potential
Activity Routes

Linkages to Adjacent
Activity Precincts:
   - Cultural
   - Leisure / Recr

SERVICE LANE

Fig.42: Urban Design Proposal

7.3.   Design Objectives

- **A fusion of the Pragmatic with the Symbolic.**

The primary objective of the design is to create a place for Indian music in Durban that provides high quality accommodation for the various functional spaces of the building programme whilst symbolically representing the culture of Indians in Durban.

- **Serving the broader Durban community and fostering cultural and social interaction.**

The proposed design, whilst being symbolic of Indian culture, would respond contextually to serve the broader Durban community with a view to bridging the differences of the past. The spaces and forms of the building should be appropriately activated; scaled and orientated to foster interaction between people of different cultures within the city.

- **Contextually responsive design.**

The design would respond to the contextual particularities of its site in context. Social; cultural; economic and environmental considerations are factors that would inform the design of the building thereby enhancing its value to the context of Durban.

- **Revitalising a desolate micro-context.**

The proposed centre for Indian music should revitalise its presently desolate micro-context by picking up the dynamic Grey Street city grid which itself is defined by a strong Indian identity. The rich mix of formal with informal trade; culture and residential accommodation is however integrated into the broader social and cultural fabric of the city affording opportunities to all the people of Durban.

- **Implementing appropriate local building technology and enhancing the tactile experience of the building.**

The integrity of technology and materials would enhance the multi-sensory perceptual and tactile experience of the building.

7.4. Conceptual Approach

Tagore refers to Indian music as the *"night world"* and that the *"men of India"* live in the realm of night. He further refers to Indian music as one that "takes us to the lonely region of renunciation".

Mansukhani refers to Indian music as *"a wire-thin thread"*. He further refers to Indian musicians meticulously stretching out sound to *"refine it to the point of extreme delicacy ...No standardised materials...rather a simple variegated silk thread which unwinds and rises and falls imperceptibly, but which in every tiniest portion evokes a world of feelings and sensations"*.

Fisher refers to the architecture of generative drawing as a technique of graphically representing music on paper. The author has reinterpreted the technique to produce a generative drawing of a classical Indian piece that the author listened to in the dark (Fig.43)

The intention of the generative drawing is to graphically illustrate the structure as well as the mood of the music. The black background represents darkness but also makes reference to Tagore's interpretation of Indian music as music of the night. Each of the other colours represents certain emotive responses at particular moments in the music piece:

- Pink/Purple   = Anticipation
- Orange/ Red   = Movement
- Blue   = Inspiration
- Yellow   = Release / Heightened activity

N.B. the white lines merely divide the music piece into sections, of an otherwise linear progression, as the entire length would not be able to fit the page. The white lines in no way suggest a vertical ordering system of the music piece.
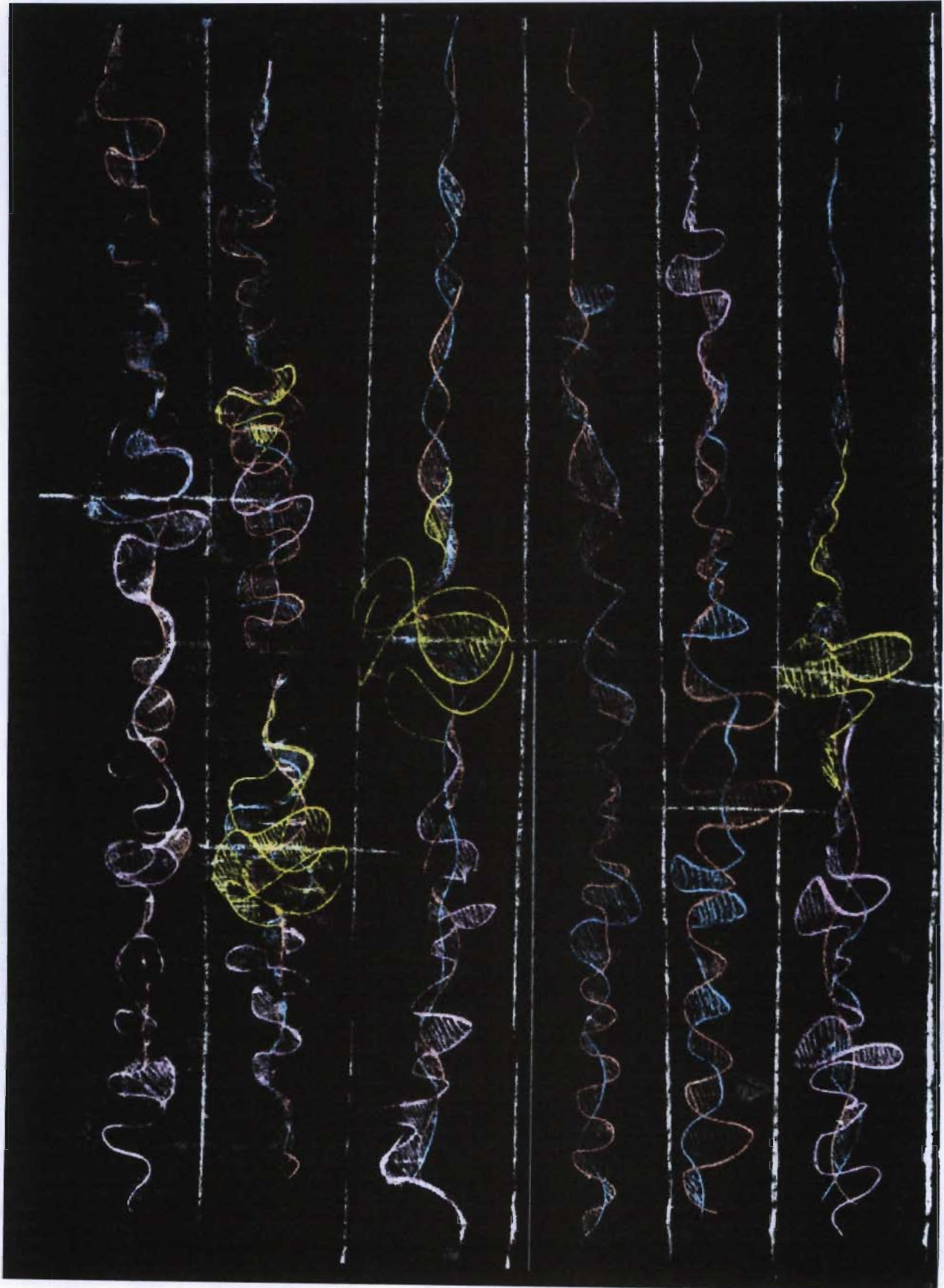
Fig.43: Generative Drawing of classical Indian music piece

The generative drawing would then be unbundled for further interpretation.

A part of the generative drawing was then extracted for analysis.

The author analysed the drawing in order to find unique relationships between music as movement in time and architecture as movement in space (Fig.44). Arora's reference to PROMIA Representative (Author, 2008:) would apply to such as transformation as the inner experience and emotions evoked by music is transformed into outer experience as visual form. The unique moments in music as movement through time are reinterpreted architecturally as movement through space (Fig.44).

The author thereafter represents the two dimensional graphic of music as a three dimensional wire model for spatial interpretation (Fig.45). Note that the use of wire as a material again makes reference to Mansukhani's reference to Indian music as "a wire-thin thread". The wire model further depicts the cyclical and dynamic nature of Indian music. Zones of open spaces between the wire are open to many narratives and fosters spontaneous improvisation of space akin to improvisation in Indian music. The wire model illustrates a layering of rhythmic patterns and varying timing "bars" as well as the homogeneity of rhythm and timing in Indian music.

The formal representation of music as graphics and model are then used in the interpretation of the essential elements of Indian architecture as identified in the theoretical discourse.

An exploration into the layering of rhythm and timing in defining the structural characteristics of music into architecture is illustrated in Fig.45.

The layering of rhythm and timing in music is transformed on computer from two dimensional drawings into three dimensional structure from which a building eventually emanates.

Fig. 44: Transformation of Music into Architecture – The Time – Space relationship (Author)
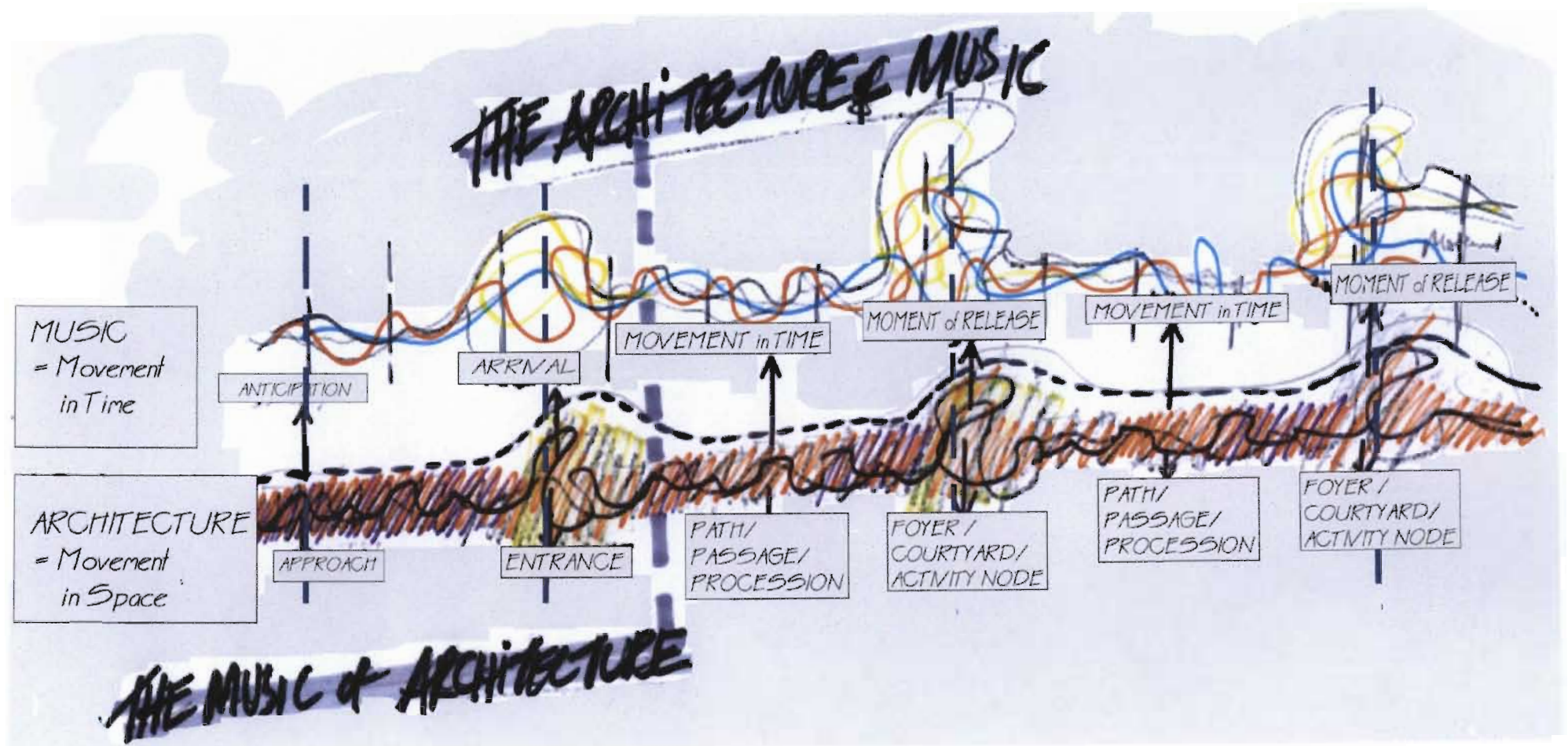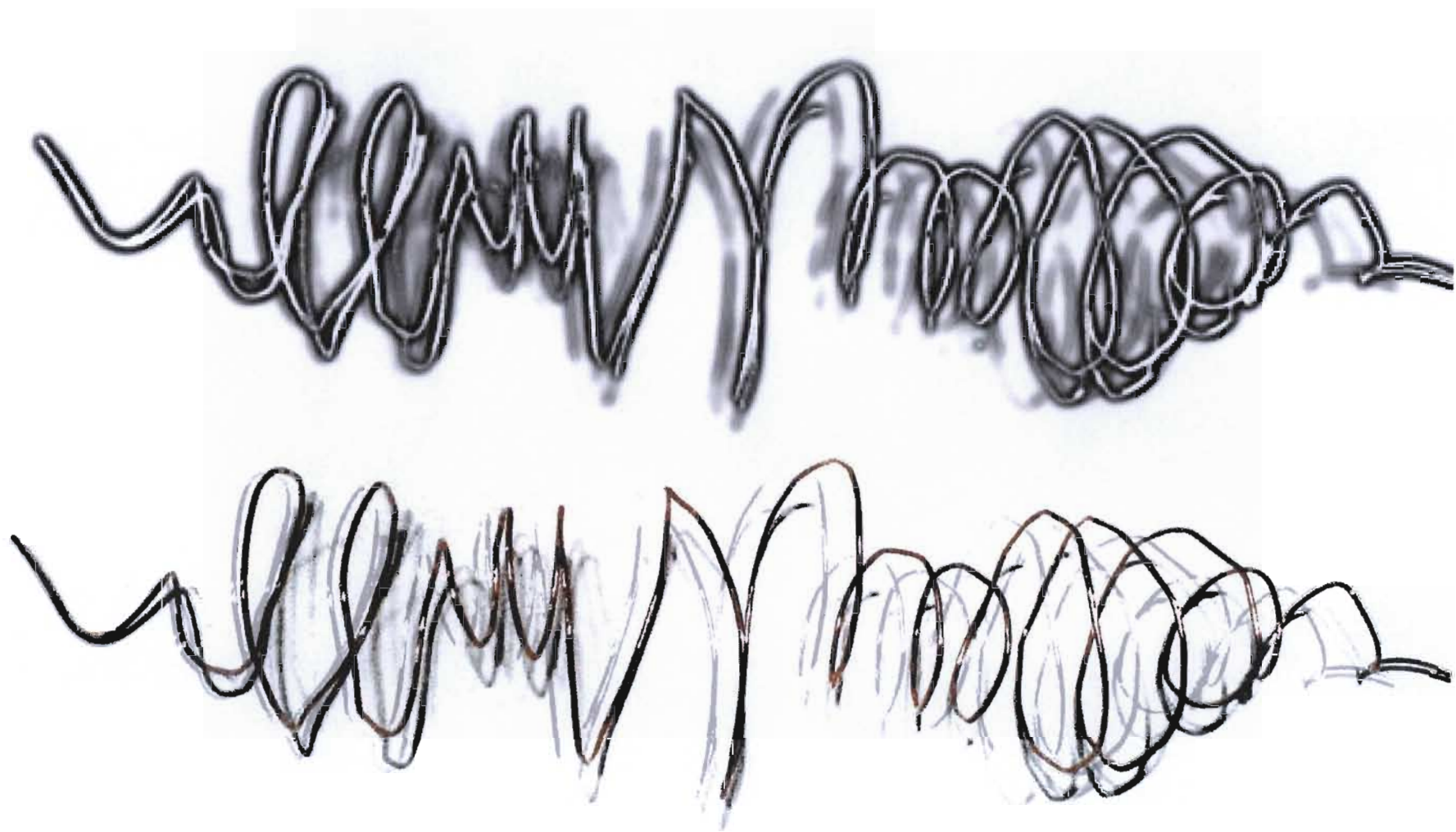
Fig.45: Wire Model – Three dimensional study of Music into Architecture

Connection, axes & perspective

The internal street & Shifting axis (Author)
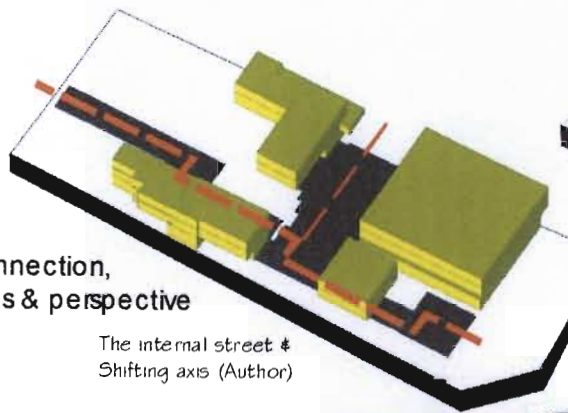
Fragments

Disaggregation of Form / Fragmentation (Author)
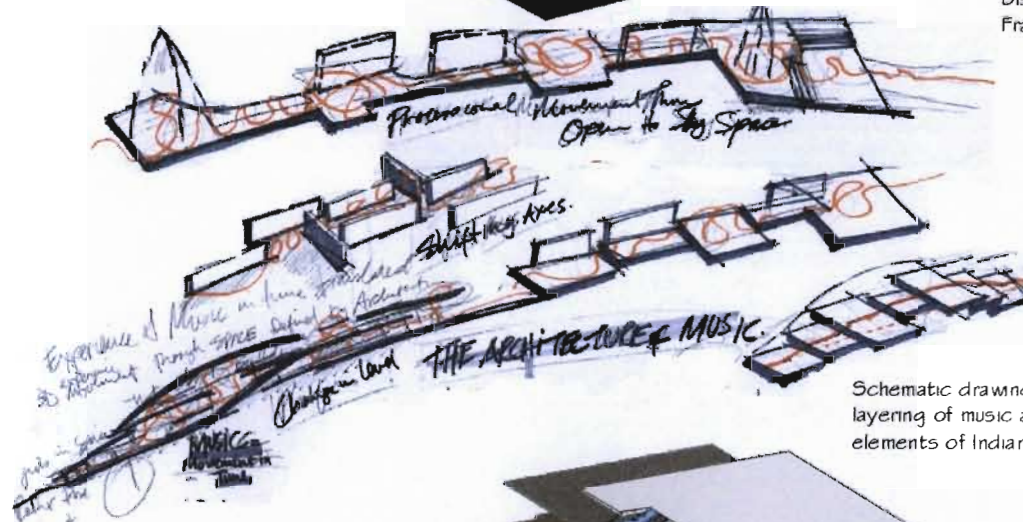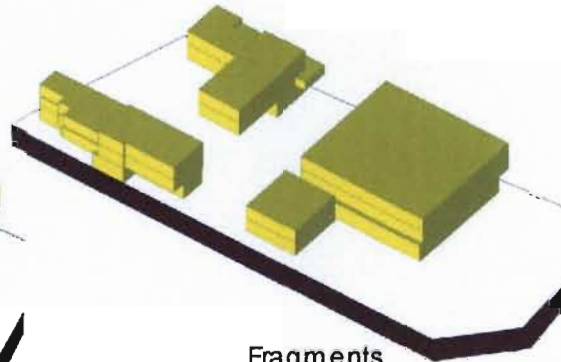
Schematic drawings showing layering of music and the essential elements of Indian architecture (Author)

Earth to sky connection Changes in Level (Author)

Indian mosaic

Courtyards as connectors of Fragmented functional spaces. The Yantra as generator of courtyard forms.

Fig.46: The essential elements of Indian architecture (Author).

Music or architecture?

The music of architecture
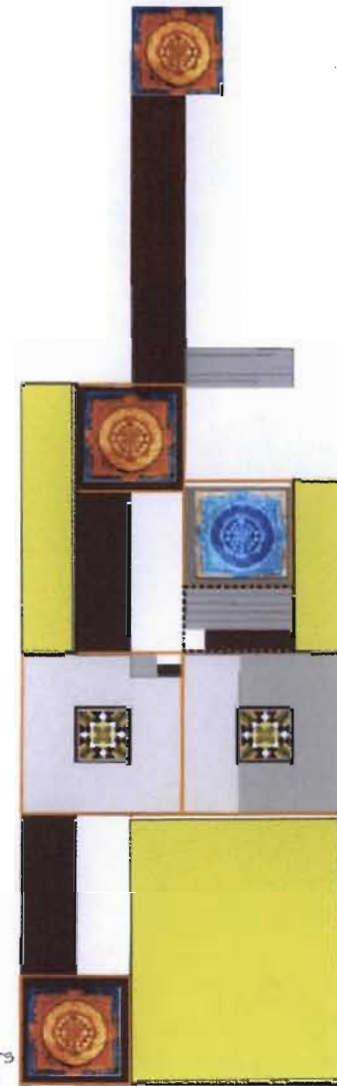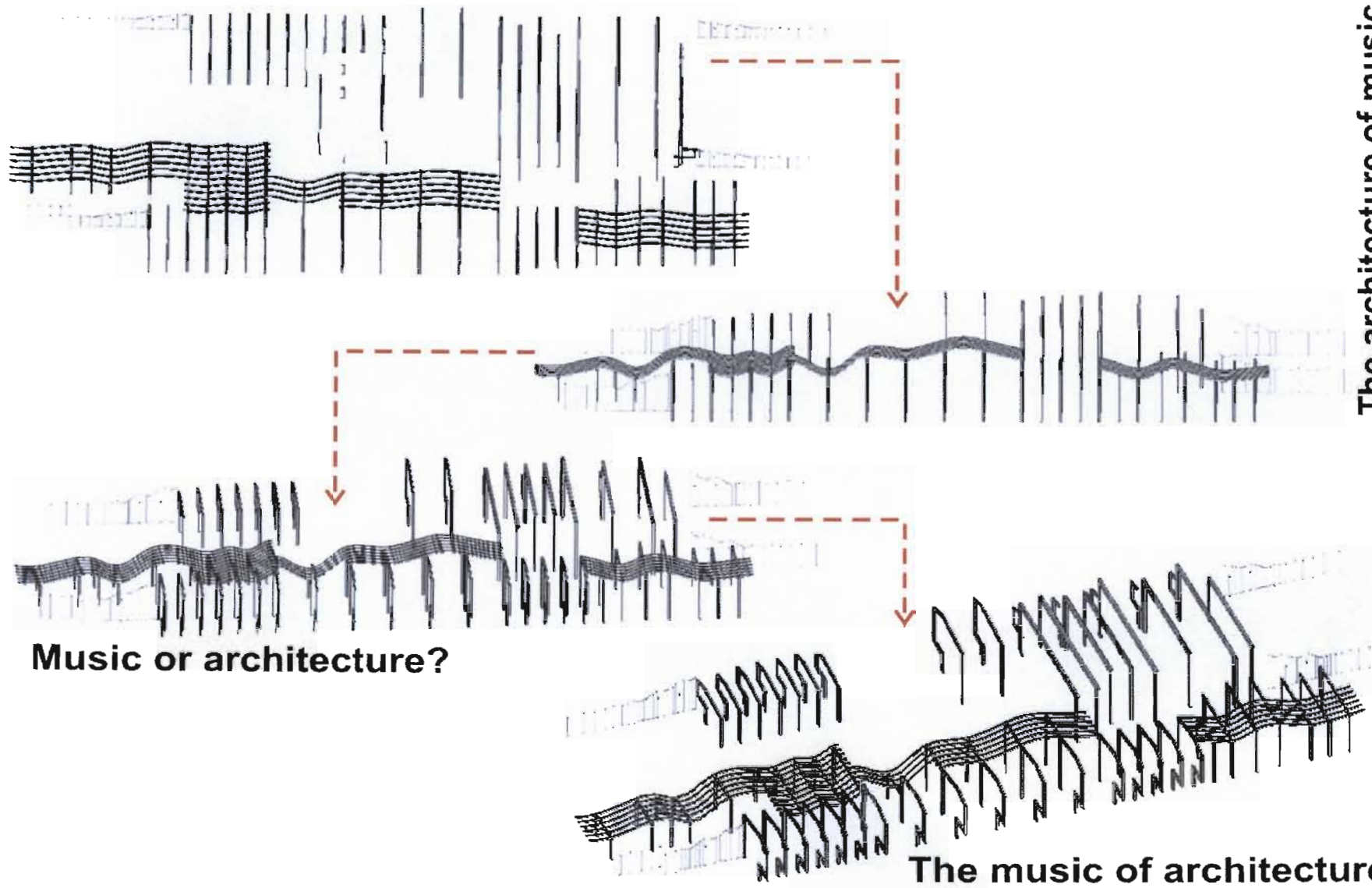
Fig.47: Computer generated drawings illustrating the layering of rhythm and timing and transformation of music into architecture (Author).

7.5. DESIGN DEVELOPMENT

CONCEPT I
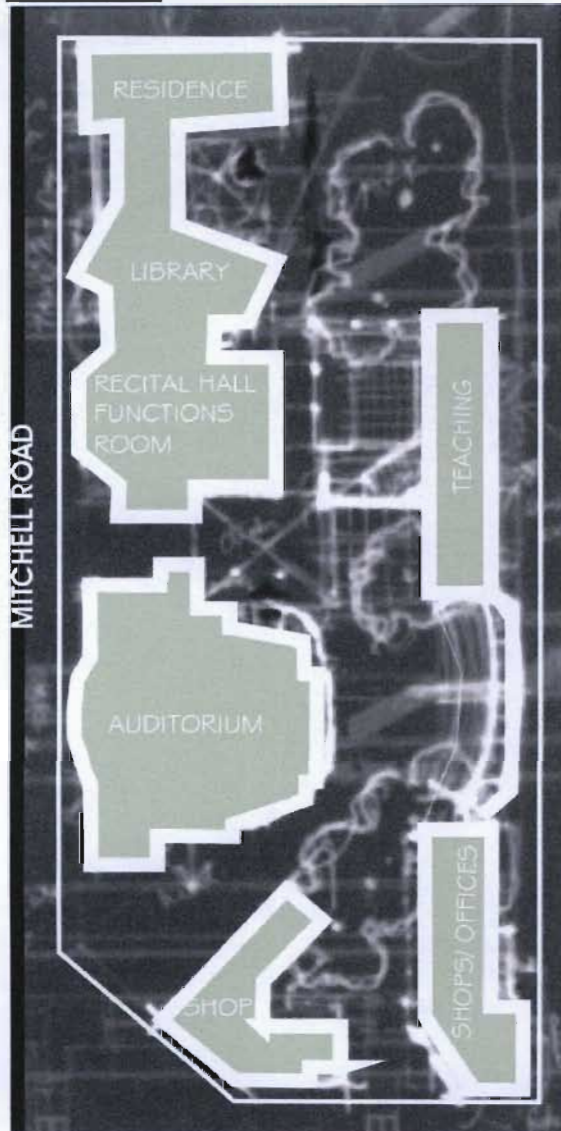
Fig. 48: Layout Drawing – Concept I

CONCEPT 1:
Disaggregation of Form
Permeable edges - easy access
Some of the trees retained
   - the only relics of the past.

Negatives:
Excessive Fragmentation poses
Security Problem and Uneconomical.
Internal Street and Courtyards lack
definition.

Plate.44 – Concept I Model
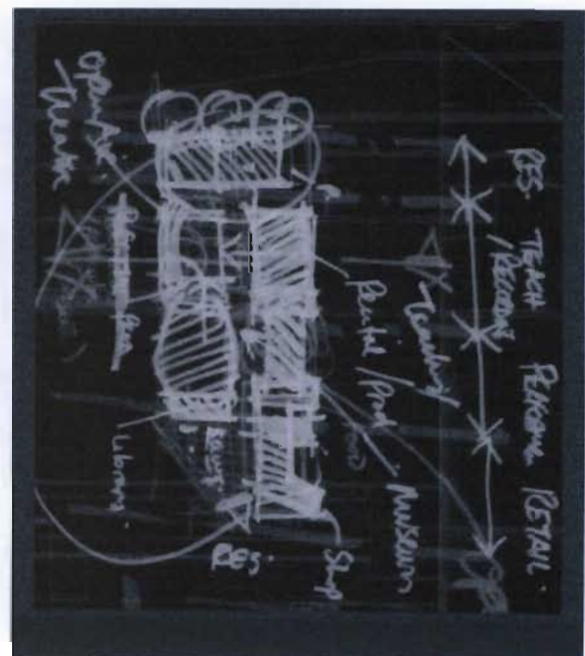
Fig. 49: Concept I – Design Development

Compact Built form - More economical
solution.
Fewer access points - better security.
Internal Street more Defined.
Overall more Legible.
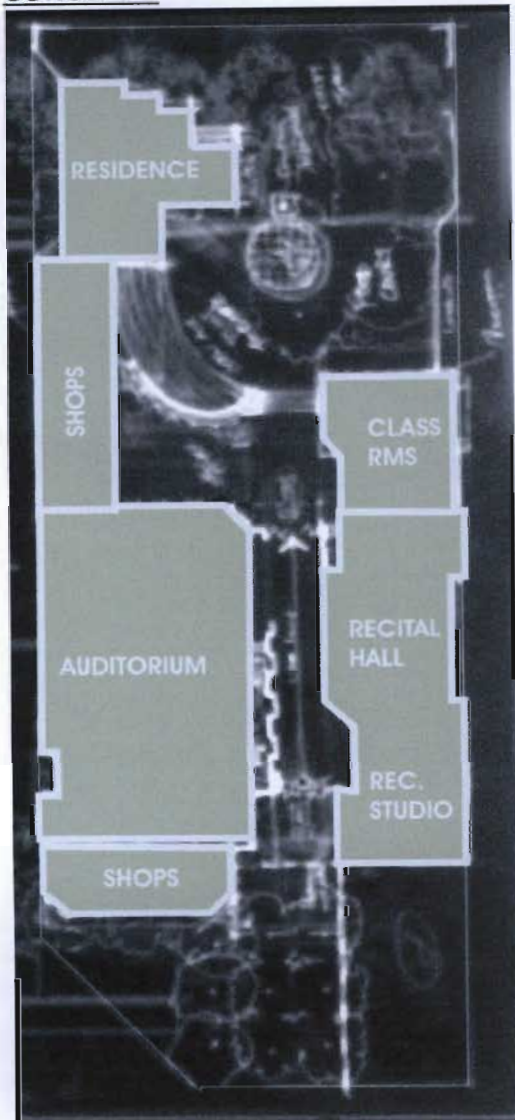
Fig.50: Concept 2 - Layout
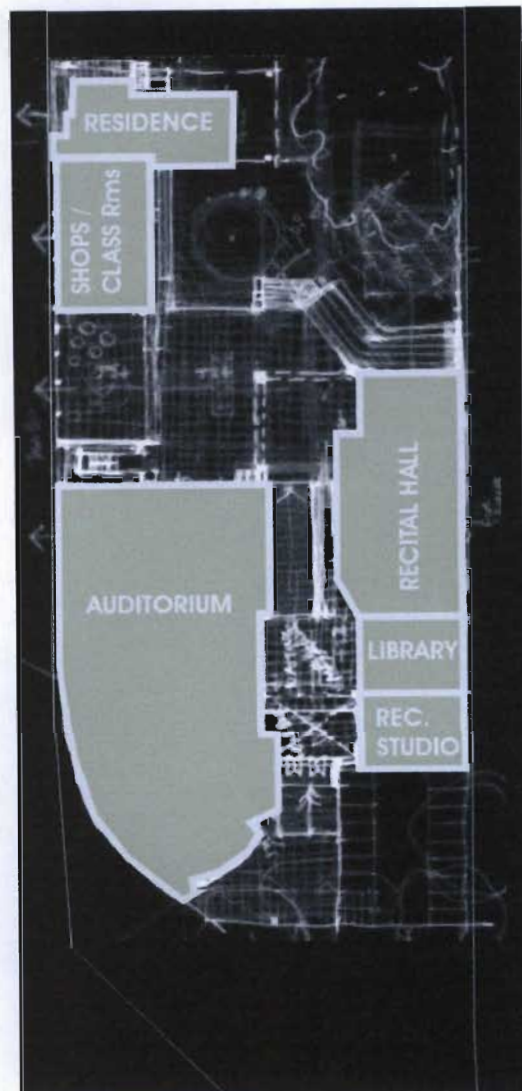
Fig.51: Concept 2 - Development

Plate45: Concept 2 - Model

Concept 2.

Design Intentions: Fig.43 indicates a more legible, compact built form.

Internal street is more defined.

Good North light penetration into int. street and main courtyard.

Critisism: Western edge to Mitchell Rd – too hard. Courtyards lack definition.

Concept 2 – Development – (Fig.44).

Design Intentions: Visual engagement with Mitchell Rd and Racecourse beyond. Restaurants and residences orientated to take advantage of the view to racecourse.

Criticism: Courtyards need more definition.

Plaza to the South - too small relative to the scale of the building.

Internal Street – too narrow.

CONCEPT 3

101

Concept 3 - Ground Floor Plan
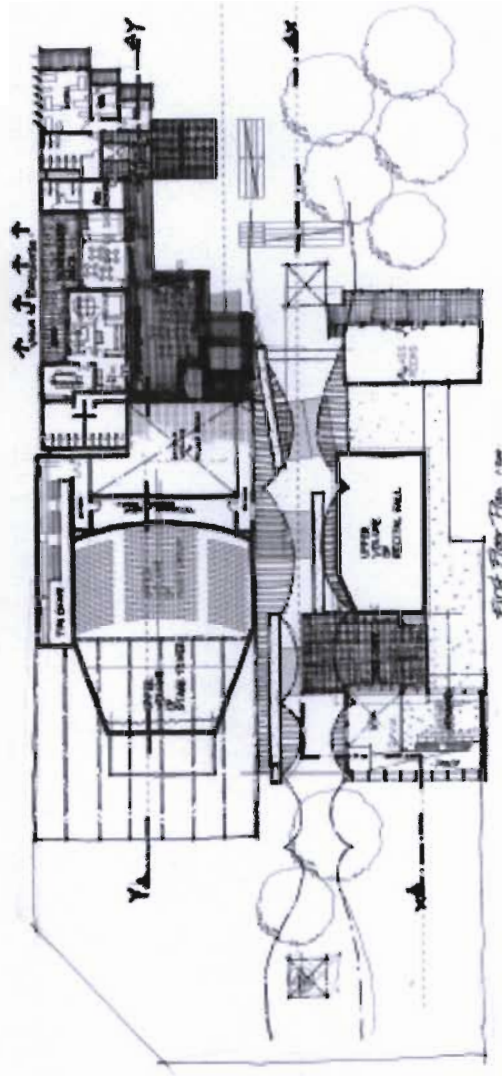
Concept 3 - First Floor Plan

Internal Gallery / Street extended to outside to North Boundary of the Site.
Restaurant, Main Foyer and other Public Amenities happen on First Floor which is raised to capture the views to the West.
Courtyards more legible

Negatives:
Internal Gallery / Street cut off by Parking against North Boundary.
Edges of Courtyards / Foyers need activation.
Dark Ground Floor Foyer.
Mass of Auditorium on Prominent South West node obstructs views into the Centre by passers-by.
Narrow street to the East not effectively activated.
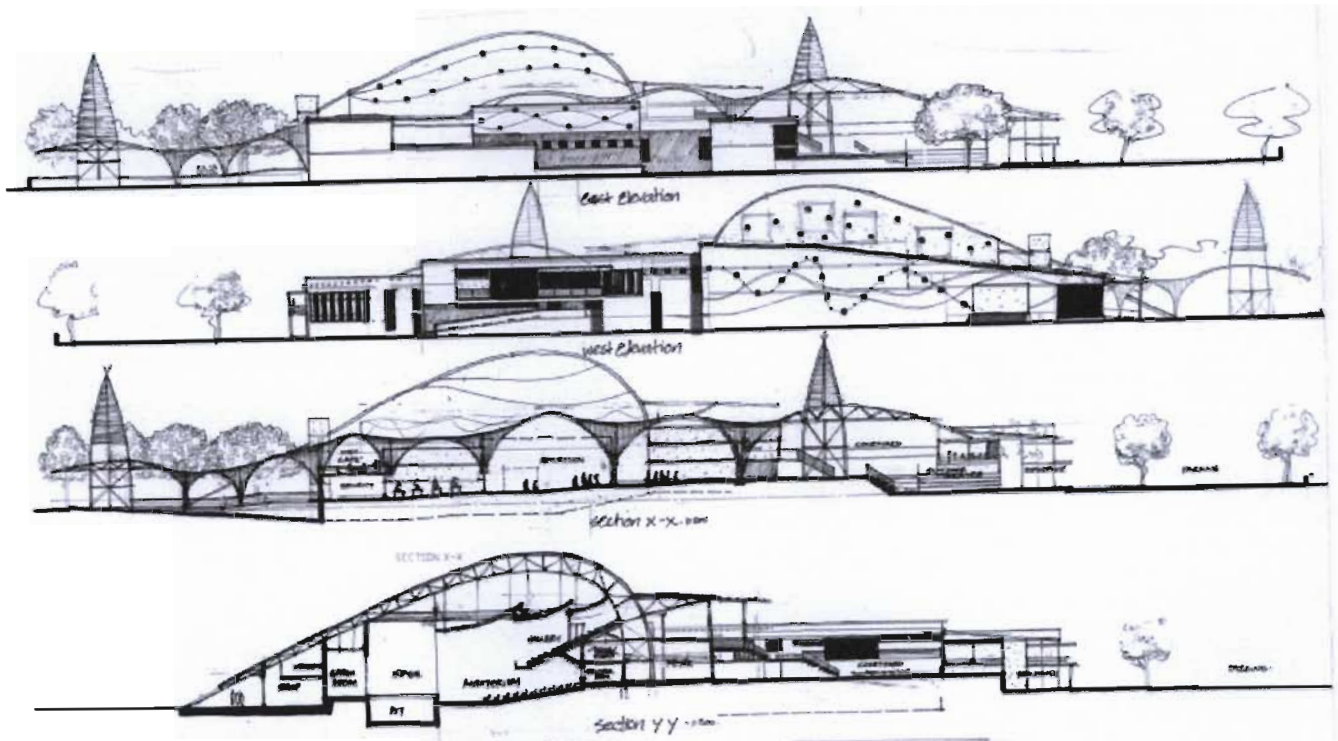
Fig.54: Concept 3 - Three dimensional Resolution
Internal Street / Gallery Metaphoric - Melody and Rhythm of Music in Architecture.
The Structural Form of the Auditorium, Although Stable, draws attention away from the Street and
Dominates the Composition.
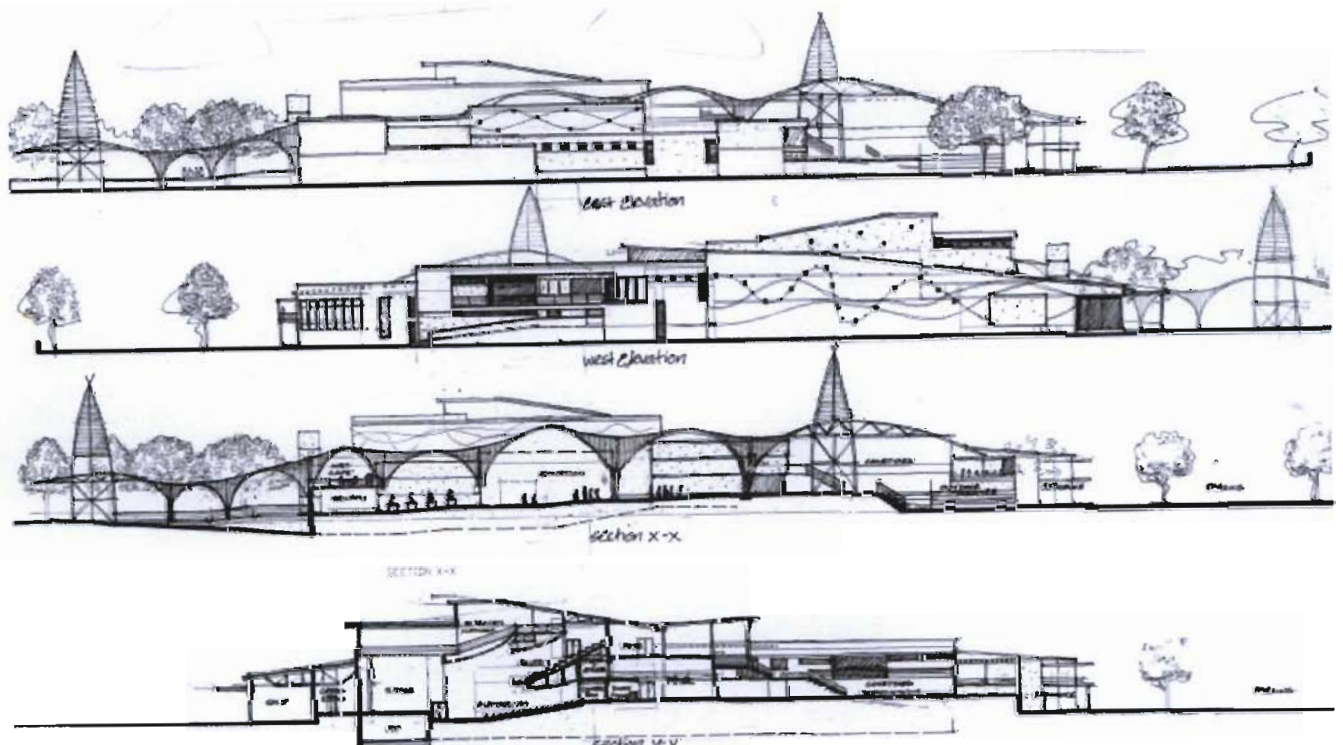
Fig.55: Concept 3 - Alternate Three dimensional Resolution
The Metaphoric and Symbolic Internal Street is given Prominence by the playing down of the Forms
of the Functional spaces.
The East and West Elevations reveal the hard edged response to the Street edges. Highlights the need
for refinement in order to engage with the Streets.

CONCEPT 4
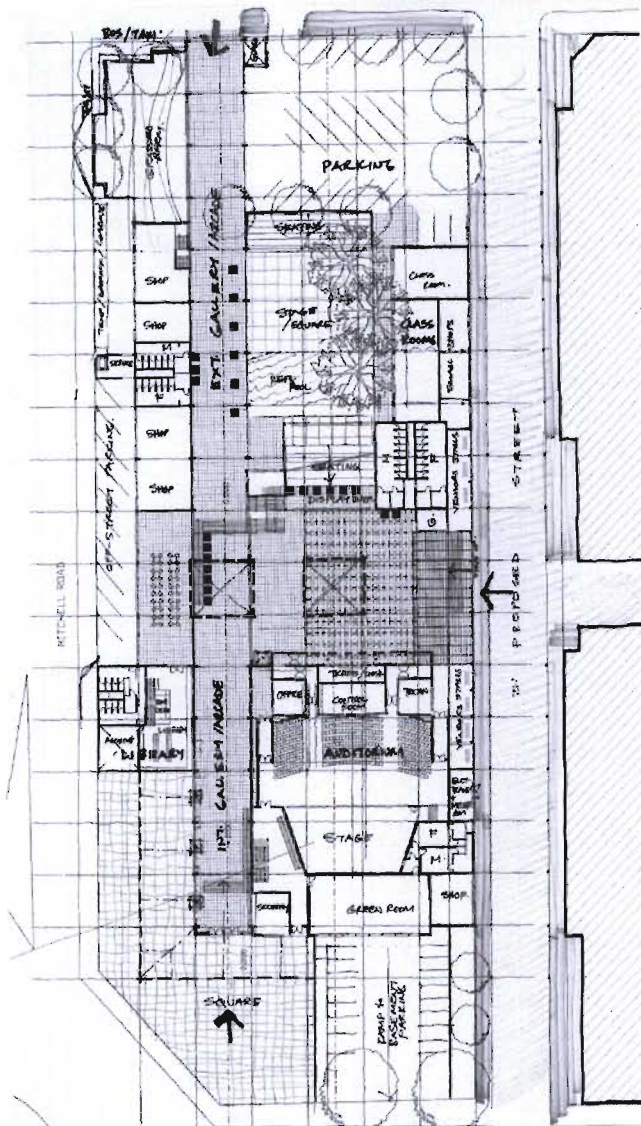
Fig.56: Concept 4 — Ground Floor Plan
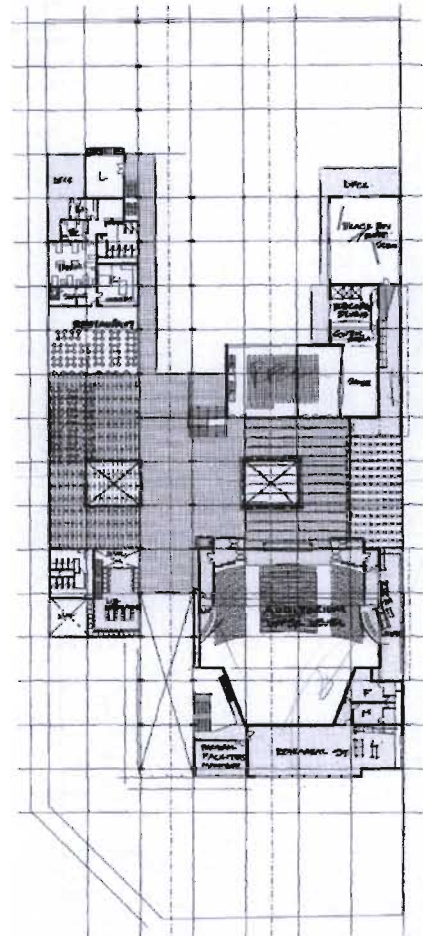
Fig.57: Concept 4 — First Floor Plan

The Auditorium repositioned to offer more engagement between building and street on the South end. A strong visual link between street and gallery - passers by given a clue to the nature of the activities within the Centre.

The mass of the Auditorium, now on Eastern edge is scaled down by Street level activities such as Shops and Trade kiosks.

An Urban solution in the form of the Mixed -use buildings on the adjacent sites further activates the narrow street to the east.

The main Foyer/ Courtyard happens at the Intersection of the Primary (Int Street) axis and the East West Axis that creat Vistas to the Racecourse to the West and the Mixed use development to the West. All the major functional spaces are accessed of the multivolume central Foyer / Courtyard. Lightweight screens, pergola and light wells allow adequate natural light into the lower volumes.
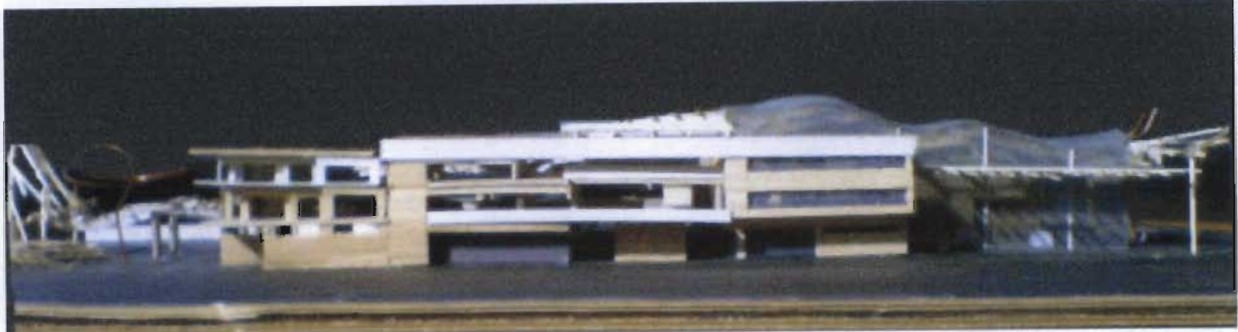
Plate.46: Western Elevation to Mitchell Road
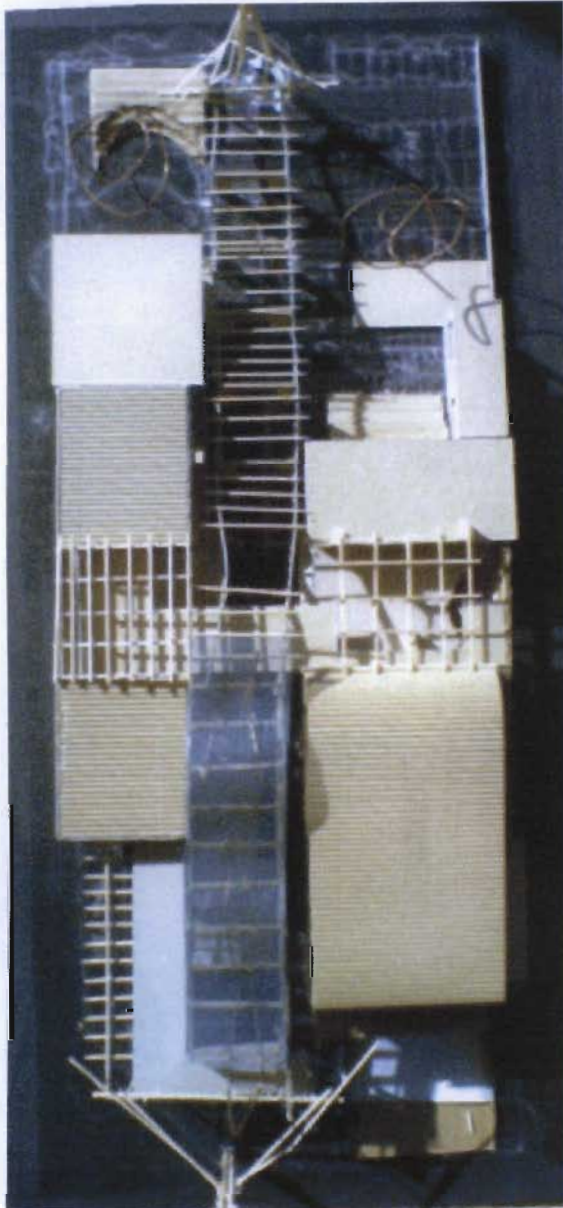
Plate.47: Entrance Plaza - South

Plate.48: Entrance Plaza - South

Plate. 49 Aerial View

The Dome forms
do. not serve any significant purpose in the
concept fo the architectural form of the Centre.
Plate 48 indicates an alternate solution.
Environmental concerns are indicated by the use of
screens and pergola. The Western Elevation, however
needs protection from the low setting sun.
The West elevation further needs to emphasise the
concept of rhythm and melody.

CONCEPT 5: (In Development)
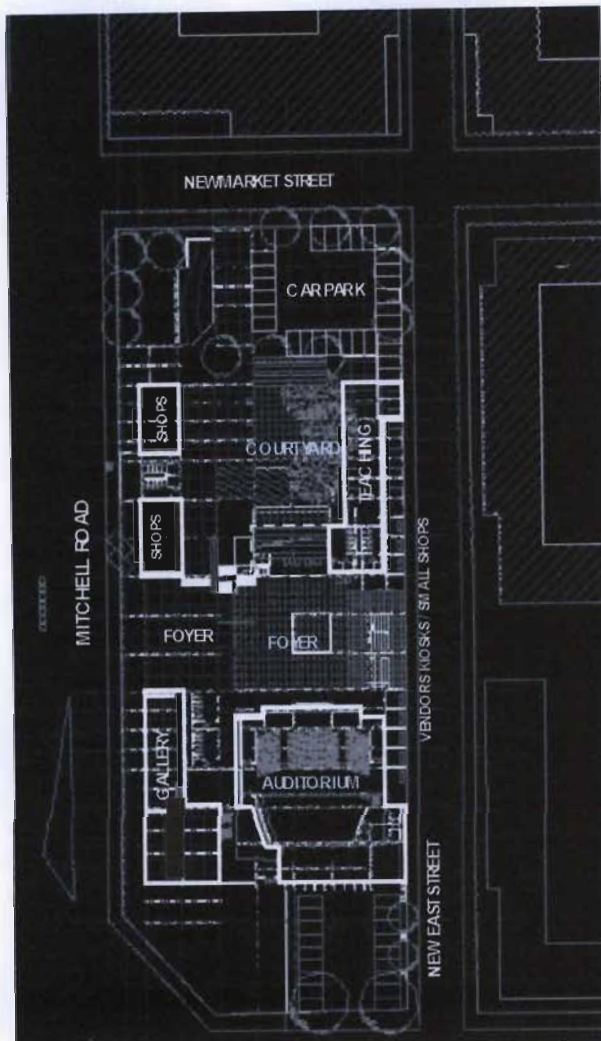
Fig.58: Concept 5 – Ground Floor Plan   Fig.59: Concept 5 – First Floor Plan
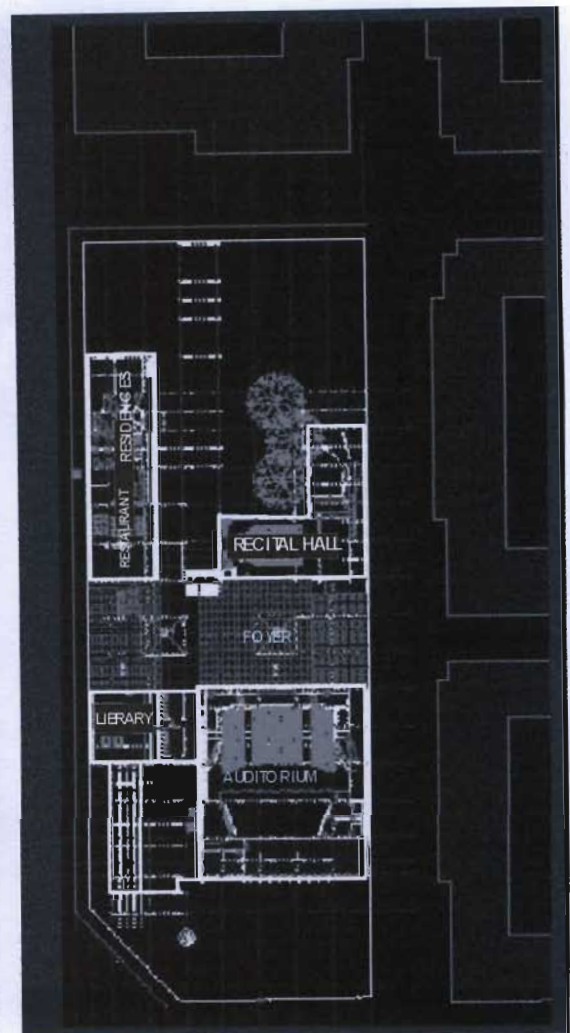
Design Intentions:

Juxtaposition of internal to external gallery highlights the concept of the shifting axis in Indian architecture. Such juxtaposition further heightens anticipation as the travellers view constantly changes.

The position of the gallery close to the Western (Mitchell Rd) boundary results in more visual engagement between the interior and exterior of the building and gives importance to the street. The internal gallery with its metaphoric roof is almost entirely exposed to the street and as a consequence lesser prominent spaces such as ablutions are shielded from public view.
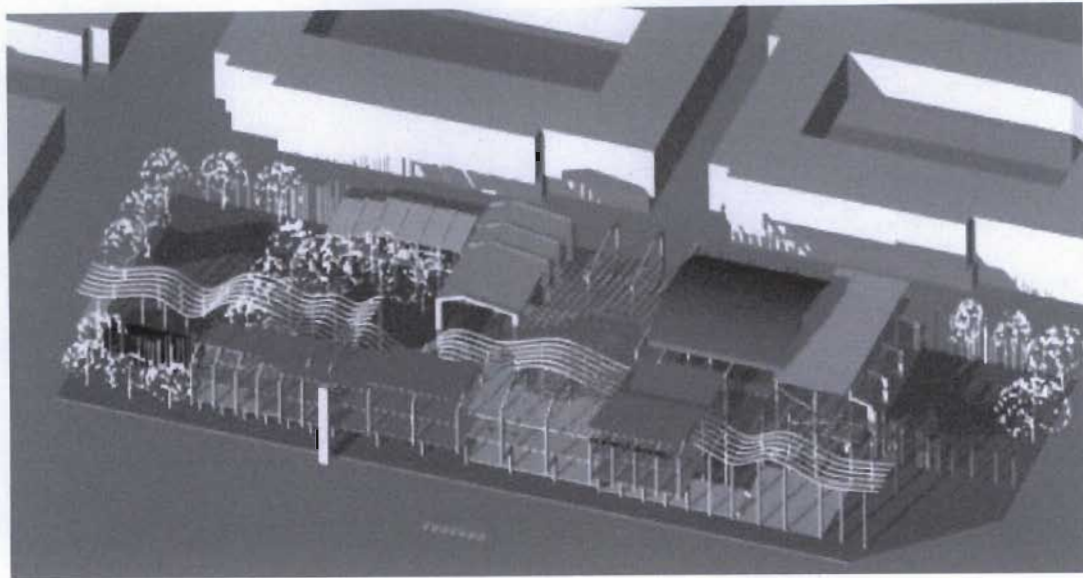
Plate.50: Concept 5 Form and Structure model

The application of the concept of Music into architecture (Pl.50)to the proposed building emphasises the layering of rhythms and melody in the structural and material organisation of the building (Refer also to Technical Report). The first layer would comprise the structural grid' the second layer – infill panels, the third layer – module and so forth.

The Yantra would be used as ordering module in design (refer also to technical report).

Fig.60: Concept 5 – Second Floor Plan

SECOND FLOOR PLAN

7.6. DESIGN REALISATION: ENVIRONMENTAL and TECHNICAL STUDY

CLIMATIC INFLUENCES:

The city of Durban is located on the 30degree latitude South of the equator and is broadly classified as a hot-humid sub-tropical region.

There is a high degree of sunshine during the year especially during summer. In summer the average time of sunrise is 5a.m. and sunset at 7p.m. In winter there are still many daylight hours and plenty sunshine. The average time of sunrise in winter is 7a.m. whilst sunset happens at 5p.m.

Fig.61 illustrates the solar paths during summer; winter and the equinoxes.
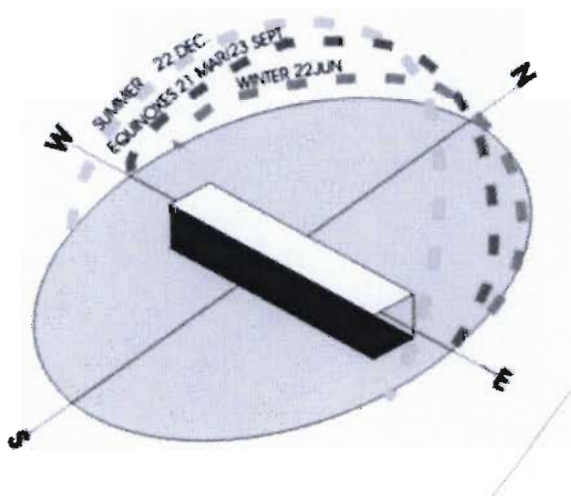
Fig.61 : Study of Solar paths during Summer solstice; winter solstice and the equinoxes.

The high degree of sunshine means a high degree of solar radiation and its associated problems such as expansion of materials; fading of finishes and warping of timber.

The site is oriented along a North – South axis which is not ideal as the West façade may be exposed to the harsh setting sun especially in summer. Trees across Mitchell Cresent and the Morningside Hill to the West do however provide some screening of

the setting sun. The long facades that define the Eastern and Western edges of the site do still need some solar control devices to windows and glazing.

Prevailing winds occur in the NE direction whilst the SSW winds are strong and moisture – laden (Figs.62&63).

SUMMER WIND ROSE

WINTER WIND R
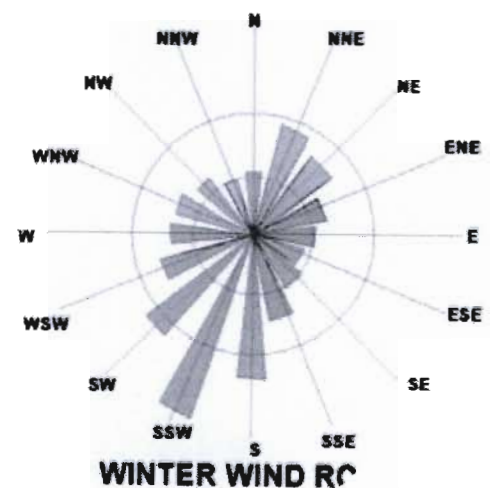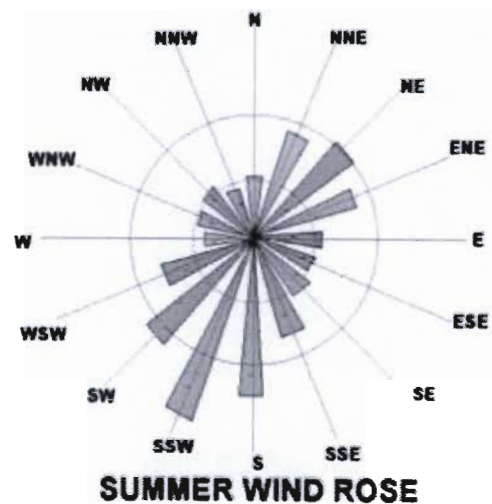
Fig.62: Wind Roses

Low angle driving rain from the SW results in weather-proofing challenges. The NE winds are useful in lessening the effects of the high humidity. Cross

ventilation is therefore crucial in the Durban climate.
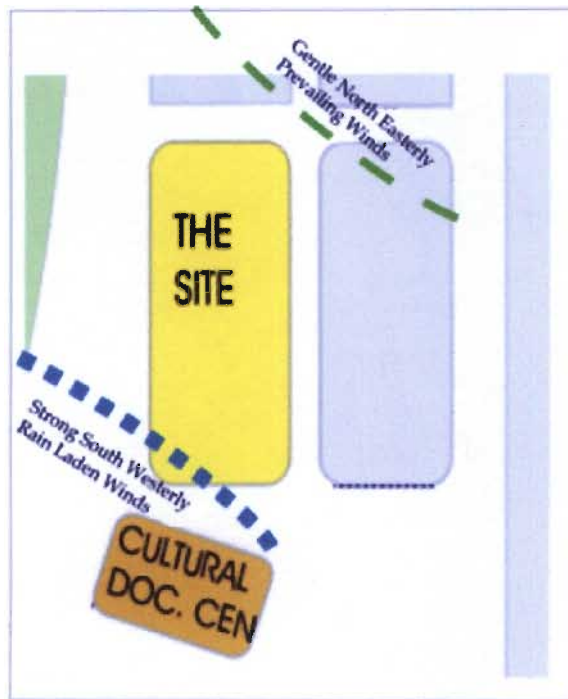
Fig.63: Wind direction in relation to The Site

Annual precipitation level is relatively high and occurs mainly during the spring and summer months. A high relative humidity and the warm Mozambique current results in a low diurnal temperature range throughout the year. Humidity results in high discomfort level especially during the months of January to March. The water table is high in low lying areas. The water table at the Site for the proposed building is a mere 2m below ground level. The high level of atmospheric and ground moisture poses challenges regarding waterproofing and fungal decay.

The hot-humid region is characterised by lush vegetation throughout the year. Green landscaping is therefore an enviro-friendly method of filtering radiation; and reducing intrusive noises from traffic and other external sources. Deciduous trees such as the indigenous White Stinkwood provide dense screening to summer sunshine whilst in winter they shed their leaves allowing for filtered winter sunshine.

Environmental Response in Design:

Solar Study of the Proposed Building:
The aim of the solar study is to analyse the adequacy or excessiveness of sunshine on the site and within the building complex. Such study entails digital modelling to produce accurate diagrams showing sun penetration and shadow projections at specific times during the different seasons (Figs.64, 65 &66).

Such study will reveal the effectiveness of solar screening / protection as well as the possible need for further solar control.

Shadow projections may also be theoretically analysed. Sunlight would be referred to as a material in architecture. The dramatic and dynamic play of light and shadow adds a further layer to the reading of the building. The dramatic play of light and shadow reveals an added layer of rhythm and melody on the vertical and horizontal planes of the building. Sunshine and natural light, further has great symbolic and metaphysical value in traditional architecture.
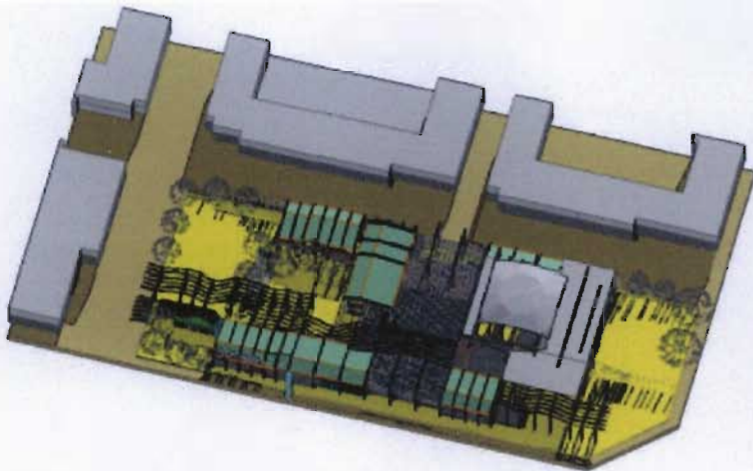
Plenty of early morning
sunshine to South plaza and
much of the North courtyard.
New East Street in shade.

21Dec 8am
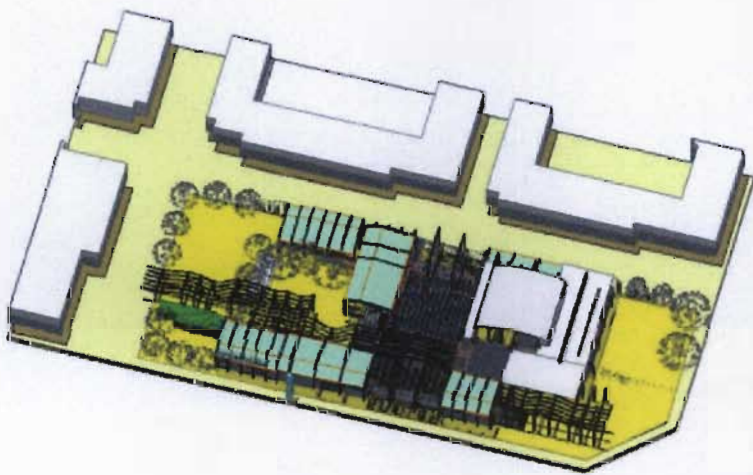
All open spaces receive
plenty sunshine. No over-
shadowing from buildings.
New East street is almost
entirely sunlit.

21Dec 12pm
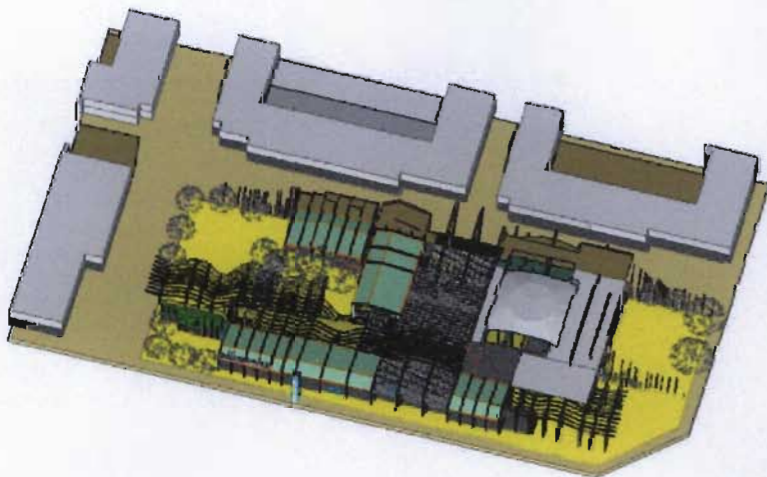
Open spaces receive plenty
sunshine. Pergolas effectively
filter the strong afternoon sun.
The new East street is partially
shaded.

21Dec 4pm

Fig.64: Solar Study – 21 December
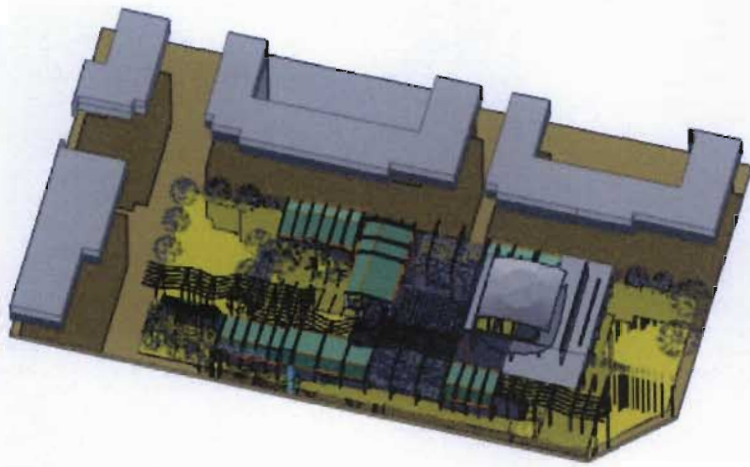
The North courtyard receives plenty morning sunshine whilst the South plaza is partly overshadowed. The internal gallery is shaded whilst the external gallery receives adequate filtered sunlight.

21 Mar/Sept 8am.
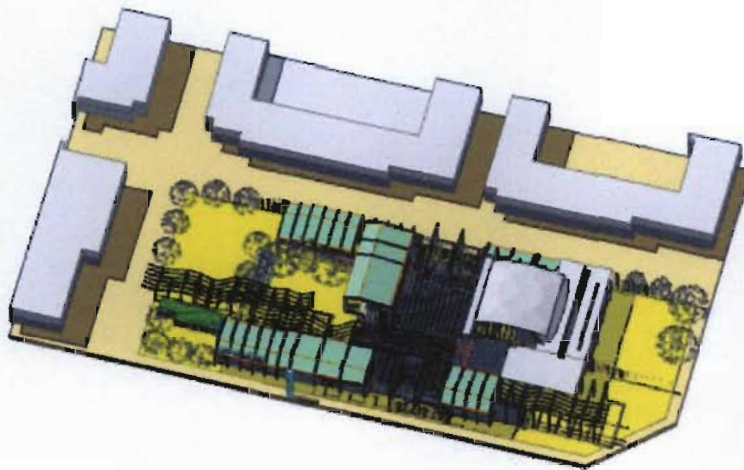
Open spaces are almost entirely sunlit. Overhead screens break up the strong overhead sunlight.

21 Mar/Sept 12pm.
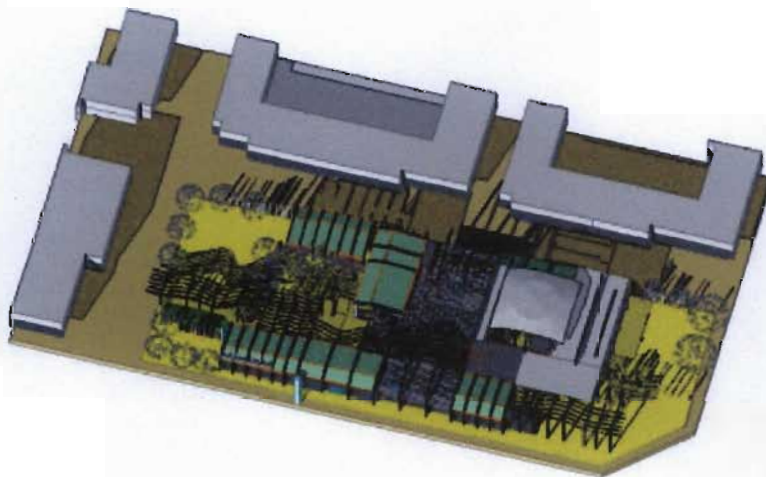
The North corutyard is protected from the strong afternoon sun by the buildings on the Western edge of the site. The site and adjacent sites receive adequate afternoon sunshine

21 Mar/Sept 4pm

Fig.65: Solar Study 21 Mar / Sept
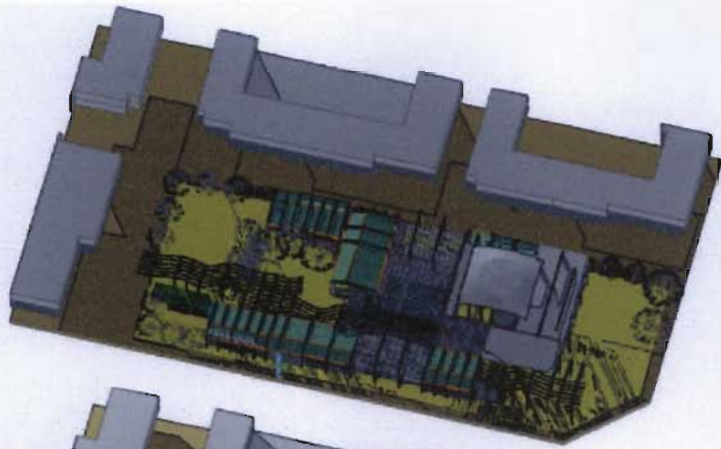
The complex and adjacent sites are almost entirely in shade.

21 Jun 8am.

Plenty of morning sunshine to all open spaces. South plaza largely overshadowed. The proposed mixed-use buildings shade the new East street.

21 Jun 10am.
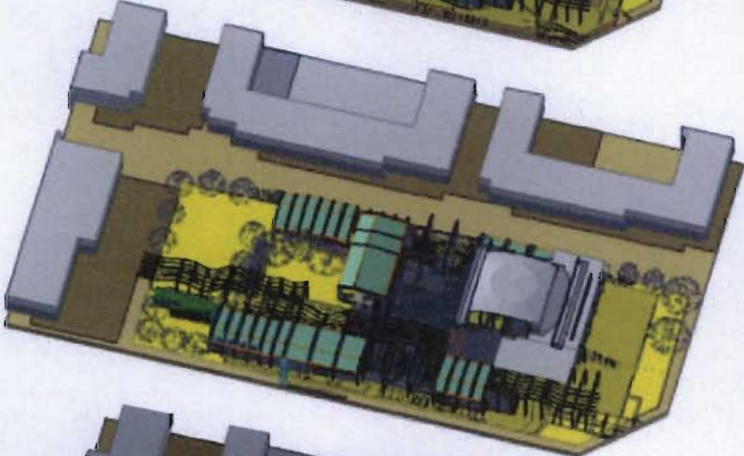
Plenty of North sunlight penetration into the complex. New East Street pleasantly sun lit.

21 Jun 12pm
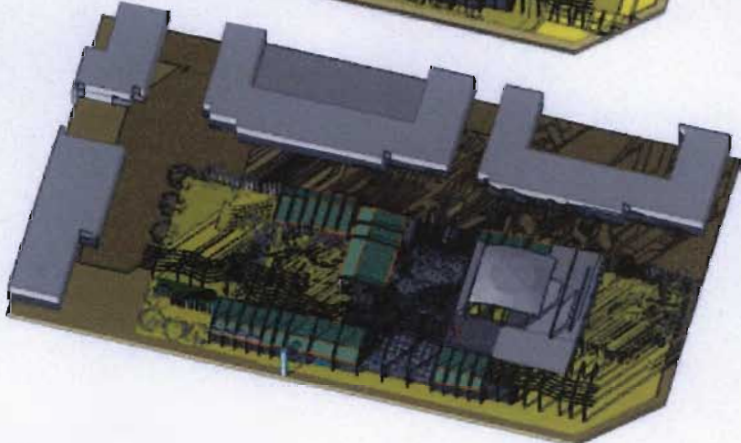
Low level of direct afternoon sunshine. Foyers on the East-West axis allow much desired filtered sunlight into the heart of the complex.

21 Jun 4pm

Fig.66: Solar Study – 21 June
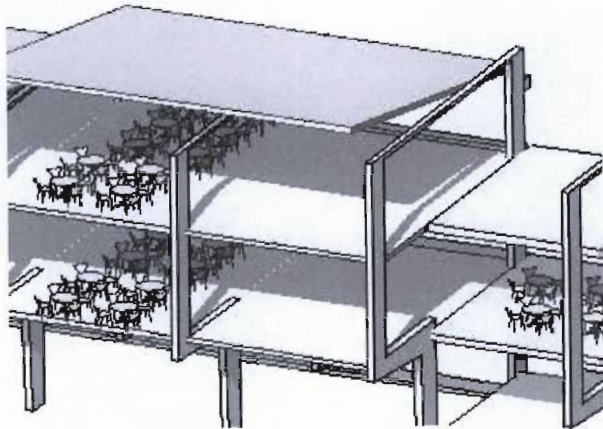
Fig.67: Solar Penetration — Unprotected West Facade
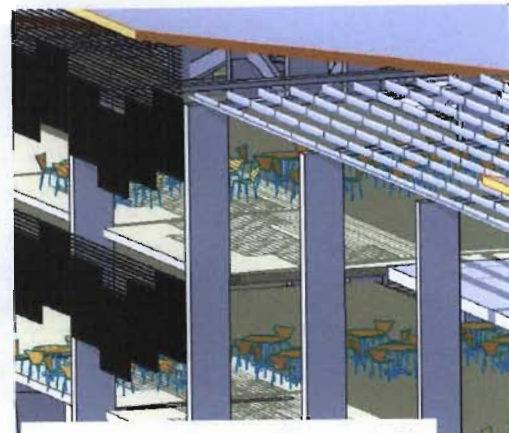
Fig.68: Solar Screens filter sunlight
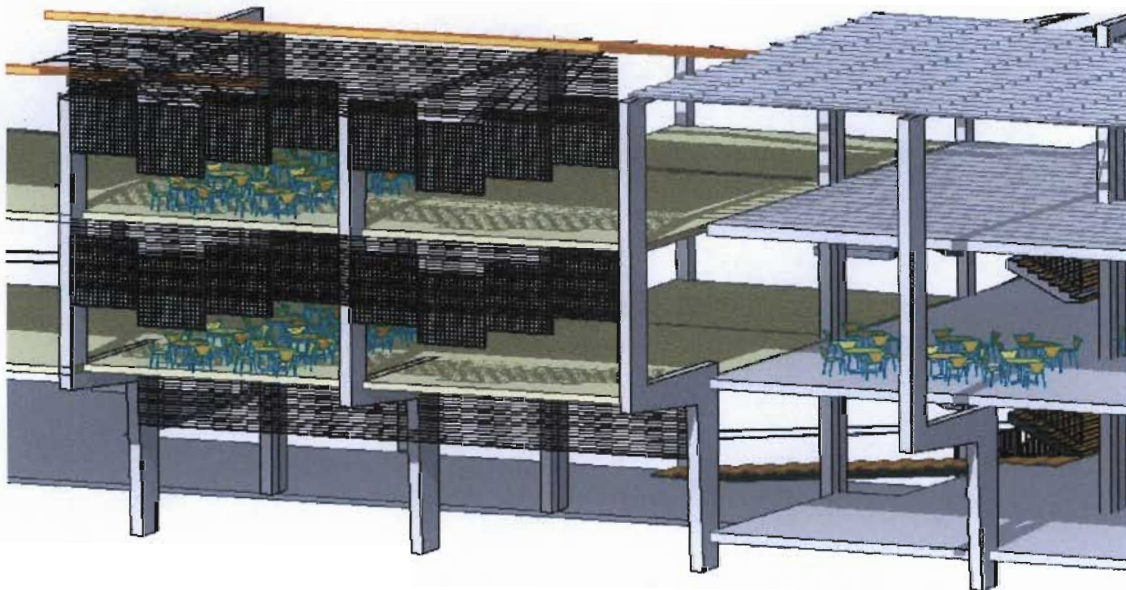
Fig.69: Adjustable solar screens allowing users to adjust screens according to their requirements. Adustable screens add a further layer of changing rhythms of forms and their associated shadows on the façade.

Sun Study of Part West Elevation

The sun study undertaken on part of the West elevation during the worst solar exposure period – 21 December at 4PM. A solar azimuth of 98.5 deg. West of North and a solar altitude of 36 deg. Poses serious challenges regarding solar radiation on the west façade (Fig.67).

Solar screens would be proportioned to the Yantra. Adjustable screens affords the opportunity to the users of the space in determining their positions. The adjustability of the screens adds a further layer of changing rhythms of forms and their associated shadows to the façade.

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<u>Ventilation and Passive Cooling.</u>
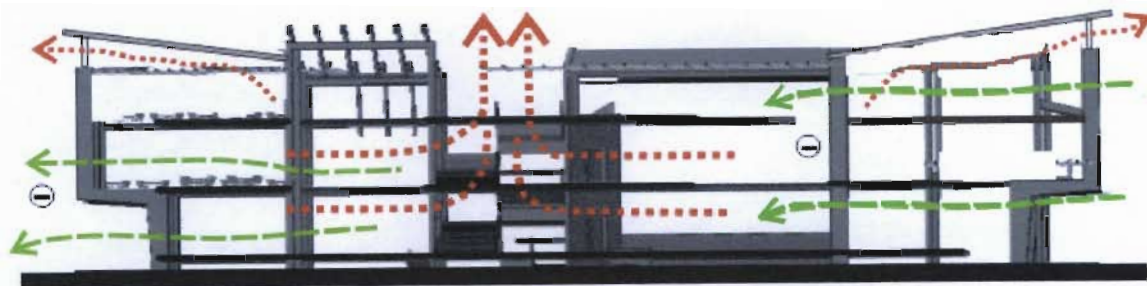
Fig.70: Cross Section showing passive cooling and ventilation
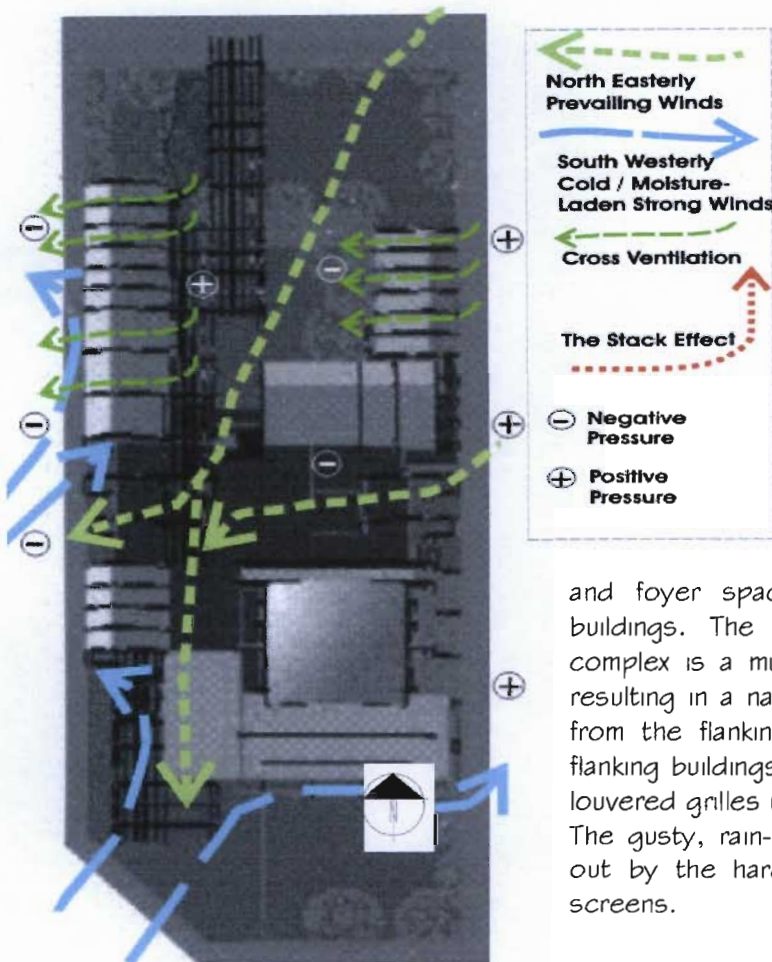
Fig.71: Site Plan showing passive cooling and ventilation (Author).

North Easterly Prevailing Winds

South Westerly Cold / Moisture-Laden Strong Winds

Cross Ventilation

The Stack Effect

⊖ **Negative Pressure**

⊕ **Positive Pressure**

All of the functional spaces, other than the Auditorium, Recital Hall and Recording Suite are naturally ventilated.

Such spaces are located on the Eastern and Western boundaries are relatively narrow, elongated spaces that allow facilitate cross ventilation (Figs. 70 &71).

The shaded North courtyard with its existing trees, foliage and water is a cool micro climate. The prevailing North Easterly winds carry cool air from the courtyard and foyer spaces through the entire complex of buildings. The Main Foyer at the centre of the complex is a multiple-volume space open to the sky resulting in a natural stack /flue for hot air to escape from the flanking buildings (Fig.72). Ceilings of the flanking buildings are raked to allow hot air to exit via louvered grilles (Fig.70).

The gusty, rain-laden South Westerly winds are kept out by the harder building edges as well as solar screens.

Fig.72: Longitudinal Section showing passive cooling and ventilation (Author)

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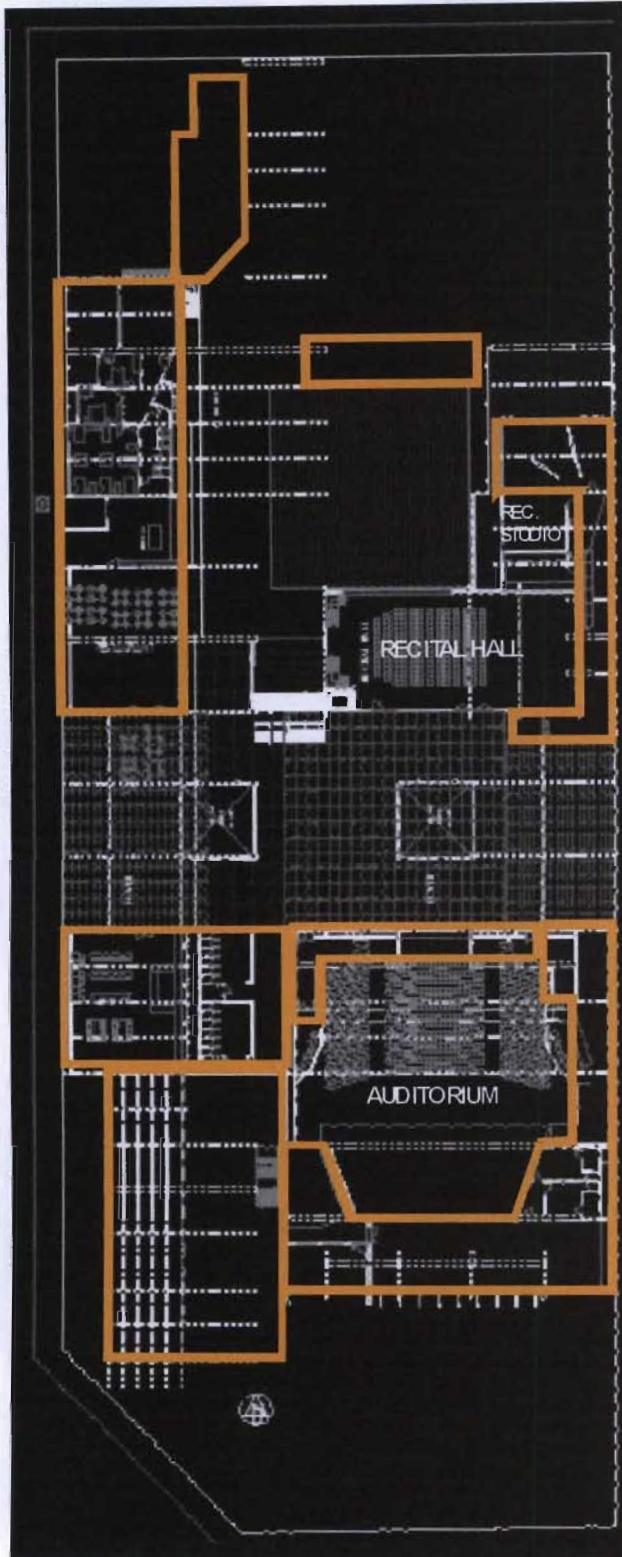
Fig.73: Plan of Proposed Centre for Music showing Acoustic Buffers Zones in bold outline. (Author)

Acoustic response in the Design of the Proposed Building.

The main acoustic considerations with regard to acoustic spaces is the exclusion of external intrusive noises; the mitigation of noise between functional spaces and the optimum quality of sound within the acoustic spaces.

The positions of acoustic spaces such as Auditorium, Recital Hall and Recording Studios are protected from intrusive noises by buffer spaces (Fig.73). Acoustic buffer spaces take the form of edge buildings that accommodate functions such as residences; shops; restaurants; cafes and galleries. Courtyards and foyers also serve as acoustic buffers.

Dense construction of external walls further assists with the insulation of acoustic spaces.

The large scale of the auditorium necessitates the installation of acoustic reflectors for even distribution of sound throughout the space. The positioning of reflectors is determined by the geometric analysis of sound paths within the auditorium space (Figs.74&75) the nature of materials within the acoustic spaces and of the reflectors would be determined by the preceding case studies.
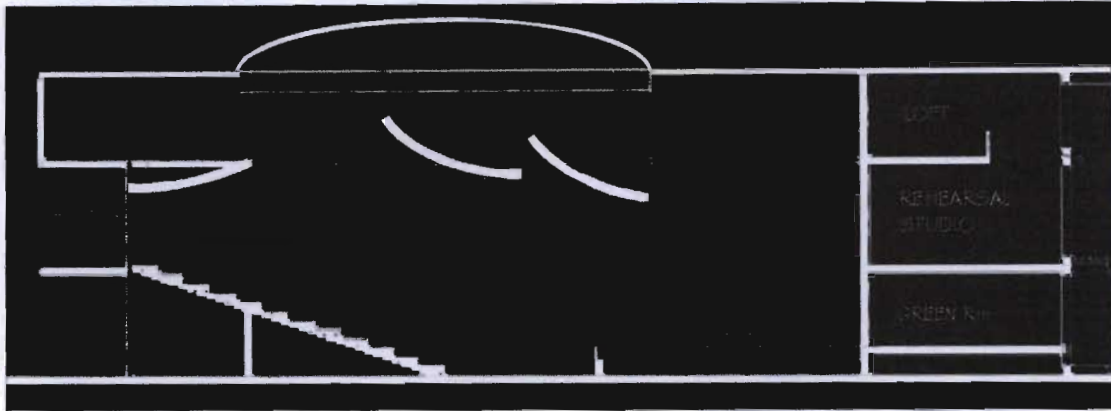
Fig.74: Longitudinal Section through the Auditorium indicating geometric analysis sound paths (Author)
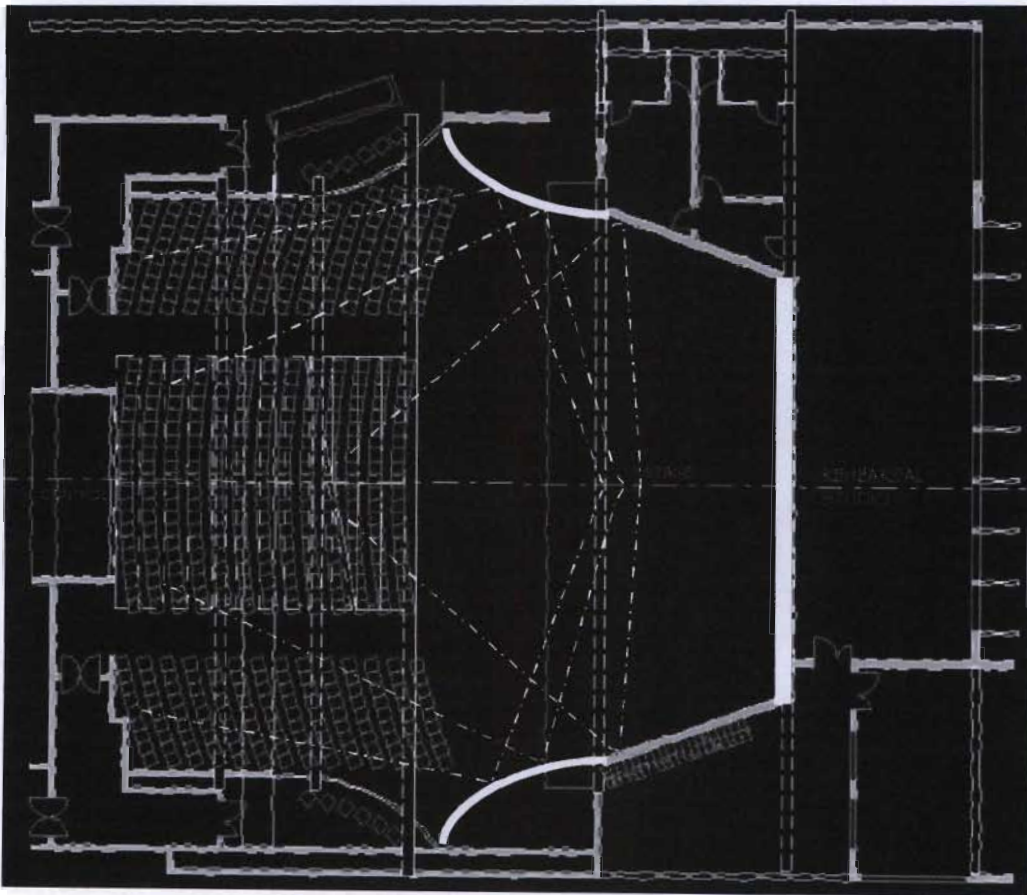
Fig.75: Auditorium Plan indicating Geometric analysis of sound paths (Author).

The Yantra as Ordering Module in Design.

STRUCTURE
structural grid

INFILL
Walls
glasing
Screens

MODULE
Screens
cladding
Plaster
windows

GRID/MESH
Solar Screens
Balustrade
Visual Screens
Tiles.

3600 3600 1800 1800

7500 3600 3600

1800/Boo

STRUCTURE
Structural grid

INFILL
Walls
glasing
Screens

MODULE
Screens
cladding
Plaster
windows

GRID/MESH
Solar Screens
Balustrade
Visual Screens
Tiles.
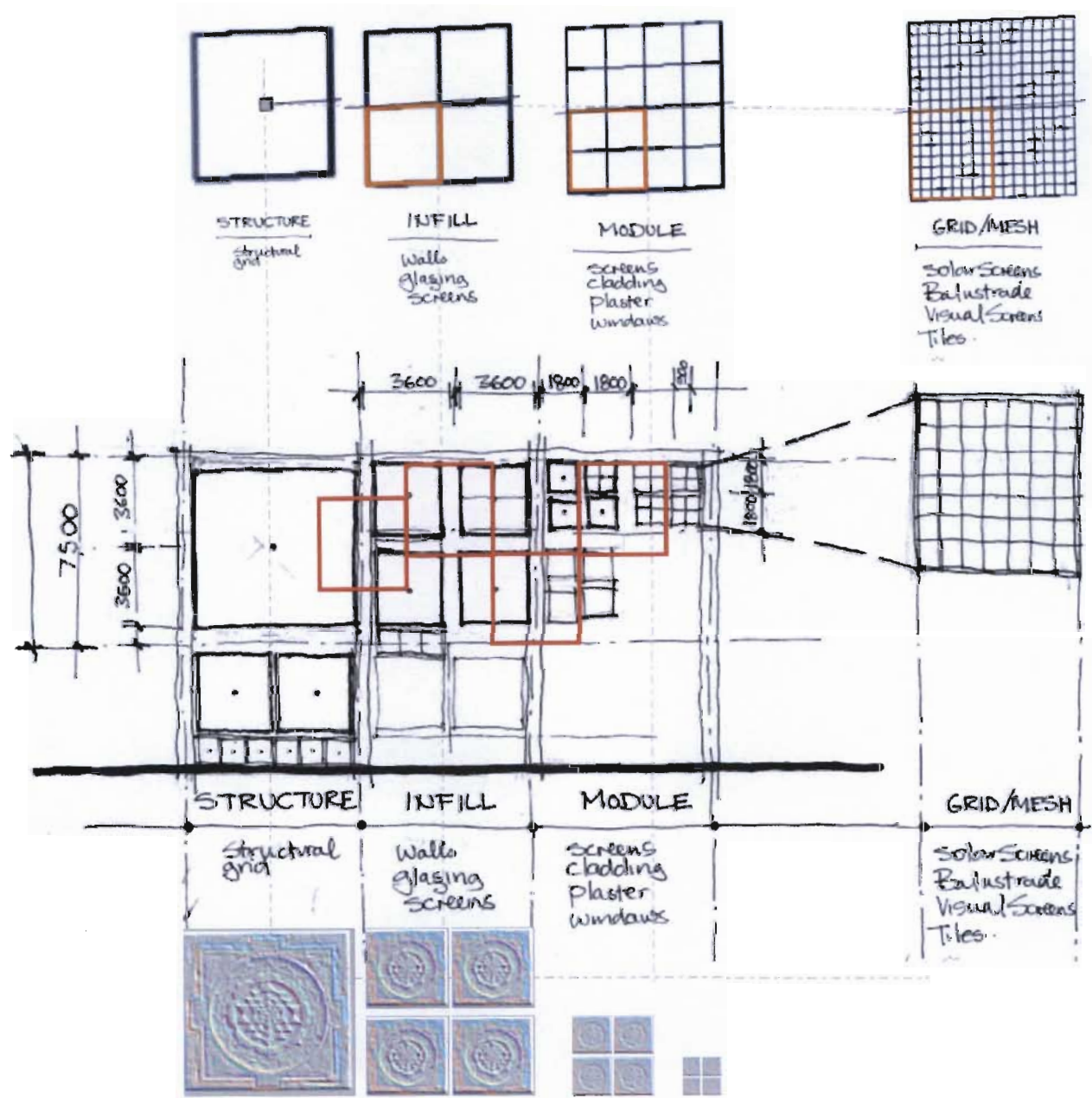
Fig.76: The Yantra as Layered Module for order in Elevation (Author).
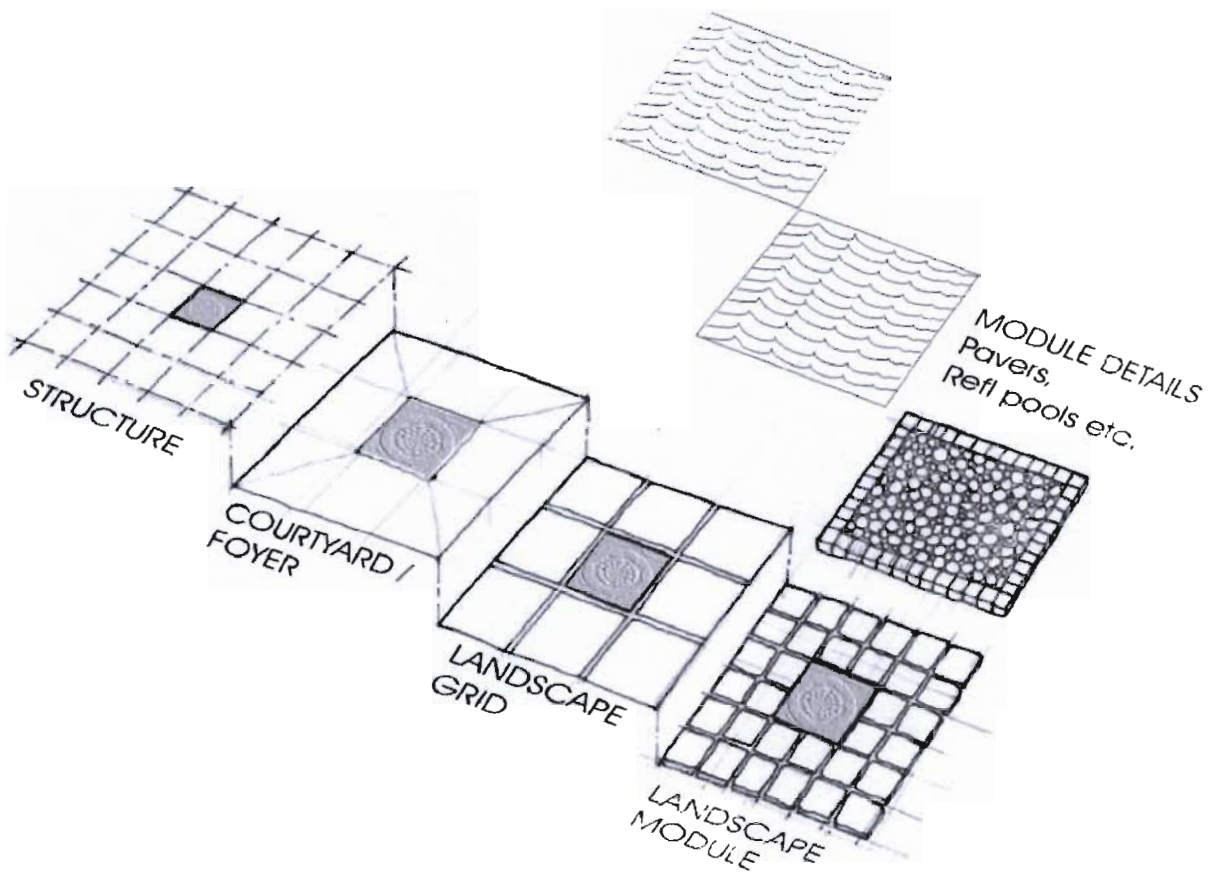
Fig.77: Yantra as Layered Module for order on Plan (Author).

The square Yantra would be used as a geometric module for order in the design of the proposed building. The yantra would be layered to varying scales to suit its application in the design of the building. Hence the Yantra is graded from the smallest unit as building block or paver up to the structural grid of the building.

The 900x900"module", for example, would serve many purposes ranging from fenestration, cladding and balustrade to ceiling grids and acoustic panels. Sub- divisions of the 900 "module" would proportion elements such as pavers and mesh aperture sizes (Fig.69). Multiples of the 900 module, on the other hand, would proportion the larger ordering elements such as infill panels and

ultimately the structural grid (Figs.76&77).

The yantra hence becomes a symbolic unifying element in the pragmatic ordering of the building from the structural grid down to the individual paving module.

Services.

Water:
The site is serviced with municipal water supply at adequate pressure to service the proposed building including the fire-fighting requirements. Collection of rainwater by means of tanks would lessen the demand on the municipal supply. As the water table on the site is high ground water from basement level would be pumped up from the sumps into the landscape water features and storage tanks. Storage tanks would supply water for all purposes other than drinking. Storage tanks located higher up would be essential in fire control.

Sewerage Disposal:
The site is serviced with municipal sewer lines (Fig.36). All sewerage would be disposed into the municipal lines.

Stormwater:
The site has been serviced with municipal stormwater lines. Where possible, though, stormwater would be collected in tanks as discussed above. Soakpits would be installed in the green landscaped areas, again reducing the consumption of municipal water. The need for possible stormwater attenuation would be confirmed with a specialist who would be tasked with the design thereof should it be necessary.

Electricity:
The site is serviced with municipal electricity. The facilities would require 3 phase power supply and the installation of transformer; meter and switch rooms on site.
In light of the recent power outages due to load shedding, backup generators are indispensable. As the sub-tropical climate in Durban provides long daylight hours and sunshine is plentiful throughout the year, it would make sense to incorporate solar power and photovoltaic cell technology in the production of electricity.

Natural light will be maximised within the functional spaces during daylight hours. All functional spaces would have direct access to natural light and ventilation. Double – banked corridors would be avoided. Energy efficiency in the design of the building would incorporate natural breezes to effect passive cooling (Figs.70-72).
Well insulated materials would prevent energy wastage.

List of Figures:

List of Plates:

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APPENDIX A:

Acoustics.

Acoustic principles are invaluable in realising the pragmatic requirements for a place of music. The various theories and unique relationships reviewed would be utilised, to greater or lesser extent, in the design of the proposed Centre for Indian Music.

Sound analysis in rooms may be analysed geometrically and statistically (Parkin, 1979:34).

Geometric Method:

The analysis of sound paths within rooms is possible by plotting the sound wave as they are reflected off surfaces. For practical purposes it is adequate to analyse only the first one or two reflections (Parkin, 1979:34). The shape, attitude and boundary surfaces affect sound reflection within a space.

Sound energy may be reflected off; absorbed by or transmitted through the surfaces the sound waves strike. The angle of reflected sound always equals the angle of the incident sound from the source (Fig.78 also Fig.75 in Design response) . Curved surfaces may either focus or disperse sound waves (Fig.79).
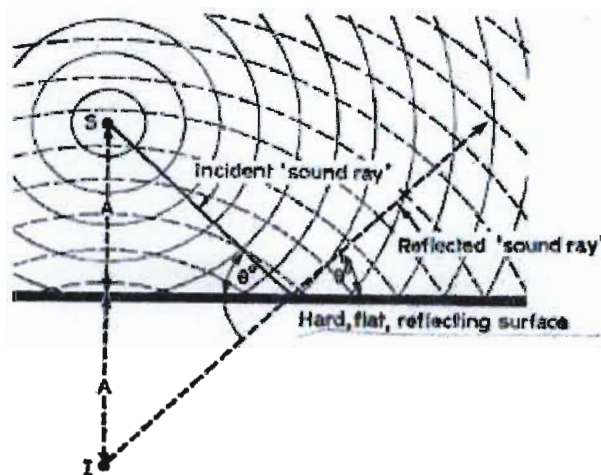

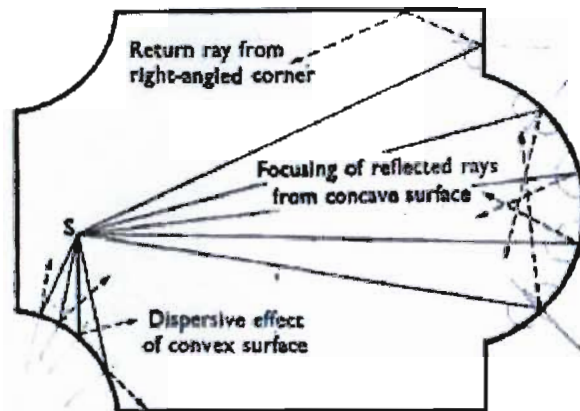
Fig.78: Angle of Reflected Sound.

Fig.79: The effect of curved surfaces on reflection of sound.

Obstacles in the path of sound do not cast complete acoustic shadows. Diffraction of sound, similar to that of light, causes bending of sound around the edges of obstacles in its path (Fig.80). The longer the sound wavelength (low frequency sound) the greater the degree of diffraction and vice versa.
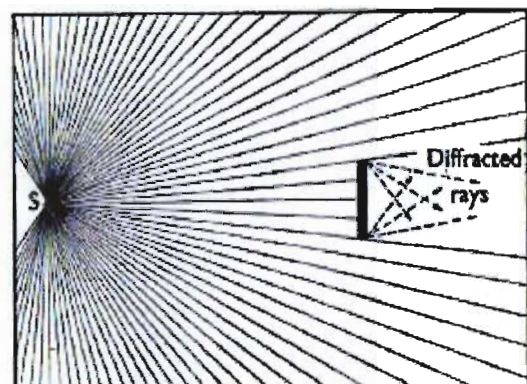

Fig.80: Diffraction of sound waves. Parkin 1979

The geometric study of sound in rooms is most valuable in the design of acoustic spaces for both speech and music. The shorter wavelength sound so characteristic of speech and most music would reverberate and die off quickly. Long wavelength sounds however behave differently. Should one of the dimensions of a room match that of a sound wavelength then a standing wave is created and the reverberation time is much longer. The same applies to sub-multiples of a

wavelength that fit within a room dimension. Certain music notes would therefore die off quickly whilst others would resonate for a longer time within the space.

Most auditoria are large enough so that there are countless number of room resonances within the auditoriums frequency range (Parkin, 1979:39). Some resonances compliment each other whilst others cancel out each other. The net effect is of far fewer resonances. Spacing of resonances is therefore related solely to reverberation time.

Statistical Method:

Sound absorption is determined largely by the nature of the surfaces that the incident sound waves strike. Harder, non-porous surfaces are less absorbent than softer, porous surfaces. Therefore harder surfaces reflect more sound. Absorption is also related to the positioning of absorptive materials relative to other surfaces in a room. Patches of absorptive material interspersed with reflective material is far more effective that grouping together the absorptive materials (Plate.28 in Case Study). This is due to the fact that sound waves at the junction of absorptive and reflective materials are diffracted toward the edges of the absorptive materials. The edges of absorptive materials become more effective absorbers than their centres (Parkin, 1979:40).

Materials and shapes of rooms affect reverberation time. As sound is reflected within a room the various surface materials as well as the shape of the room would determine the reverberation time.

Sound from a source does not rise instantaneously but rather builds up over a short period of time. Direct sound level is only a fraction less, though, than the total sound produced as a result of the build up of reverberant sound in a room. The actual difference in the level of direct sound as compared to that of the final sound in a room is therefore practically unnoticeable to the listener.

When music is suddenly switched off, however, the transient sounds are somewhat modified due to the effects of reverberation as the sound takes some time to die off. Music as well as speech consist largely of transient sounds. It is therefore essential that auditoria be designed such that transient sounds are not too seriously affected as music or speech may become distorted. Reverberation time may be reduced to prevent blurring of sounds or notes played in succession. It is therefore necessary to produce a level of reverberation that is constant over a range of frequencies in order to prevent excessive fluctuations in sound levels (Parkin, 1979:42).

Materials are more or less absorptive depending on their composition. Soft porous materials are much better absorbers that smooth, hard materials. Where fore practical reasons walls have to be plastered and painted the acoustic properties of acoustic plasters could be negatively affected by painting of such. A pattern of perforations within such surface would restore its absorptive properties. Multiple layers of glazing with air spaces would provide better absorption and insulation of sound Fig.31 Case study). Similarly cavity walls can be lined with absorptive materials. Mechanical resonators are also effective in cavity walls.

The Design of Rooms for Music:

Traditionally the acoustic environment in which music was performed actually determined, to a large extent, the nature of the music composition. The highly ornate Italian opera house with its elaborate furnishing and tiered boxes produced short reverberation time within the opera space. Such spaces were therefore suited to the rapid music compositions of Mozart among others. Until the beginning of the 19th century music continued to be composed to suit the acoustic

nature of the spaces within which the relevant music would be performed (Parkin, 1979:66).

In the late 19th century Wagner and Bayreuth pioneered the idea of rather creating buildings to suit the music they facilitated. Contemporary music venues are designed to enhance the quality of music. Faults such as echoes can now be minimised by design and use of materials in a performance space (Parkin, 1979:66).

Certain acoustic requirements are essential in the design of rooms for music:
Definition; Fullness of Tone; Balance; Blending; no obvious faults such as Echoes; Low level of Intruding noise and uniform distribution of acoustics over the entire audience area are the main design objectives of any acoustic space.
With regard to the uniform distribution of sound the Inverse Square Law causes the intensity of direct sound to drop as it travels through a space. The sound levels at the back of auditoria may be significantly lower than at the front. This loss in sound intensity may be mitigated by raking the rear rows of seating in the audience and by keeping the length of the auditorium to a minimum (Fig.23 in Case study). The fan shaped auditorium with balcony / gallery seating is therefore an advantage over rectangular rooms (Parkin, 1979:70).

Reflectors over the stage area are effective in projecting the incident sound waves to the rear of the auditorium. Balconies, though, may weaken sound intensity in the seating areas below the balcony. It is therefore essential to rake the soffit of the balcony which then becomes a reflector to the seating below(Fig.81 & Fig.74 in design response)
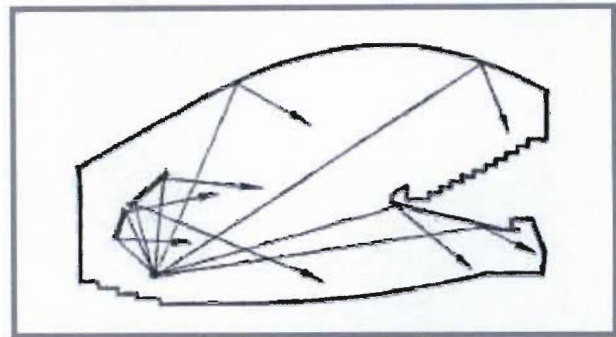

Fig.81: The use of reflectors in an Auditorium.

Echoes, resonance and flutter echoes can ruin the quality of sound in an otherwise well designed space. The shape of rooms and the materials used on their surfaces may assist in lengthening reverberation time and thereby reduce echo. The use of slatted or porous absorptive material on the rear wall of music room would reduce echo within the room.
Concave surfaces focus sound waves and may worsen echo and therefore should only be used where such surfaces would not focus the sound on the audience (Fig15).
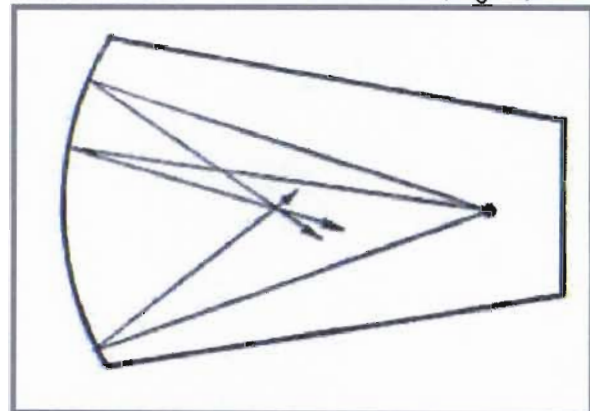

Fig.82: The focussing effect of concave surfaces.

Resonances may occur where the shape or size of room surfaces favour certain frequencies. For example, a sound wave that is exactly the same length or any sub-multiple of the distance between two parallel surfaces will be louder than the sounds at other frequencies.
Parallel surfaces also produce flutter echoes. The source of music (stage) is usually set back from the auditorium space in order to mitigate flutter echoes.
Resonances and flutter echoes may be nullified by keeping wall surfaces at least five degrees off parallel (Parkin, 1979:75).

Ferreira identifies certain design principles that every music room should incorporate as listed hereafter:

Exclude intruding noises; minimise flutter echoes and standing waves; provide diffusion of sound and have suitable reverberation characteristics. Noise attenuation can be cost effectively achieved by the placement of buffer spaces such as corridors and utility rooms between the music spaces and noise sources. Arrangement of different functional buildings within a complex may also shield acoustic spaces thereby providing effective noise attenuation (Ferreira, 1971: 35).

Ventilation and other mechanical systems may also produce intrusive noises. Such plant should be located away from acoustic spaces. Plant rooms situated in basements are ideal. Plant should be positioned on heavy bases with flexible anti-vibration mountings. Flexible connections drastically reduce noise transmission. All air ducts etc. should be installed with noise filters and such ducts may also be lined internally with absorbent materials. Air volumes to acoustic spaces should also be low enough to prevent excessive turbulent noise through grilles and diffusers (Ferreira, 1971: 36).

Electro-acoustic Aids in Music Rooms:
Auditoria may have permanent sound systems installed. However most musicians prefer to carry around their own equipment to suit their particular needs. In auditoria with permanent electro-acoustic systems such as the Playhouse Opera, a specialist sound engineer or technician would be designated to control sound in such auditoria.

Electro-acoustic aids enhance sound in larger auditoria by ensuring that an even level of loudness is distributed throughout the room. Electro-acoustic aids also effect the manipulation of reverberation before feeding out to the loudspeakers.

Modern equipment channel sound from individual microphones through a mixer/ amplifier and then out through the loud speakers as processed sound.

The design of music rooms is no less important with the advent of electro-acoustic aids as confirmed in an interview with musician and sound engineer, Mr. Tansen Nepaul. In fact the effects of echo and resonance could be much worse due to the amplification of sound through speakers in music rooms.

Electro-acoustic aids are crucial in the recording and production of music. It is possible to record separate musicians on separate tracks (multi-track recording) thereby affording the possibility of editing each instrument or singer separately before mixing and balancing the music. The net result would be music of higher quality than possibly even the original rendition.

There is an increasing trend among singers to use back-tracked music due to practical, financial and economic reasons. Such performances though limit spontaneity and the visual drama of live performances.