

■ JOURNAL OF THE INDIAN INSTITUTE OF ARCHITECTS ■



REFEREED JOURNAL OF IIA | ISSN-0019-4913

2018 NOVEMBER | VOLUME 83 | ISSUE 10 | ₹ 100



happiness through architecture

I Am Dynamic



Contents

JIIA IS REFERED JOURNAL
ISSN-0019-4913

REGISTERED UNDER SOCIETIES REGISTRATION ACT, XXI OF 1860
JOURNAL OF THE INDIAN INSTITUTE OF ARCHITECTS
VOL-83 ISSUE 10 - November 2018

- 4** Editorial - Ar Anand Palaye
- 5** President's Message - Ar Divya Kush
- 6** Construction and Demolition Waste Management in Cities
- Prof. Dakshayani R. Patil & Dr. Mamatha P. Raj
- 12** Exploring the Replica of the St. John the Evangelist Church, Colaba
- Ar. Sonia D'silva Fonseca
- 18** Reinventing the Public Realm
- Ar. Chintan Shah
- 26** The Confluence of Built and Art
- Ar. Abhirami.A
- 29** Colour as a tool for designing spaces for the elderly
- Ar. Sukanya Dasgupta
- 32** The ACA 18 TOKYO Asian Congress of ARCHITECTS
- 35** Foster's Amaravati | Consciousness of Continuity
- Ar. Vardhan Mehta
- 40** Mughal Art and Architecture of India
- Ar. Bindu Agarwal



ALL RIGHTS RESERVED 2006. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, photocopying, recording or any information storage or retrieval system without permission in writing from THE INDIAN INSTITUTE OF ARCHITECTS.

Only materials accompanied by stamped and self-addressed envelopes can be returned. No responsibility is taken for damage or safe return by the Editor of JIIA. The Editor of the THE INDIAN INSTITUTE OF ARCHITECTS takes no responsibility for author's opinion expressed in the signed articles.

Printed & Published by **Ar Anand Palaye** on behalf of **The Indian Institute of Architects** and printed by **Arihant Digiprint**, Unit Nos. 1-2, Bussa Industrial Estate, Hanuman Lane, Near to Peninsula Corporate Park, Lower Parel, Mumbai - 400 013 and Published at The Indian Institute of Architects, Prospect Chambers Annexe, 5th Floor, Dr D N Road, Fort, Mumbai - 400 001.

Tel.: +91.22.22046972/22818491/22884805 Fax: +91.22.22832516

Email: iiapublication@gmail.com / iiaho1214@gmail.com

Website: www.indianinstituteofarchitects.com

Editor: Ar Divya Kush R.N.I. No.9469/57

Email : divyakush@yahoo.co.in

Printer's Email : arihantdigiprint.offset@gmail.com

JIIA OFFICE BEARERS 2015-2017

Ar Divya Kush	- President
Ar Prakash Deshmukh	- Imm Past President
Ar Vilas V Avachat	- Vice President
Ar Amogh Kumar Gupta	- Jr Vice President
Ar Sunil R Degwekar	- Hon Treasurer
Ar C. R Raju	- Jt Hon Secretary
Ar Lalichan Zacharias	- Jt Hon Secretary
Ar Anand Palaye	- Chairman – Publication Board & Executive Editor, JIIA



Ar Anand Palaye

Dear Fellow Architects and readers

We are pleased to present a collection of papers and articles on a variety of subjects integral to architecture.

Ar. Prof. Dakshayini Patil and Dr. Mamatha Raj write on the subject of Construction and Demolition waste management and present practical solutions for this live problem.

Ar. Sonia Fonseca revisiting the St. John the Evangelist Church at Colaba presents an analysis of its architecture and construction methods.

Ar. Chintan Shah in his paper on Reinventing the Public Realm presents another live case proposal of ideas for a lake in Dahod, Gujarat.

Ar. Abhirami A. highlights the intricate relations of the traditional art with the built architecture in her paper on the Confluence of Built and Art.

Ar. Sukanya Dasgupta and Ar. Avik Roy address a specific and basic element i.e. 'colour' and its many effects in the design process for facilities for the elderly.

We are pleased to present a brief report on the Arcasia Council Meeting held on 10 – 14 September 2018.

Ar. Vardhan Mehta presents his analysis on the design process of Amaravati a modern city being built in southern India.

Ar. Bindu Agarwal in her paper on Mughal Art and Architecture of India, presents an interesting case study of Fatehpur Sikri to highlight its references to contemporary architectural styles.

We are sure our readers will find these articles interesting.



Ar Anand Palaye

Chairman - Publication Board & Executive Editor,
JIA

PRESIDENT'S MESSAGE



Ar Divya Kush

Dear Fellow Architects,

Warm Greetings,

I am also happy to inform you that, IIA has organized the UIA Council meeting for the 1st time ever at Lucknow in India on 29th Nov. & 30th Nov. 2018 which will be followed by the Architects Maha Kumbh on 1st & 2nd Dec. 2018. UP & Uttarakhand Chapter of IIA has made elaborate arrangements for the event. A detailed consolidated report will be brought to you in the December 2018 issue of the Journal.

This issue of the Journal has articles & research papers by eminent authors on important subjects like Construction Waste Management, Heritage, Public Spaces, Conceptualization of Modern Cities, Art & Architecture.

I am sure, as always, the papers & articles in this issue will prove to be very interesting & informative for the readers.

A handwritten signature in black ink that reads "Divya Kush". The signature is written in a cursive style.

Ar Divya Kush

President,

The Indian Institute of Architects

Construction and Demolition Waste Management in Cities

Prof. Dakshayini R. Patil



Dakshayini is currently Associate Professor at BMS College of Architecture, Bull Temple Road, Bangalore. She completed her B. Arch from BVBCET Hubli in 1999, M. Arch in Urban design from RVCE, Bangalore in 2010 & currently submitted her Ph D thesis to VTU, Belagavi based on research conducted on understanding elderly citizen's walkable mobility in residential neighborhoods. She has previously worked with Sobha developers- on various INFOSYS projects in Bangalore & Mysore, RSP pvt ltd- Master planning projects and with Hindu society of Minnesota, Temple & Community space project in Minneapolis, USA. She has Ten publications with prominent National journals & in conferences in India as yet.

dsjoshi08@gmail.com

Dr. Mamatha P. Raj



Dr Mamatha is currently Director of BMS College of Architecture (BMSCA), Bull Temple Road, Bangalore. She completed her B. Arch from BVBCET Hubli in 1988 & MURP in 2000 from Mysore University with First rank & Triple Gold medals. Her Doctorate from Mysore University in 2008 was on the topic of Metamorphosis of CBD of Bangalore, as a response to challenges of Digital Era. She has over 30 years' experience in teaching Architecture at UG, PG & Research levels. Her Professional tenure spans over 25 years and she leads the Consultancy cell at BMSCA. She is a distinguished Chairperson & member of various Professional bodies & Academic bodies. She has over 30 publications at national & international levels. She was been conferred awards such as A3F Teacher Award (Architecture) by A3 Foundation, Practicing Architects Association for Contribution to Architectural Education in Karnataka and recently Distinguished Educator & Scholar award by NFED- Coimbatore in Sept 2018.

director.bmsarch@gmail.com

ABSTRACT

There is an aggressive construction activity occurring in our cities along with constant demolition & renovation of existing built forms resulting in the generation of considerable waste & debris. This waste finds it's way onto landfills or roadside dumps or water bodies; scarring the city's public spaces but mainly polluting the environment. This waste upto 20% of overall Municipal solid waste has a good potential of being recycled and reused. An efficient regulatory framework is essential to manage construction & demolition waste. Cities such as Delhi are taking initiatives to tap the waste into useful resource. In Bangalore as well, BBMP has released a manual with a hierarchical approach to C&D waste management.

Key Words: *Construction & demolition waste (C&D), Implications, Urban life, Recycle/ Reuse*

INTRODUCTION

A sustainable city ensures that the solid waste management (SWM) is efficiently formulated and handled well. CPHEEO, the technical wing of Ministry of Urban development (MoUD), GOI classifies SW into 14 categories, one of which is the Construction and Demolition waste (C&DW). Civil works and building construction is an ever-happening activity in a city's progress & development. Increase in demand for housing, commercial growth, industrialization & infrastructure enhancement to keep up with the population growth are leading factors for increased building activities in both public and private sectors. Swachh Bharat mission envisages processing of 100% SW generated in cities by 2nd October

2019. C&DW management gains prominence in terms of tackling its generation and treatment as a sustainable goal. The three R's of reduce, reuse, recycle shall not only solve the concerns of waste generation & economical gains but save the environment as well. (GIZ & CSTEP: 2016) Builders, Architects, Engineers, Interior designers, Contractors and Property owners should be responsible towards the city and the environment. This paper aims to understand C&DW and its implications on urban life, possible ways to tackle; taking the case of Bangalore's plan of action to understand the various stages in the C&DWM.



JOURNAL OF THE INDIAN INSTITUTE OF ARCHITECTS



ADVERTISEMENT TARIFF CHART



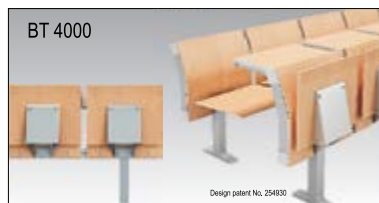
S.No.	Location	1 to 4 issues Per Insertion	1 to 8 issues Per Insertion	1 to 12 issues Per Insertion
1 COLOUR				
	Inside front cover	1,00,000	87,500	75,000
	Back cover	1,00,000	87,500	75,000
	Inside back cover	80,000	70,000	60,000
	Full page Right Hand Side	60,000	55,000	50,000
	Full page Left Hand Side	50,000	45,000	40,000
	Half page	30,000	27,500	25,000
	Quarter page	20,000	17,500	15,000
2 BLACK & WHITE				
	Full page Right Hand Side	40,000	35,000	30,000
	Full page Left Hand Side	35,000	30,000	25,000
	Half page	20,000	17,500	15,000
	Quarter Page	12,500	10,000	7,500



"The Cheques to be issued in the name of "THE INDIAN INSTITUTE OF ARCHITECTS".

Innovative Institutional Furniture Solution from **bonton**

Classroom Furniture



Lab Furniture



Library Furniture



bonton manufactures Wooden & Steel Modular Institutional /Office furniture comprising :

- Office Tables
- Chairs
- Partitions
- Storage Systems

Bonton Products Available At



bonton
FURNITURE SOLUTIONS
for those who believe in quality!

BONTON TECHNOMAKE PVT. LTD.
7-A, Scheme No. 71, Near Chandan Nagar Police Station, Dhar Road, INDORE - 452 009
Tel. / Fax : 0091-731-2383157, 2388769 E-mail : info@bontonturniture.net
website : www.bontonturniture.net

Channel Partners : Ahmedabad : 99786 71280, Bangalore : 97407 62969, Bhopal : 99260 00291, 94250 64260, Bhubaneswar : 78944 23365, Chennai : 98409 43022, Coimbatore : 98430 20018, Gwalior : 98277 68526, Hyderabad : 93475 01848, Jabalpur : 98931 20886, Kolkata : 97485 57710, Mumbai : 98204 29335, Nagpur : 94228 31364, New Delhi : 98111 22922, Palanpur (Gujarat) : 94145 46077, Patna : 94310 25276, Pune : 98810 94771, 95034 06715, 98224 38290, Raipur : 97529 99695, Vizag : 96528 49749, Wardha : 98222 32842, Yavatmal : 94221 65476

For Dealership Enquiry : Amit Dubey - 98260 38315, Vinod Bapna : 98260 62313

Dealer's Enquiry Solicited

C&D WASTE & DEBRIS

In India construction waste constitutes approx 5% and demolition waste 95% of C&DW and together upto 20% of all MSW excluding large projects. (Page 334, MSWM manual) C&DW largely refers to (i) Construction waste - generated during building construction/repair/renovation such as dismantled shuttering; (ii) Demolition waste- resulting from demolition of built structures for renovation or complete removal or renewal or resulting from natural events. (Table 1, Fig 1)

Table 1: C&D waste categorization

SI No	Classification	Components
1	Major Components	Bricks, Cement concrete, Plaster, Steel, rubble, stone (marble, granite, sand stone), timber/wood (especially demolition of old buildings) etc
2	Minor Components	Conduits (iron, plastic), Pipes (GI, iron, plastic), Electrical fixtures (copper/aluminum wiring, wooden baton, plastic switches, Panels (wooden, laminated), glazed tiles, glass panes etc

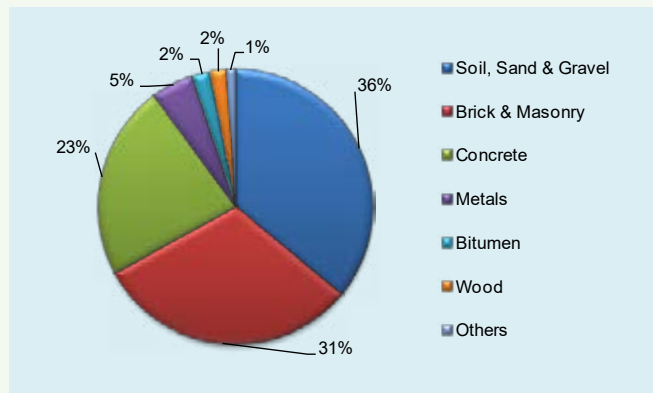


Fig. 1: Typical composition of C&DW in India (<https://www.nbmcw.com/report>)

C&DW has critical implications as it differs from other SW; it is bulky & voluminous occupying considerable space. Hence, it gets dumped by the site owners and builders in public spaces such as sidewalk, open ground or a vacant site which is easier. (Fig 2)

Such dumps reduce effective useable space along streets causing traffic congestion and agony to pedestrians. It poses risks to the safety of the pedestrians while walking along streets specially children walking to schools, elderly or physically challenged resulting in falls, injuries or worse. (Fig 3) In the doctoral research conducted by the authors, it was found that of the nearly 14 barriers that were observed to pedestrian mobility, one of the main barriers is the 'construction debris' dumped along streets. Inventory of barriers included vehicles, infrastructure poles, encroachments, trees and such other elements which make walking in public spaces difficult. The study was conducted



Fig. 2: C&D debris illicitly dumped on vacant sites in Vijayanagar, Bangalore creating poor public realm & blocking sidewalks (Photo by Author on 16/08/2018)

in four neighborhoods of Bangalore city (Vijayanagar, Govindrajnagar, Basavanagudi and Chamarajpete) with a survey methodology adopted for a critical analysis of elderly walkability. In the study, the Level of criticality was deduced for each barrier. For the 'C&D debris' the average score under 'high adversity' rating was between 60 to 70%, implying that the element poses barrier to mobility and highly unsafe. Primarily it scars the quality and overall aesthetics of the city's neighborhoods giving rise to poor public realm.



Fig 3: C&D debris in Govindrajnagar residential locality adjacent to new constructions & blocking pedestrian sidewalks (Photo by Author on 18/08/2018)

C&DW cause air and water pollution; clog drains causing urban floods & spread of diseases. It is bio-non degradable, may comprise of poisonous gases & harmful sharp objects. But there is a bright side to the C&D waste. If Architects and builders take initiatives to recycle and reuse the waste towards productive tasks, it becomes an asset. The recycling

industry helps in employment generation at various scales and an economic activity which will help sustain local economies. As per the MoUD’s manual, it is directed that C&DW shall be managed by ULBs with a decentralized system in place.

C&D WASTE MANAGEMENT PLAN BY BBMP

Bruhat Bengaluru Mahanagara Palike (BBMP), the administrative body for civic and infrastructural assets of the Greater Bangalore metropolitan area has prepared draft guidelines on C&DWM subject to finalization. BBMP has identified 7 sites for C&DWM. (Table 2)

Table 2: Seven sites for collection of C&DW in Bangalore (source: BBMP)

SI No	Name of the Location	Extent of Area in acres	Nearby Zone
1	Mallasandra, North Taluk	30	R.R. Nagar/West
2	KaduAgrahara, East Taluk	18	Mahadevpura
3	Srinivasapura & Kogilu, North Taluk	10	Yelahanka
4	Gollahalli, South Taluk	60	Bommanahalli & South
5	Kannur, East Taluk	50	East
6	Guddadahalli, North Taluk	46	Dasarahalli
7	Mittaganahalli, East Taluk	10	East/Mahadevpura

BBMP has adopted a sequential methodology with a set of appointed contractors to undertake collection and transportation of debris at a predetermined rate; sell debris towards recycle by other agencies for making bricks or tiles. There is a helpline which has to be mandatorily used by citizens to get debris removed. Processes of segregation and storage are clearly defined and the dump site parameters as well. Awareness programs for the public shall spread information about WM practices. No waste is supposed to be deposited along streets or vacant sites causing public nuisance. Violations will attract stipulated fines. Respective occupiers/owners/developers are responsible for removal/transport/disposal in compliance of notice at the time of applying for plan sanction. (Table 3)

Table 3: BBMP Guidelines for estimating waste generation

SI No	Type of process	Estimated waste generation (kg/sqm)
1	Construction	40- 60
2	Renovation & repair work	40- 50
3	Demolition of pucca building	500
4	Semi-pucca buildings	300

For minor works, owners shall retain the debris within their premises until arrangements made to clear through empanelled vendors. C&DW shall not be mixed with wet or recyclable waste. In case of hazardous waste, it shall be sent separately to KSPCB. Waste lying unattended for over 7 days will be removed by BBMP and the cost with penalty along with property tax shall be collected from the owner. Citizens willing to construct/renovate are required to seek prior sanction & all C&D applications must be filled specifying the expected nature & quantity of waste. There is a set of documents to be furnished along with the application such as site plan indicating areas proposed for temporary storage/segregation of C&DW in line with the benchmark areas as suggested in the manual. (Table 4)

Table 4: Storage area estimation table (source: BBMP)

Project Built up area (sq ft)	Size of storage area (sq ft)
<50000	82
5001 – 15000	125
15001 – 50000	175
50001 – 100000	225
100001- 200000	275
>200001	500

The occupier is mandated to maintain a log sheet & proofs on the C&DWM for getting Completion certificate & Occupancy certificate or BESCOM/BWSSB connection. Primary objective of BBMP sanction is to minimize wastage and enable reuse/recycling. But even with these guidelines in place, Bangalore has not been able to efficiently address the concerns and is frequently posed with hurdles of SWM. It is essential to understand the reasons for the possible dilution of the guidelines and issues posed in the city.

NON-COMPLIANCE BY CITIZENS

- Site owner’s unwillingness to make efforts to clear the debris or spend money
- No awareness on methodology to clear the debris or the helpline number, procedures etc.
- Requires specific vehicles to transport the debris, which may not be easily available
- Convenience to dump debris on unclaimed public spaces

ISSUES & CONCERNS w.r.t C&DW

- Immoral actions from appointed vendors. Illicit trading of recyclable materials amongst their own acquaintances
- Only 10% of C&DW reaches the dump sites (CSTEP & GIZ report, 2016) Waste either gets into landfills or dumped in water bodies & open spaces
- Mixing of C&DW with other waste making it unsuitable to recycle
- Non-coordination amongst infrastructure bodies in regulation controls/NOC’s

- Smaller builders in the unorganized industry contribute to the unaccounted waste (Bharadwaj, 2016)

RECYCLING OF C&DW

Construction industry in India generates about 10-12 million tons of waste annually. Whereas, there is a wide demand-supply gap in building material requirement of the housing sector and road sector. Housing sector indicates a shortage of aggregates to the extent of 55,000 million cu m & additional 750 million cu m aggregates for road sector. Recycling from C&DW may reduce these gaps. (CPHEEO manual) A systematic approach of segregation and storage of waste is the first step since a high quality of recycled material (Table 5) is always desirable to have a good market demand; else it is not feasible to recycle. Few suggestions in the manual:

- Reuse (at site) of bricks, stone slabs, timber
- Sale/auction of material which cannot be used due to design constraint
- Plastics, scrap metal to recycling industries
- Rubble, brick bats, concrete pieces used for leveling, under coat of minor lanes

Table 5: Examples of reusing C&DW (MSW Manual)

Sl No	Material	Process	End uses as
1	Plain concrete	Crushed & sorted	Aggregate
2	Reinforced concrete	Crushed, sorted	Aggregate
		Steel recycled	New reinforcement steel
3	Clay bricks & roof tiles	Cleaned	Masonry
		Crushed & sorted	Aggregate
		Pulverized	Lime mortar
4	Natural stone masonry	Cleaned	Masonry
		Crushed	Aggregate
5	Asphalt paving	Crushed & cold mixed	Road construction
6	Gypsum plasterboard	Cleaned	Boards
		Crushed	Soil conditioner
		Recycled	New Gypsum products

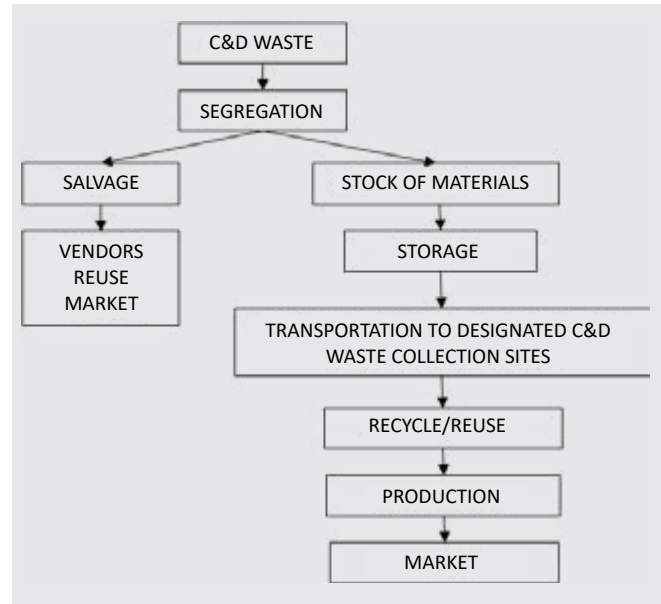
INITIATIVES IN INDIAN CITIES

Delhi Municipal Corporation (DMC) saw the first collaborative pilot project of C&DWM in 2009. Delhi produces upto 4600 tons of C&DW per day. DMC set up a plant to process 500 tons per day in Burari on a PPP model. Processed waste is used for two purposes- as road sub-base and for making finish materials such as pavement blocks and concrete bricks. The loose soil and sand is sold and by-products are used in construction of bus shelters. Central Pollution Control Board guidelines has listed 69 other Indian cities which have

initiated recycling of C&DW. Hence, there is a paradigm shift seen in addressing C&DW.

STRATEGIES

Firstly, to address the C&DW management, it is suggested that strict Institutional and Regulatory mechanism be formulated with punishment for non-conformation of rules. Neighborhoods need to be designed for a good public realm so as to discourage illicit usage of public spaces, create natural surveillance by awarding ownership to general public to enhance community participation in controlling encroachment of streets. Moral awareness amongst citizens by public initiatives shall instill the onus on the citizens. Secondly, appropriate management of waste and recycling needs to be adopted using the 3R's philosophy. Building approvals for construction, renovation, extension or demolition- clause that outlines and lays down norms for collection & disposal of waste & debris shall address the core of the issue i.e., waste generation. The process needs to be transparent to public in order to make it easy for every citizen to understand ways to handle the waste. (Fig 4) Every ULB shall plan and invest in appropriate technology to treat and recycle the waste while employing local manpower in the process.



CONCLUSION

Construction waste has to be viewed as a 'resource' and not as a discard which results in polluting the city & its environs. Taking cues from the best practices, setting up plants to process the waste, while generating employment and local economy boost should pave the path for a better C&DWM in our cities. Architects & designers need to be part of construction projects and take initiatives on efficient C&DWM processes while educating citizens on the relevance of the same.

REFERENCES

- BP Naveen & PV Sivapullaiah, (Aug 25 2016). Solid Waste Management in Bengaluru-Current Scenario and Future Challenges, IISc, Bengaluru. Innovative Energy & Research online.
- Compendium of good practices- Urban solid waste management in Indian cities (2015) Report by UMC& CEE, NIUA.
- Construction and Demolition Waste Utilization for Recycled Products in Bengaluru: Challenges and Prospects (July 2016) Report by CSTEP, published by GIZ.
- Guidelines for Construction and Demolition waste management (March 2016) BBMP, Bengaluru. Available online at bbmp.gov.in/documents
- Guidelines on Environmental management of construction & demolition wastes (2017) by Central Pollution Control Board (Ministry of Environment, Forests & Climate Change)
- Manual on Solid waste management (2000) Report by CPHEEO, by MoUD GOI
- Municipal solid waste management manual- draft (2014) Report by CPHEEO & GIZ, by MoUD GOI
- Recycling Economic Information (REI) Report (2016) United States Environmental Protection Agency (EPA) <https://www.epa.gov>. Accessed Aug 17, 2018
- Construction waste disposal: BBMP doesn't care for rules, Article published 05th March 2018, Accessed Aug 16, 2018. <http://www.newindianexpress.com>
- Shrivastava S & Chini A (January 2009). Construction Materials and C&D Waste in India (irbnet)



AN APPEAL



Dear Friends,

It gives me immense pleasure and satisfaction to inform you that a long cherished desire of the members of the Institute of owning the IIA Head Office premises at Prospect Chambers Annexe, Fort, Mumbai of which we are the tenants for the last several decades has fructified.

Friends, we have finally entered into an agreement to purchase, with the Owners of the premises for a price of Rs. 1.25 crores. Applicable Stamp Duty and other fees amounting to Rs.6.55 lakhs along with a token advance of Rs. 1 lakh has already been paid.

I congratulate all the members of the Institute for this achievement in the Centenary Year of I.I.A.

I also take liberty of appealing to all the Chapters/Centres/Sub-Centres and also individual members of the Institute to handsomely contribute to meet the requirement of the balance payment to be made to the Owners.

“Wishing you all the Best once again”.

With warm regards,

Ar. Divya Kush
President

The Indian Institute of Architects

Exploring the Replica of the St. John the Evangelist Church, Colaba

In Colonial Bombay Parallel to the Gothic Revival Architecture in Britain, Era: 1840 - 1880

Ar. Sonia D'silva Fonseca



Ar. Sonia D'silva Fonseca has completed her M.Arch, Theory and Design from CEPT University, Ahmedabad in 2014 and her B.Arch from I.E.S.College of Architecture, Mumbai University in 2011. She is currently teaching at Asmita College of Architecture, Mumbai and is also pursuing her free lance practice. Her interests lie in Architectural Design, History & Research.

Special thanks to Ar. Vikas Dilawari for his constant guidance and support, Prof. Kulbhushan Jain, Prof. RJ Vasavada & Prof. Snehal Shah for their mentoring & monitoring which has aided me to achieve a much deeper comprehension of this research.

ar.sonia011@gmail.com

ABSTRACT

The nuance of ideas in architecture from one country to another is of immense curiosity while investigating the various aspects shaping the architectural language of a particular era. The Gothic Revival Movement left a strong impact in colonial Bombay. The approaches to construction, adaptations to climate, materials and workmanship demonstrates subtle shifts, which arose towards the Indian context. The St. John the Evangelist Church, Colaba, a British church in Mumbai stands as a testimony to this progression. An investigation whether the ideals of this church is based on the principles stated by the Ecclesiological Society of Britain which dictated dogmas for designing buildings in Britain during this era is inspected. Did the St. John the Evangelist Church replicate 19th century British architecture or did it generate an extraordinary outcome of neo-Gothic in Bombay? An expedition which decodes the significance of this church is explored while its rationale has been examined.

Key Words: *The Gothic Revival Movement, Colonial Bombay, Construction Techniques & Materials*

1. The Gothic Revival

With the inception of new technologies, machinery, developments and ideas spreading rapidly throughout Europe, a sense of insecurity was felt among the people and society of Britain. This sudden change of ideals resulted in the common man taking a set - back caused due to his inability to keep up with the changes. Society wasn't ready to face challenges, complications and newness of industrialization. Its inability to cope up with the speedy changes and fear of the outcome it may produce, drove them back to the past. Its memories, seemed greatly attractive in comparison to this present era of rapid growth.

The industrial revolution, caused an architectural revival in Britain. Revivalists such as A.W.N. Pugin and Sir John Ruskin, through their writings created a basis for architectural designing. Ruskin, through his book 'Stones of Venice' 1853, devoted a chapter to the 'Nature of Gothic' praised Gothic architecture for 'the magnificent science of its structure, and the sacredness of its expression.'¹ 'What fascinated Ruskin

and his contemporaries was not only the extraordinary feats of engineering achieved by the great Gothic masons, but also the spirituality of Gothic design, which struck a chord at a time when the effects of industrialization and the materialism of Western culture were subjects of widespread concern.'² The craftsmen expressed freedom, which gave heed to display his individuality creating an art that was vibrant unlike the dull, repetitive quality of factory produced objects after the Industrial Revolution.³ This Gothic style transformed the classic grammar of columns, lintels, pediments and round arches into a visual language of slender colonettes, buttresses, pointed arches and vaulting which gave rise to vast interior spaces.⁴

This was the beginning of the Gothic Revival Era, whereby, a moral justification and truth was linked to every aspect of building design whose value was obviously felt more than the practicality of the industrial revolution. The Gothic Revival which spurred up due to the Industrial Revolution, spread

¹Sir John Ruskin, *Stones of Venice*, 1853, Chapter: *Nature of Gothic*. ²*Stones of Venice*, John Ruskin, taken from Megan Aldrich, *Gothic Revival, Gothic Forms and Gothic Sensibilities*. ³Megan Aldrich, *Gothic Revival, Gothic Forms and Gothic Sensibilities*. ⁴*Ibid* 3.

to its colony in Bombay by the British, whose ancient Gothic principles played a major role in its planning and designing.

2. A.W.N. Pugin, 1812 – 52

A.W.N. Pugin, the towering figure of the Gothic Revival Movement, born in 1812 to a French Catholic émigré, Auguste Charles Pugin and an English Protestant, Catherine Welby, the daughter of a well to do barrister, was a child prodigy in terms of architectural drawings. Pugin, a writer and architect aimed at bringing back the old medieval styles and forms of architecture of the fourteenth century, through his books *Contrasts*, 1836 and *True Principles of Pointed or Christian Architecture*, 1841. His books combined a variety of beliefs such as, Architectural: A demand for 'truth' of construction, inherited from the French Rationalist tradition of the 18th century and a strong sensitivity to materials and colours, inherited from the English Picturesque.

Religious: A romantic religious zeal and love for the symbols of the Middle ages Social beliefs: A belief in the superiority of the social system of the middle ages.⁵

He produced a distinctly new proposition: that the artistic merit of the artifacts of society was dependent on the spiritual, moral, and temporal well-being of that society. However the great theme of *True Principles* was construction.⁶ Pugin through his books states that, the design has to be, Necessary for convenience, construction or propriety. All ornament should consist of enrichment of the essential construction of the building. These are the two principles by which he says, "You may be enabled to test architectural excellence."⁷ These norms were published by the Ecclesiological Society in Britain which formed a backbone of dogmas that revolved around the planning and designing of a perfect church building, further interpreted and replicated accurately, in the structures built in Bombay.

3. The St. John the Evangelist Church, Afghan Memorial church, 1847-1858

The First Afghan War was fought between the British East India Company and Afghanistan. The St. John the Evangelist church, also known as the Afghan Memorial Church was built to commemorate the loss of lives of British soldiers in the Afghan War. In 1847, Sir Bartle Frere, Governor of Bombay, (1862 – 1865) approached the Architectural Society of Oxford again, on behalf of the church's trustees, brought back drawings for the church by one of Britain's renowned architect Sir George Gilbert Scott successfully. As these drawings were too elaborate and expensive, they were modified by Henry Conybeare, a British architect and engineer in Bombay. Embracing theories of Pugin and the Ecclesiological Society who had a major hold on the National



1. The Afghan Church, Exteriors, Photo: Enoch Rodrigues

Architectural style in Britain, the same followed in its colony in Bombay thus giving rise to a 'pure' style of neo Gothic in church architecture.⁸ The Afghan church was the largest and most elaborate of Conybeare's architectural compositions, according to Frere, it "owes some of its best features" to G.G. Scott's original designs.⁹ Built using Ashlar Masonry, this was the first church constructed in Bombay, as per the principles laid down by the Ecclesiological society in adherence to the Gothic Revival Architecture prevailing in Britain during that era. This church further gave heed to the so called 'Bombay Gothic' in Colonial Bombay.

4. Analysis of the church

The analysis revolves around demonstrating a replica of Britain's national style of architecture represented in Bombay's colony. Analyzing the St. John the Evangelist Church, Colaba, Bombay based on the following parameters:

- Principles set forth by the Ecclesiological Society in Britain
- Direct import of materials and Inputs of British Architects

Principles set forth by the Ecclesiological Society in Britain

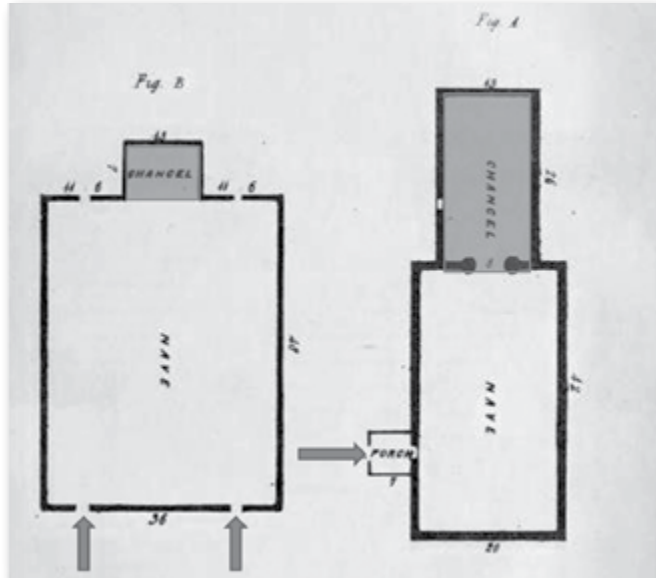
These principles served as dogmas set forth by Pugin and the

⁵Mcleod Robert, *Style and Society: architecture ideology in Britain 1835-1914*. ⁶Megan Aldrich, *Gothic Revival, Gothic Archaeology and Gothic Propriety*. ⁷A.W.N. Pugin, *True Principles of Pointed Architecture*. ⁸Cox, H.E., *op. cit.*, p.13, Dr.VijayaGupchup, *A Witness to History*, chapter 3. ⁹Christopher London, *Bombay Gothic*.

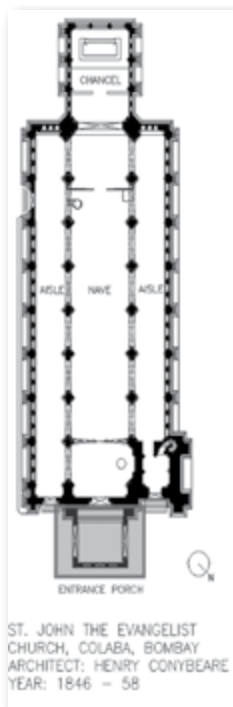
Ecclesiologists in Britain, governing the manner in which a true building of the Gothic Revival style should be designed. It was followed by the British in Bombay, representing themselves in Indian Society, in order to create an empire of their own.

4.1. Planning and Orientation

A church should not be a ‘preaching box’, but preference should be given to the ritual on the altar. Even the smallest church should have a spacious chancel, clearly distinct from the nave, and a porch on the side of the nave.¹⁰



2. Contrasted plans of churches, Source: A Few Words to Church Builders, published by the Cambridge Camden



The Afghan church building of the Early English Gothic Style, has a simple plan form. Comprising of a nave with aisles on both sides and a Chancel at the South West end, the plan is absent of the transept arms. A distinct roof truss which is clearly evident from the outside is present. A bell tower with a prominent spire dominates the skyline. The Church is entered through a large Entrance Porch situated on the North Eastern end, while the Tower and Spire are at the North corner of the building next to the Porch. The position of a porch according to the principle is from the side of the nave. A need for having an entrance from the east

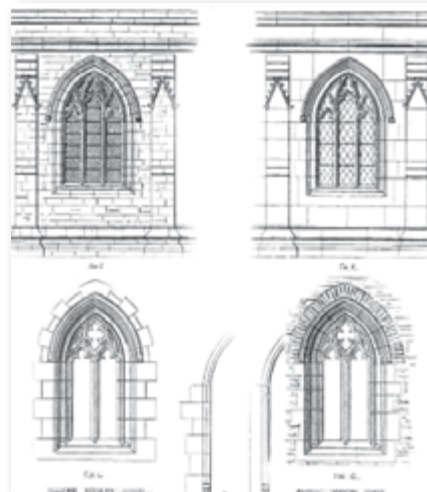
3. Plan of the Afghan Church, Source: Kirtida Unwalla, Intach

end was essential because of the position of the church with reference to the road. The builders placed the Chancel at the West end as they were also observing a good rule for India. Their intention was to have a large glass window over the Altar which could have been done to prevent the harsh morning sunlight from coming straight onto the altar.¹¹

4.2. Masonry Construction and Materials

Pugin argued against the use of regularly cut, big stones for masonry: ‘not only are the stones which are used in ancient buildings exceedingly small, but they are very irregular in size so that the jointing may not appear a regular feature and by its lines interfere with those of the building’.¹²

In the adjacent sketch, Pugin illustrates how, in the case of the top two, the eye is drawn towards the buttresses in the right hand picture, whilst the focal point is the window in the left hand drawing. In the case of the lower two drawings, in the left hand window the regular jamb stones lead the eye to the periphery of the window whilst in the right hand picture the irregular and smaller jambs accentuate the window itself.



4. Sketch by A.W.N. Pugin, Source: True Principles of Pointed Architecture

The walls of the St. John the Evangelist Church are thick and faced with tightly laid (originally laid with thin joints) coursed Kurla stone in ashlar masonry and buff coloured basalt for the exterior & Porbandar stone on the interior. The window openings have an irregular pattern and smaller

jamb stones such that it draws the viewer’s attention to the window itself. Also, the corner buttresses, were of a larger size made of basalt which is a stronger stone than the regularly coursed Kurla stone. This keeps the intended foci of the structure & strengthens the walls as stated by Pugin.

4.3. Horizontality and Verticality

"It is evident that for strength and beauty, breaks or projections are necessary."¹³

In the St. John the Evangelist Church, the lines of the long north and south walls are broken by a regular series of seven bays

¹⁰A Few Words to Church Builders, published by the Cambridge Camden, later Ecclesiological, Society in 1841. ¹¹Church Historic Records, Afghan church ¹²A.W.N. Pugin, True Principles of Pointed Architecture. ¹³A.W.N. Pugin, True Principles of Pointed Architecture.

consisting of alternating windows and simple buttresses. These serve as ornamentation also following the principle of "utility," by virtue of their weathering function. The bottom course, or plinth, is splayed, or bevelled, to take the water run-off away from the base following the principle of "propriety."



5. External Façade showing masonry & buttresses, Photo: Enoch Rodrigues

4.4 The Roof Pitch

"The pitch of the roof, the most beautiful pitch of a roof or gable-end



6. Scissor Braced roof truss, Source: Author

is an inclination sufficiently steep to throw off snow without giving the covering too perpendicular a strain; it is formed by two sides of an equilateral triangle. The practical aspect is that the correct pitch ensures the wind pressure bears down on the roof covering and not

allowing the wind to blow under it so lifting it up."¹⁴

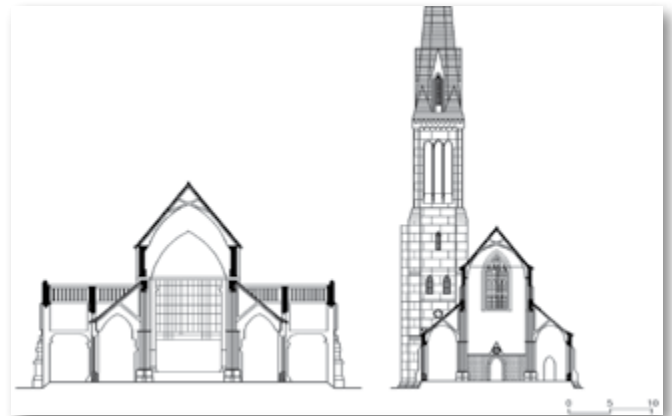
The roof of the St. John the Evangelist church is an open one, of varnished teak wood, with a pitch of fifty degrees. The height of the church is sixty feet (18.29m) and the chancel arch is fifty feet (15.24m). The pitch of the roof in this case is based on the climatic conditions of Bombay which needs the angle due to heavy rainfall.

4.5. The Roof Woodwork

"The strength of woodwork is attained by bracing the various pieces together on geometrical principles. The construction of these, so far from being concealed, is turned into ornament."¹⁵

In the St. John the Evangelist Church, the entire structure is roofed by a system of Timber roof trusses, covered presently in Asbestos Cement Sheets. The sheets are laid over a good system of timber planking. A Scissor Braced roof truss lies

above the nave with its tie beams crossing each other. A collar supports the two principal rafters, maintaining the pitch of the roof which further joins the columns for support which thereby carries the load. It serves both 'utility' as it spans over the length of the nave and also forms a very interesting ornamental feature. On comparing the Afghan church with the St. Mary Abbots Church, 1872, Kensington designed by Sir G.G. Scott it is observed that the scissor braced roof truss over the nave is precisely the same as that of the Afghan Church. Also, the same form of roof construction is observed over the aisle as well. However, the scale & intricate detail work of the St. Mary Abbots church is much larger as it probably caters to a much larger congregation & has construction resources available. The material used in both cases is wood which brings us to conclude that the major elements of scale, proportion and constructional accuracy has been maintained.



7. Section showing the St. Mary Abbots Church, Kensington 1872 & the St. John the Evangelist church, Colaba, 1858, Source: Compiled by Author

4.6. Pinnacles

"Pinnacles should be regarded as answering a double intention, both mystical and natural."¹⁶

The spire draws the eye upwards, pointing like a finger to heaven. It is symbolic but also practical as it houses the bell. At the Afghan Memorial church, the spire, is highly visible and also used as a landmark for ships approaching the Bombay harbour. It rises upto a height of 210 feet (64 mts.) and consists of eight bells of different sizes which are used to call the faithful. This spire, representing a pinnacle serves a mystical intention as well. A typical broach spire (octagonal) rises straight from a square tower without a parapet.

The St. Mary Abbots church, Kensington, 1872, has a huge and lofty spire of 85 metres (275 feet) holding a ring of 10 bells, the tallest in London governs its skyline. This shows how the idea of a high rise pinnacle serves the function of utility by housing the bell and also fulfils the purpose of ornamentation in both Britain and its colony.

¹⁴Ibid 13. ¹⁵John & Lindsay Mullaney, www.victorianweb.org. ¹⁶A.W.N. Pugin, *True Principles of Pointed Architecture*.

4.7. The Splay

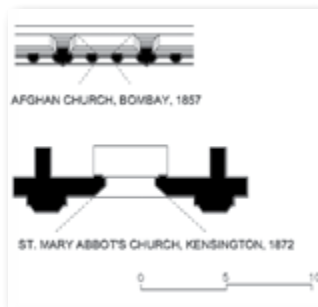
"It will be readily seen that without a splay a considerable portion of light would be excluded, and that this form of jamb is necessary to the use and intention of a window."¹⁷

4.7.1. Splayed Window openings

The window openings at the St. John the Evangelist church follows this principle creating a feeling of airiness. Wherever one sits in the nave, at least two full windows and their light are visible. This also validates Pugin's theory of dispersion of light. It was a style and technique frequently used in the Middle Ages, at a time when glass was very expensive.¹⁸ Small apertures served a double purpose. They were useful in maintaining an even temperature. They lessened heat loss in winter and heat gain in summer. This concept of splaying of light through the window openings in the St. John the Evangelist church proved acceptable in Bombay's hot and humid climate. The ventilation was maintained, as also light was provided in a rather mystical fashion, which adhered to Pugin's principle of 'utility' with mysticism.



8. Splayed window openings at the Afghan Church, Photo: Author



9. Sections of Splayed windows
Compiled by Author

On comparing this with the St. Mary Abbot's church, Kensington it is observed that the concept of splaying of light has been followed at the window openings.

4.7.2. Splayed Doorways

The purpose of the essential construction of doorways is to allow access and egress. They should be the right



10. Splayed Entrance Doorway at the Afghan Church, Photo: Enoch Rodrigues

width for their purpose and any ornament should contribute practically and aesthetically to this end. So, in the case of a door jamb, the mouldings should not project, as this would counteract the purpose of a splayed jamb: to increase width of access.¹⁹

The St. John the Evangelist church has accentuated doorways at every entrance, splayed with a series of arched columns forming an 'archivault'. This form pushes the focus to the entrance doorway heightening the width and height of the access.

4.7.3. Mouldings

"Mouldings are the enrichment of splays, doorways, windows, arches, piers, bases and string-courses, of weatherings and copings, and they are introduced solely on the principle of decorating the useful."²⁰

Splays allow extra light in the case of windows and at the base of buildings they protect and shed water off plinths. The interiors of the St. John the Evangelist church consists of a series of splayed arches.

The colonnades between them, the arches at the chancel behind the altar, the base of every pier, copings and external archways follows the principle of splaying of mouldings.

The perception of splay has been followed at the St. Mary Abbots Church, Kensington through their mouldings of arches, piers, bases and doorways as well. It has been observed that the buttresses have also been designed such that they splay towards their base. This, fulfils the aesthetic function of production of pleasing gradations of light and shadow and the practicality of weathering.

4.8. Direct Import of Materials and Inputs from British Architects

Pugin next examines the "consideration of works in metal." As he puts it, "the design to the material and decorating construction."²¹ His initial three principles of convenience construction and propriety are to be applied as much to ironwork as to any other part of the building. At the St. John the Evangelist church, William Butterfield designed some of the railings and benches, seats, choir stalls, entrance screen, and the floor – paving pattern for the Minton tiles imported



11. The Altar, Flooring of Minton tiles,
Photo: Enoch Rodrigues

¹⁷True Principles of Pointed or Christian Architecture, 1841, A.W.N. Pugin. ¹⁸Church Historic Records, Afghan church. ¹⁹A.W.N. Pugin, True Principles of Pointed Architecture. ²⁰Ibid 19. ²¹True Principles of Pointed or Christian Architecture, 1841, A.W.N. Pugin.

from Britain.²² The stained glass in the lancet windows at the Afghan church were designed by William Wailes who had earlier collaborated with William Butterfield on London’s church of St. Barnabas.²³

5. Conclusive Analysis

5.1. Decoding the Indian Victorian Churches

PHASES OF DEVELOPMENT	INVOLVED BRITISHERS	INPUTS
1. Design Backbone	A.W.N. Pugin and the Ecclesiologists, 1830’s	Formulated Principles which served as dogmas for designing buildings in Britain.
2. Planning and Designing	Architects: Henry Conybeare, a Hydraulic engineer	Modified Original drawings made by Sir G.G. Scott Executed the construction of the churches Designed the St. John the Evangelist Church & executed its construction
3. Construction	John Lockwood Kipling, Taught in the J.J. School of Art	Trained craftsmen who were implemented in the construction of the Bombay Gothic and also worked on the churches.
4. Artists	William Butterfield William Wailes	Designed benches, seats, choir stalls, entrance screen at the Afghan church Designed the Stained glass in the Lancet window at the Afghan church
5. Direct Imports	Materials	Minton tiles for the chancel flooring at the Afghan church

5.2. Conclusion

The zeal of the British to create a home for themselves such that it kept up with the current trends in Britain and also cast an image of their country on the Indian Subcontinent led them to build this church.

The St. John the Evangelist church, Colaba was the first church in the country built according to the principles laid down by the Ecclesiological Society in Britain. These principles were followed by the churches in Britain and hence the same rules were applied while designing the churches in Bombay under the British rule.

It also was the first building that used the ashlar masonry in lieu of the prevailing brick construction that existed in Bombay. The neo Gothic style of architecture used stone for its construction. The soft limestone used in London was replaced by the locally available Porbandar stone for details

and basalt masonry i.e. Kurla stone. Traditional materials such as stained glass for windows, Ornamental C.I. gates, Minton tiles which were solely manufactured in Britain were shipped to Bombay. Thus materials that could not be replicated were imported. One has been able to find traces of Britain’s design principles, imported materials and direct replications of the forms of British architecture applied at the Afghan Church. Other discoveries include adaptations to Bombay’s climate, availability of local materials, craftsmanship as also the economy forming the major factors that govern the architecture.

Pugin’s principles of ‘convenience, construction & propriety’ have been adhered. An enrichment to construction fulfilling ‘utility’ through ornamentation is satisfactorily decoded in the analysis of the St. John the Evangelist Church.

This church thus, stands as an example through architecture of colonial domination and supremacy. Its replica made, also hints that the British who came initially as traders in the Indian Subcontinent were now firmly based, establishing their territory and were here to settle.

6. Bibliography

1. A.W.N. Pugin, True Principles of Pointed or Christian Architecture, 1841, Cambridge University Press, 2014
2. A Few Words to Church Builders, Cambridge Camden, later Ecclesiological Society in 1841
3. Ruskin, John, Seven Lamps of Architecture, Boston Dana Estes & Company Publishers
4. The Bombay Gazette, Volume 3, Asiatic Library, Fort, Mumbai
5. Kenneth Allison, Architects and Architecture of London, Published by Elsevier Ltd. 2008
6. Bombay Gothic: Christopher London, Published by India Book House Pvt. Ltd.,2002
7. A.J. Nix-Seaman, The Afghan War Memorial Church & Historical Notes on Colaba by (Ag. Archdeacon of Bombay (Herat Institute Of History & Culture)
8. Article by Mariam Dossal: Henry Conybeare and the Gothic Revival in Bombay c.1840-1900
9. Dr.VijayaGupchup, St Thomas Cathedral Bombay – A witness to history, India Book House Publications
10. Macleod, Robert, Style and Society: Architecture ideology in Britain 1835 – 1914, RIBA Publications Ltd.
11. Meagan Aldrich, The Gothic Revival, Phaidon Publications

²²Christopher London, Bombay Gothic. ²³Bombay Gothic, Christopher London

Reinventing the Public Realm

A case of Chabb Talab Dahod City, Gujarat

Ar. Chintan Shah



B.Arch - Bachelor of Architecture, (2003 - 2008), KLS Gogte Institute of technology, Belgaum (Kar).

M.Arch - Masters in City design, (2016 - 2018), Sarvajanic college of Engineering, Surat (Guj).

arch.chintan@gmail.com

ABSTRACT

The happiness index of people of any urban area is dependent on the kind of public spaces the city offers to its people and how people uses such spaces. A well designed public realm not only boosts to the liveability of a place but can also benefit to the environment. It can help to grow community comprehensively and increases the social cohesiveness among the people. But the use of public spaces are modifying with the change in socio-cultural and socio-economic lives of people. Initially, the public spaces used to be streets, chowks, bazaar or a religious complex but over the years, the public realm has added more components to it like community halls, cafes, waterfront developments etc.

Introduction

The happiness index of people of any urban area is dependent on the kind of public spaces the city offers to its people and how people uses such spaces. A well designed public realm not only boosts to the livability of a place but can also benefit to the environment. It can help to grow community comprehensively and increases the social cohesiveness among the people.

PUBLIC REALM

Spaces which are developed for the public use and are knit together to create an urban space for people of an urban area

TRANSFORMATION IN PUBLIC USE

Before



Now



- Public realm has added new components into its domain over the years
- The chowks and streets which were the main spaces for public interaction are mostly used by the vehicles now a days
- The spaces like cafes, rooftop gardens, community halls, water front parks are the new components of public realm in Indian context

DAHOD CITY - IN BRIEF

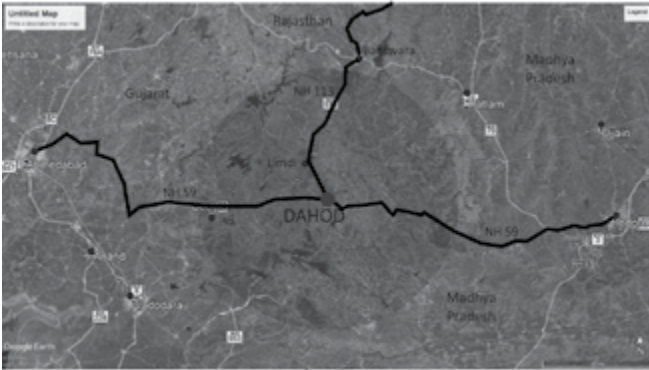


Dahod is also into smart city race

- Dahod city is situated on the banks of river Dudhimati.
- Dahod Nagar Palika Area – 1635 acres (6.61 sq.km.)
Gamtal area - 133.25 acres (0.52 sq.km.)

- Population - 130,503 (2011 census), floating population - 25000
- Projected population in 2042 - 2.17 lakhs
- Average Annual Rainfall - 794 mm.
- City is at a distance of 16.0km from Madhya Pradesh border and 35.0 km from Rajasthan border.
- Falls under the 'Purvapatti' region (tribal belt from Banaskantha in central gujarat to Umergam in south gujarat).

MAGNET TO THE TRIBAL BELT



- Interface for the tribal communities residing almost 70km from core city
- Daily migration for commercial, trading and recreational purposes

COMPONENTS THAT MAKES THE PUBLIC REALM OF DAHOD CITY



- PUBLIC PARKS**
- The city lacks green recreational spaces for public use
 - The existing green spaces are in depleting condition and there is a need of development of open green spaces

STREETS



- Streets play the important role in the public life of city as it offers activities like trade and commerce in day time
- During evening hours streets acts as a medium

for social gathering for people and are being used as recreational space for people of city

PEDESTRIAN PATHWAYS



- Used for parking vehicles rather than pedestrians
- Lack of walkability experience
- Aesthetically unpleasing
- Lacks clear distinction between driveways and pathways
- Lack of shaded space for city climatic condition
- Mostly in unhygienic condition

SQUARES



- The chowks of the city creates a breathing space in the dense fabric of the city
- They are connected by the network of streets and mostly layered with commercial activities around it

BAZAAR

Temporary bazaar



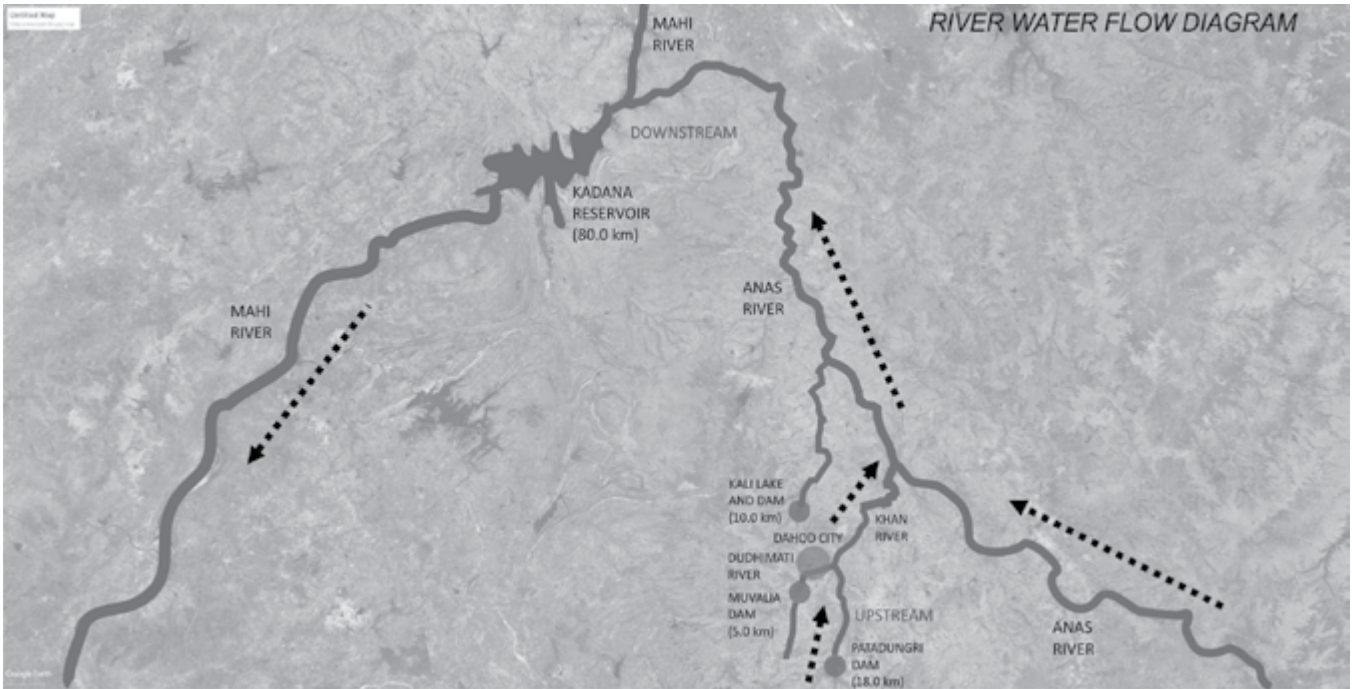
- Some of the open lands of railways and nagar palika are used for temporary market places for daily migrating tribal people
- The bazaar is formed between 8am to 5pm in the evening

Permanent bazaar



- The permanent market places are formed on the primary and some tertiary streets
- These are the major recreational activity for people of the city
- The locals are mostly dependent on migrating

tribals for trading



THE CITY AND ITS WATER SYSTEM

WATER NEEDS OF CITY

- Water needs - 140 Lt per person per day and 20 Lt for floating population
- Water requirement of dahod city - 18.41 MLD - 237.20 MCft annually
- Water supply from patadungri dam - 100 MCft
- Rest comes from Kadana reservoir
- Water supply - once in 2 to 3 days
- Projected water needs - 30.64 MLD (2042)
- Dahod city - 310.0 m from mean sea level
- Kadana reservoir - 120.0 m from MSL.
- 80.0 km from dahod city

URBAN ISSUES - REGIONAL AND CITY LEVEL

PHYSICAL

DEPLETING WATER BODIES

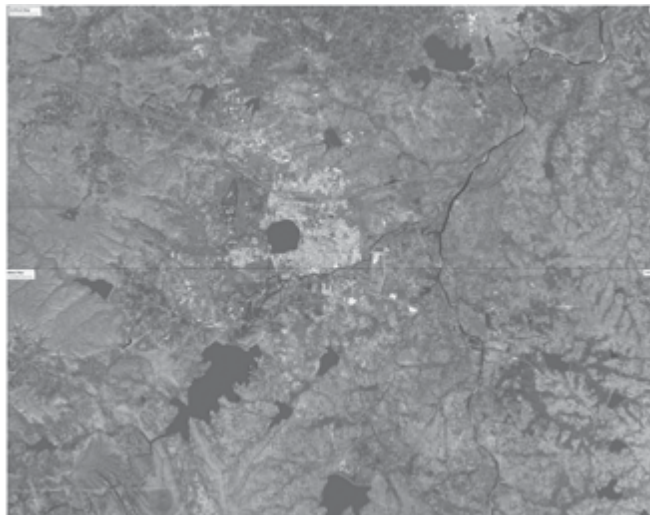


Image Source : Google Earth - 2006

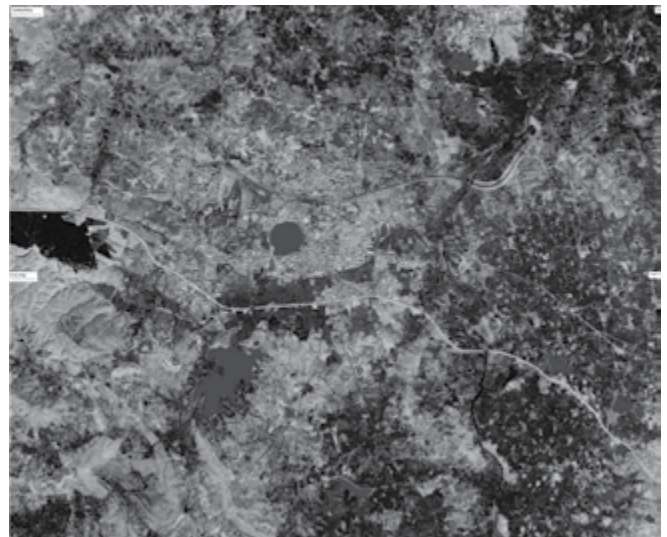
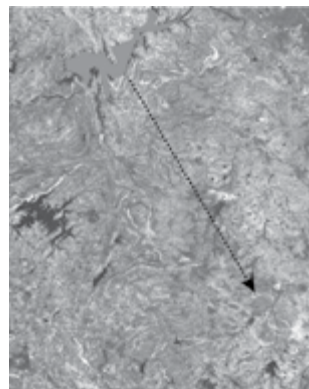


Image Source : Google Earth - 2016

- Due to lesser rainfall in the region and increase in water demand some of the water bodies has completely disappeared or has reduced in the size and water carrying capacity



DEPENDENCY ON FAR WATER SOURCES

- Water is brought from kadana reservoir through the electric pump from low level to high level of dahod
- There is an existing water body in the center of the city which can be developed as a source of water supply for people

ENVIRONMENTAL
POLLUTED WATER BODIES



- The existing water bodies of talab and river are highly polluted due to dumping of wastes and there is a need of strategy to improve its condition

CONTAMINATED GROUND WATER



- 60% of population use ground water for domestic use but the water under the ground is contaminating due to pollution in talab

A DERELICT WATER BODY - CHABB TALAB

The city of Dahod has a historical 'Chabb Talab' at the heart



of it which also covers 20% of the city's nagar palika area. The main source of water supply to the talab is rainfall and storm water. The quality of water in the talab is very poor and instead of adding aesthetic value to the city, it has become a burden for the people of the vicinity due to foul smell and unpleasant view.

PRESENT SCENARIO

- Diameter - 800 m
- Circumference - 2.5 km
- Area of talab - 5,02,400 sq.m.



- Maximum depth - 12.0m
- Water capacity of talab = 5,02,400 X 6
= 3014,400 Cu.m. i.e. 3014 MLt.
- Sources of supply - rainfall and storm drains
- No issues of flooding • No aquatic life present into it
- Not used for domestic purpose or irrigation

AREA OF CONCERN

A city with the dense built fabric and lacking green spaces has a large water body in its center which is not used for any of the public welfare. The open drain system of the city which contains the pollutants, drains the waste water directly into it without any treatment and pollutes the water body. This has resulted in the deterioration of the water quality and even depleted the aquatic life into it. The poor quality of talab water is further impacting the ground water quality in the city. Also, due to rise in temperature over the years and depleting surface water bodies, the city is also forced to depend on far sources for its water needs. With development strategies, the talab can develop into a large recreational public space and can benefit to the people and local environment of the city.

PROJECT DEFINITION

The project tries to change the 'Image of the talab' from a derelict water body to an important resource in the dry region by filling the gap of water needs of city and strengthening the character of the city by making it a recreational hub of the region.

CATCHMENT AREA

- Catchment area of talab - 9.0 sq.km.



- Amount of avg. annual rainfall - 0.80 m
- Total amount of water received
- 72,00,000 Cu.m.
- Amount of water in liters - 7200 MLt.
- Water loss to percolation, evaporation etc.
- 70% of total water
Collected water - 30 % of total water
- Total water received in talab through rainfall
- 7200 X .30 = 2160 MLt.
- Ground water table - varies at different place
- Bores are dig min. 20 ft to max. 400 ft. deep

- 60 % population is still using ground water as a source for domestic use
- Regular water supply once in two days
- During summer, water supply in 3 to 4 days
- Over expensive to get water through motorized piped system from kadana reservoir

ISSUES - TALAB LEVEL



WATER NOT USED AS A RESOURCE

Water as an important resource in the dry region is not utilised for any public use



LOSS OF WATER

The overflow of excess water from talab is discharged into ravine and is getting polluted from solid wastes without being utilised



DEPLETING ENVIRONMENTAL CONDITION

Disposal of solid and sewage wastes into the water body without treatment is leading to environmental pollution

INAPPROPRIATE LIVING CONDITION

There is a need to relocate people living in unhygienic condition and provide them with better living facilities



GROWTH OF WILD AQUATIC PLANTS

Loss of water quantity due to the growth of water hyacinth on the water body



DEGRADED OPEN SPACES

Lack of connectivity between the north-west to north-south end of talab has left open spaces in degraded condition



WATER + ECOLOGY + RECREATION

URBAN DESIGN STRATEGIES

TALAB DESIGN LEVEL

1. REVIVING THE ECOLOGY OF TALAB - WATER SENSITIVE APPROACH - PHASE 1
2. FORMATION OF TALAB PRECINCT
3. DEVELOPMENT OF PUBLIC SPACE AROUND TALAB
4. DEVELOPMENT OF OTHER PUBLIC BUILDINGS OF PRECINCT - PHASE 2

A. TREATMENT OF CATCHMENT AREA



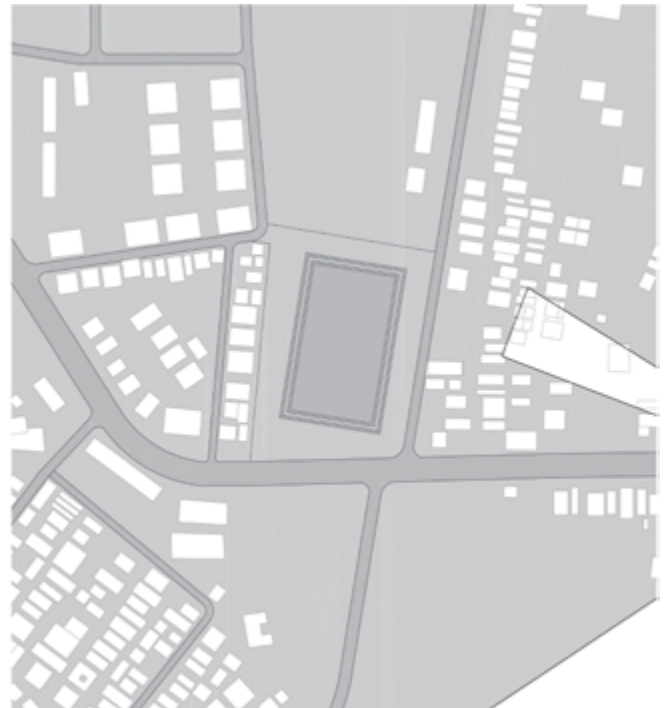
- Afforestation in catchment area for ground water recharge and forming green cover for the city
- Design of sedimentation basin at different locations in catchment area to avoid excess inflow of sediments and debris into the talab in future

B. CLEANING OF TALAB WATER

- Removal of debris, weeds, wild aquatic plants - water hyacinth from the edge
- Dewatering of the talab
 - Using water for watering the plants of urban forest and for irrigation purpose
 - Pumping water to recharge other water bodies
- Closing of open drain sewage lines of city
- Implementation of sewage water drain underground lines

C. DEVELOPMENT OF NEW KUND FOR GANPATI VISARJAN

- Contamination of Talab water due to Ganpati visarjan
- New proposed Kund on DNP's land
- Distance from talab - 970.0 m
- Area of proposed kund - 4770.0 sq.m.
- Depth of excavation - 6.0 m
- Amount of soil excavated - 28,620 Cu.m.
- Kund to receive water from Talab through underground piping system
- Soil to be used for construction of other public buildings



Conservation of water



Less scope for horizontal expansion



More opportunity to go vertically down

Conservation of water

- This extra water of quantity 803.70 MLt. can be used to recharge other water bodies of the city and can even be used for irrigation or water supply for domestic use during the months of summer.
- Benefit of more recharge of ground water for city.

D. DESILTING THE TALAB

- Removal of silt and garbage which has accumulated over the years to increase the water storage capacity of talab.
- Use of nutrient rich silt for agriculture land as a manure.
- It can be done with the citizen participation
- DNP can also sell it at an average cost of Rs.120 / Cu.m.
- It will be done under the 'Jal Sanchay yojana' of state government to conserve water.
- Area of Talab - 5,02,400 sq.m.
- Amount of silt excavated - $5,02,400 \times 3 = 15,07,200$ Cu.m.
- Available depth - 12.0 m (max.)
- Quantity of water - $5,02,400 \times 6 = 30,14,400$ Cu.m.
- Amount of existing water in liters - 3014 MLt.
- Amount of water seepage into ground every year - 30% of 3014 = 904.20 MLt. and remaining 70% = 2109.80 MLt.
- Amount of rain water received from catchment area - 2160 MLt.
- Total water accumulated - $2109.80 + 2160 = 4269.80$ MLt.
- Amount of water goes into ravine - $4269.80 - 3014 = 1255.80$ MLt.
- Deepening the talab by 3.0m
- Increased storage capacity by - $5,02,400 \times 3 = 15,07,200$ Cu.m - 1507 MLt.
- New capacity - $3014 + 1507 = 4521$ MLt.

For next year,

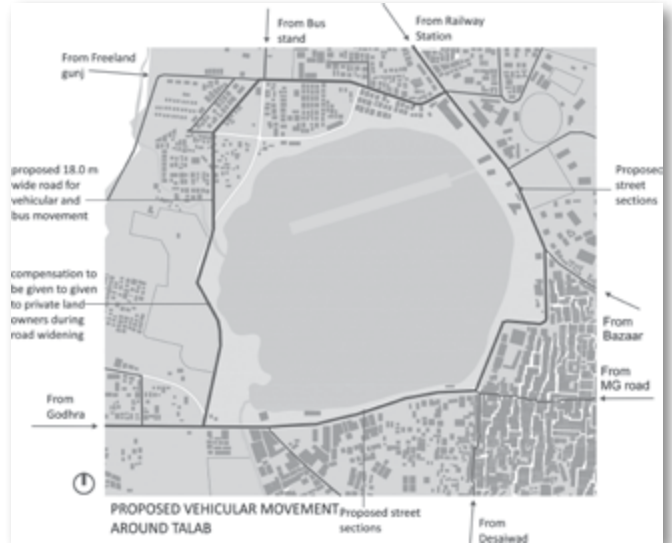
- Amount of water seeped into ground in a year - 30% of 4521 = 1356.30 MLt. and remaining 70% = 3164.70 MLt.
- Water received through catchment area - 2160 MLt.
- Total water accumulated = $2160 + 3164.70 = 5324.70$ MLt.
- Extra water after filling of talab = $5324.70 - 4521 = 803.70$ MLt.

CONCEPTUAL IDEA



2. FORMATION OF TALAB PRECINCT

A. DEVELOPMENT OF VEHICULAR MOVEMENT RING

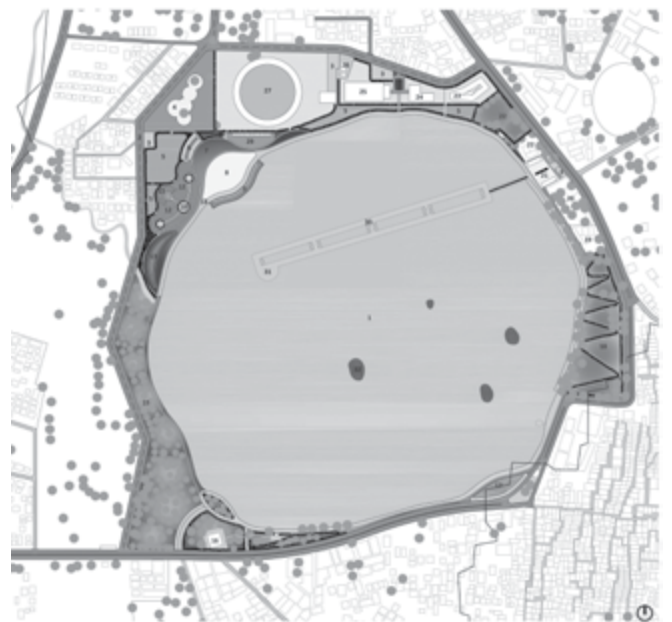


- B. REHABILITATION OF PEOPLE LIVING UNDER SLUMS**
- C. GRAVEYARD TO BE CONVERTED INTO URBAN FOREST**

3. DEVELOPMENT OF PUBLIC SPACE AROUND TALAB

- A. INCLUSION OF EXISTING PROGRAMS INTO PROPOSED DESIGN**
- B. CONNECTING DEAD ENDS AND CREATING CIRCULAR LOOP FOR WALKWAY**
- C. RESTRICTING VEHICULAR MOVEMENT INSIDE THE PRECINCT**
- D. DEVELOPMENT OF RECREATIONAL SPACES**

4. DEVELOPMENT OF OTHER PUBLIC BUILDINGS OF PRECINCT - PHASE 2



PROGRAMS

- 1. Chabb Talab
- 2. Ent. Plaza

- 3. Parking
- 4. Space On Rent - Public Fair / Public Use - 10,336 Sq.m.
- 5. Space For Daily Market Of Tribals - 10723 Sq.m
- 6. Permanent Shops On Rent
- 7. Garden With Gym Equipment - 5276 Sq.m.
- 8. Public Plaza - 4217 Sq.m.
- 9. Ghats For Sitting
- 10. Water Kund For Sitting
- 11. Open Air Theatre
- 12. Botanical Garden
- 13. Children Play Area - 2033 Sq.m.
- 14. Water Front Walkway
- 15. Dense Plantation Of Trees
- 16. Temple And Mosque Complex
- 17. Space For Food Laris
- 18. Existing Garden
- 19. Existing Mosque
- 20. Existing Private Lands
- 21. Ent. Plaza With Food Court - 1527 Sq.m.
- 22. Existing Gandhi Memorial
- 23. Renting To Private Developers - Commercial Complex / Cinemas - 4130 Sq.m.
- 24. Space For Development Of Public Buildings - 3185 Sq.m. - Library / Tribal Musuem / Aquarium / Community Center
- 25. City Auditorium - 7615 Sq.m.
- 26. Existing Church
- 27. Sports Complex - 30,130 Sq.m.
- 28. Public Toilet
- 29. Food Court On Rent - 2051 Sq.m.
- 30. Existing Platform
- 31. Boat Ride
- 32. Tree Plantation On Islands

MASTER PLAN LEVEL

1. LINKING OF TALAB TO OTHER WATER BODIES - PHASE 2



CONCEPTUAL IDEAS FOR PROGRAM FORMULATION



CHABB TALAB - 'A SPACE FOR CELEBRATION'

- Integrates the comprehensive character of the city into the fabric of water body
- The overall development of precinct is based on the idea of making it as a space for celebration at regional level

- Programs are developed based on the needs of the city

CONCEPTUAL DIAGRAM



- Large cities has activities of recreation scattered at different locations catering to people of a neighborhood or an area
- It helps in distribution of city population

Large Cities - scattered activities

- A model of development where activities of recreation are centralise at one location
- This helps in increase in numbers of users for an activity in an urban area with lesser population

Small cities - concentrated activities



OTHER PROGRAMS

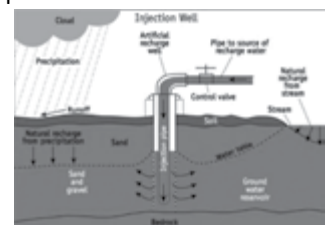
- PLAZA CAN BE USED FOR EVENTS LIKE PUBLIC GATHERINGS OR CHABB TALAB FEST OR EXHIBITIONS
- OPEN SPACES CAN BE RENTED DURING FESTIVE SEASONS LIKE NAVRATRI OR RENTING TO PEOPLE
- XERISCAPE PLANTING IN LANDSCAPE AREAS TO SAVE WATER
- FOUNTAIN TO CIRCULATE WATER
- JET AERATORS FOR WATER AERATION

FOR FAMILY EVENTS

- SPACE FOR VENDORS
- FISHING CAN BE DONE FROM PLATFORM
- TRAIN RIDE FOR CHILDREN

A. INSTALLATION OF UNDER-GROUND PIPELINES TO RECHARGE OTHER SURFACE WATER BODIES

- Excess water from Chabb talab can be made as a source of water supply to other water bodies during summers
- Installation of recharging wells along the piping route
- Helps in ground water recharge of the area
- Area of pond 1 - 52,884 sq.m and - water carrying capacity has reduced to 45,575 sq.m.
- Area of pond 2 - 1,50,087 sq.m - water carrying capacity has reduced to 51,674 sq.m.
- Area of pond 3 = 1,50,087 sq.m - pond has depleted completely



The Confluence of Built and Art

Ar. Abhirami.A



- Currently pursuing Bachelors in Architecture at Mangalam School of Architecture and Planning in Kerala.
- Completed internship at Silpi Architects in Kerala.
- Interests – Architecture, History, Ethnography, Heritage Studies, Literature.

abhiramianil16@gmail.com

ABSTRACT

Architecture when perceived technically is simply a building. While when perceived artistically it is something that cannot be explained but to be experienced. Hence architecture is both tangible and intangible and reaches its pinnacle when there is a marriage of the two. Nrityagram in Bengaluru, the first modern gurukul in India, is one such paradise designed by Ar. Gerard da Cunha where the dance form of Odissi is brought intangibly into the built and unbuilt environment through certain architectural semiotics. This paper describes this institution for Odissi, one of the perfect examples showing how an art form can be manifested into a built form.

Keywords: Art, Built, Tangible, Intangible

INTRODUCTION

Imagine a journey from an archetypal city filled with postmodern facades, sky scraping apartments, tumult of traffic and animated streets to a humble village filled with an unimpeachable environment, lush greenery, orchard of fruits and crops and grazing cattle. Nothing more than such a contextual change could be exciting for a traveler in search of surprises in his voyage. The perfect contrast and extremity of rural and urban life fascinates every traveler as one moves from Bengaluru- the centre of India's high tech industry to Hesarghatta- the centre of an agrarian circle. A labyrinth of dwindling roads passing across orchards and crop fields take us to an enthralling paradise where the classical dance form of Odissi has been gifted with its own architectural form- the Nrityagram.

NRITYAGRAM

Nrityagram has been translated into its architectural idiom encompassing the quintessence of the two words- Nritya meaning dance and Gram meaning village.

"It is a community of dancers in a forsaken place amidst nature place where nothing exists except dance. A place where you breathe, eat, sleep, talk, imagine dance. A place where all the five senses can be refined to perfection."
-Protima Gouri, Founder of Nrityagram.





Even though the visionary danseuse had left this world, her words are immortal and still alive with all its glory thanks to renowned architect Gerard da Cunha who crafted this heavenly abode of Odissi. For the members of this dance village, Odissi is not a profession nor a passion but their *raison de tor*.

The architectural design of each spaces starting from the entrance to the dance halls and every nook and corner acts as a backdrop and backbone in fostering a deep compassion and dedication for this art. As soon as one steps into the stone fenced grama, the eyes are grabbed by the distant view of the Panchabhoota temple, a model of the duel of Orissan temples. A beautiful dancing posture of the veteran odissi exponent Kelucharan Mahopatra sculpted on its walls enthuses

and excites very visitors, attracting them to its nucleus. The exuberant canopy of trees and stone pergolas of the pathways escorts us and the small antique mud sculptures of the divine figures in the garden are such that they are awaiting the arrivals, all of them welcoming the aficionados to the realm of dance.

The intangible essence of the orissan culture and odissi art within the architectural design of Nrityagram by its master craft Ar.Gerard is worth mentioning. The vernacular architecture composed of mud bricks, stones and thatched roofs makes the great institution down to earth. The brown hue of the built environment, the undisturbed nature with a plethora of green woods, stone sculptures and pillars beautifully sketches a picturesque ambience which reminds one of the scenes





portrayed in the mythological tales of amarchitrakadhas read in childhood days.

The stone structures supported solely by compression, the arcuated windows and trabeated openings, roofs resembling the vimanas of orissan temples and domed structures adds to the historicity of the buildings. It is as if nature has been moulded into a built form, narrowing the distinction between the built and unbuilt by free flowing and semi open spaces. It is a self-contained typical Indian village accommodating temples, public spaces, communal areas, dance halls, residences, guest homes, amphitheatre and common wells, all inculcating a deep sense of community spirit and sentiment.

Every dancer gets self-elevated into an ascetic mind state at the very moment when she sets her footprint in Nrityagram. The mesmerizing part of architecture lies in the fact that Ar.Jerard has miraculously or rather meticulously brought the dance form of odissi into its built and unbuilt world, through certain architectural semiotics. The grace of Odissi lies in its calmness, serenity and subtlety of movements. The histrionic expressions, sculpturesque postures and the calm and composed moves of an odissi dancer are as enchanting as a swan floating through a lotus pond. In spite of its simplicity, the dancer looks adorable in her aharya- the costume and unique jewellery. The essence and flavour of odissi has been adapted into the form and articulation of spaces. The reposed senses of spaces are achieved by the wise use of materials and non-orthogonal geometric configuration of spaces and the form. Just as a dancer looks adorable on wearing ornaments, the buildings are ornamented by fine architectural details such as arcuated

fenestration, graceful dancing sculptures at nooks and corners and beneath the trees, small decorative artworks bordering the doors, bright yellow doors contrasting its mud brick walls and stone artworks in walls. Structure and ornamentation are collaborated beautifully at various points like the circular steps leading to the open air yoga space, curved stair ascending to the top of the performance space of amphitheatre and stairs atop a stone arch in the common area. All the built forms are idolized by a sculpturesque beauty. The open courts adjoining the dance halls invite the sun and rain to enjoy and appreciate the graceful recitals of the performers.

The most admirable part of the first modern gurukul of India is the holistic approach of the design of spaces which shall tune the body and mind of a dancer to perform odissi alone, no matter whichever school of dance they profess and practice. The whole institution is indulged within the art of odissi intangibly. In short Nrityagram is a world of tranquility where the man and the manmade join their hands together to dance and rejoice rhythmically with the mellifluous melody of the Hindustani music, for which the nature and celestial bodies behold and applaud.

CONCLUSION

We shape our buildings, which on reaching its ultimate form will shape us in turn. This universal truth regarding architecture becomes most significant for designs pertaining to Institutions in which the architect has an obligation to have a holistic approach in design that has to inspire the students to learn. When it comes to the design of an institution of art, more than the contemporary trends, it is the art form that has to be moulded into the built form which makes it classic in contemporary. Moreover, both art and architecture are evolved from the indigenouse culture of a community within a geographical region. Hence the cultural context is another inevitable parameter of the design.



Colour as a tool for designing spaces for the elderly

Ar. Sukanya Dasgupta



B.Arch (2003), SIT Tumkur, VTU, Belgaum
MA (UD, 2012), Oxford Brookes University, UK

Sukanya is an Architect and urban designer with over 15 years of professional experience. She takes interest in reading and travelling. After having worked in architectural design firms, project management and real estate industry across the country, she is currently working as an Asst. Professor in KIIT School of architecture and Planning.

sukanyandasgupta@gmail.com

Ar. Avik Roy



B.Arch (2007), CET Bhubaneswar
Masters in Industrial Design (2010), SPA, Delhi

Avik is an avid product designer with an impeccable eye for details and lighting design. Currently working as an Asst. Professor at KIIT School of architecture and Planning, he very dexterously uses his past teaching experience in premier institutions like Pearl Academy and Sharda University. He strongly follows his passion for travelling across the globe and does not settle for the second best in anything that he pursues.

sukanyandasgupta@gmail.com

ABSTRACT

Creating spaces for the elderly calls in for colours to be perceived in a different way by the designers. Colours can play an important therapeutic role in the day to day life of an elderly. However it has not been addressed beyond fragmented medical data. A compiled assessment of empirical data and systematically gathered evidence is needed. This article deals with finding a design solution for senior living communities that can stand the test of time for an environment using colours as a tool to address the physical and emotional change in the elderly.

Methodology adapted:

First step was to map the reduction in the functional abilities of the elderly with regards to their vision and other related physical ailments. The next was to observe and interview 15 elderly men and women in an old age home and map their day to day activities.

The observations were amalgamated to arrive at a set of guidelines which designers can best implement into their colour scheme while setting out their spaces for the elderly.

Reduction in functional abilities:

The application of colour into the design elements should take into account the psychological and the emotional effects of it on the well being of the elderly. Natural aging of the eye, including difficulty in envisioning close and proximate objects clearly, declining sensitivity, having trouble distinguishing colors, such as blue from black and needing more light to see well are most common of the functional disabilities that set

in with old age. (Available online at www.nei.nih.gov, last accessed: 2/11/18)

Colour does have a practical and functional use in patients. (Dalke, H., Colour and Lighting in hospital design, 2005. Available online at: www.colourdesign.com, last accessed: 1/11/18). A separate palette was chosen for the colours of the rooms wherein the 15 elderly men and women were being observed. This was to ensure that the mapping of their activities and their response to the colour could be effective.

Firstly, it was observed and also understood from them that cool colours such as blue and green promoted relaxation and also facilitated sound sleep to the inmates. However, neutral colours such as grey tend to reduce the concentration among the people. The group was assigned an activity to feed data onto a computer over a period of 3 days at 3 different locations. The results yielded that all of them made more mistakes in the room with neutral colours especially grey and beige.

It was also observed that colours when used subtly could also control glare and utilize the available light to its maximum. While controlling the light, colours can also be used as a tool for navigation and way finding. Hence, corridors are spaces that need to be coloured judiciously specially when being used by the elderly.

Colour Psychology:

The psychological effects of colour are also an important tool that designers should necessarily embark upon. The following are some common psychological effects of colors in the Western Hemisphere. Our study also yielded similar results.

Colour	Psychology
White	Purity, Innocence, Cleanliness, Sense Of Space, Neutrality, Mourning
Black	Authority, Power, Strength, Evil, Intelligence, Thinning / Slimming, Mourning
Grey	Neutral, Timeless, Practical
Red	Love, Romance, Gentle, Warmth, Comfort, Energy, Excitement, Intensity, Life, Blood
Orange	Happy, Energetic, Excitement, Enthusiasm, Warmth, Wealth, Prosperity, Sophistication
Yellow	Happiness, Laughter, Cheery, Warmth, Optimism, Hunger, Intensity, Frustration Anger
Pink	Romance, Love, Gentle, Calming, Agitation
Brown	Reliability, Stability, Friendship, Sadness, Warmth, Comfort, Security, Natural, Organic, Mourning
Purple	Royalty, Wealth, Sophistication, Wisdom, Exotic, Spiritual, Prosperity, Respect, Mystery
Blue	Calmness, Serenity, Cold, Uncaring, Wisdom, Loyalty, Truth, Focused, Un-Appetizing
Green	Natural, cool, growth, money, health, envy, tranquillity, harmony, calmness, fertility

Colour and architecture:

To facilitate judicious selection of colours for spaces like the corridor, this paper intends to formulate a colour palette for the elderly which can be used by designers for application into various functional areas. The target areas are generic and can be applied to commercial and residential buildings.

Reception: As the name suggests, the space should be ready to welcome, friendly and provide the necessary information to the ones entering. The colour of these areas should be neutral and subtle to ensure that the lighting in this is ample. Also, green in the form of plants will augment the benefit of the good light.

The design of reception or the waiting area should necessarily be of the domestic or the “homestyle” to facilitate the

intimacy of the space which an elderly person looks forward to at the onset of his journey into the building.

Corridor/Foyer: These being transition spaces also act as way finders. A well lit corridor coupled with accent colour on wall and a piece of art along one end of the corridor aide the orientation.

Bed Rooms/Private rooms/Wards/Suite: It was noticed that the elderly look forward to a sense of having some control over spaces like these. Also, they respond well if these private rooms allow them to customise these areas along with their belongings . Windows are a must in these rooms apart from ventilation requirements. They get a sense of connection to the outer world with these windows.

With regards to the application of colour, it was observed during their stay, that shades of cool colour like greens and blue help them induce sleep better. However, these colours do not aid their enfeebling memory. Instead, using darker shades helps them remember the placement of their belongings in the space. Thus, to enhance their memory quotient, it maybe proposed that cool shades for the rooms along with highlight members such as columns/ niches should bear darker shades of either same colour or some contrast colour.

Library/day rooms/work areas: These areas should primarily be clutter free for the ease of work. Their concentration levels are highly affected by confusing signage, noise and cluttered areas. Neutral colours like beige and grey need to be avoided as they tend to disturb the concentration of the elderly. Well lit, clutter free spacious environment along with warm colours should be adopted. The colours should however be used subtly using light as a functional tool.

The elderly with ailments like Dementia and Alzheimer are colour sensitive as well. Rizzo and colleagues (2000) compared 43 individuals with mild Alzheimer's Disease (AD) and 22 people without dementia. Basic visual functioning (acuity and motion direction discrimination) was similar for both groups, but the people with dementia scored significantly worse on tests of contrast sensitivity, visual attention and color. Both groups found it easier to distinguish between colors in the red/yellow range, and harder to distinguish colors in the blue/green range.

The lightness of the color (tint and shade) was an important factor in being able to discriminate between colors). Color preference ratings were similar for people with dementia as for the comparison group: that is, blue, red and green were most preferred, in that order.

Conclusion:

It might seem from the aforesaid that most areas should be blue or green if designed for the elderly. However, this is not what should be recommended. The senior because of the impairments and the ailments need to be visually guided not only in spaces or rooms but also in elements like risers and

treads , in fixtures and furniture. Colour, is one best way to direct them to the same.

The elderly, patients with dementia in particular often find it difficult to understand and comprehend signage /notices of hues similar to the background they are set in. Risers or changes in the level should have a contrast colour to other parts of the stair. Similarly, the parts of a building that need not get the attention of the seniors should be treated with colours which are similar to the background that they are set in.

Few other local interventions that could be applied are:

1. The WC seats should be contrasting to the colour of the walls /dado and the floor.
2. The plates and other utensil placed on the table top should be in contrast to the table top colour or to the liner /cloth spread above it.
3. Sink and the wash basin colours should be in contrast to the vanity of the counter top that they are set in.

The research available in this field so far is through testing few individuals, or patients or through the interview method. Hence the designers using colour as a tool for the elderly should emphasize maximum on the perception of contrast. The behavioral pattern can be used to propose colours for spaces that line the bed rooms , receptions etc. However, judicious use of contrasts, colours and hues by designers while creating spaces for the patients of dementia is highly necessary.

Placed below is a tabular representation of the aforesaid:

Interior Element	Colour Choice
Movable Furniture Such As Chairs	High Contrast Value To The flooring/background
Door Frames	Dark Coloured Frames With White Walls
Toilet Seats	Avoid Similar Coloured Flooring And Toilet Seats. The Toilet Seat Should Be High Contrast With Both The Floor And The Walls.
Wash Basin, Sinks	High Contrast Colour To The Counter Slab
Day To Day Accessories	Utensils, Soap Trays, Tooth Brush Holders, Medicine Boxes, Water Bottles Etc Should Be Of Contrast Colour To The Space They Are Usually Kept.

Lighting Levels	Avoid Glare Such As Direct Vision Clear Lamps Where Source Of The Light Is Visible.
Floor	Avoiding High Reflection Surfaces And Complicated Patterns. Use Subtle Colours For Flooring Patterns As It Is Not Necessary For The Elderly To Focus On Them Such As Shades Of Cooler Colours. Use High Contrast Patterns At The Entrances/ Transition Area To The Room.
Switches & Sockets	High Contrast & Value Colour To The Back Ground
Stairs	High Contrast Between The Floor And The Staircase With Supporting Handrails

Bibliography

Art Therapy. 2018. Color Psychology: The Psychological Effects of Colors. <http://www.arttherapyblog.com/online/color-psychology-psychologica-effects-of-colors/>. [Accessed 13 November 2018].

Calkins P. , Using Colour as a therapeutic tool, Available online at: http://www.ideasinstitute.org/article_021103_b.asp. Last Accessed: 12/11/18

Dalke.H, Colour and Lighting in hospital design, 2005. Available online at: www.colourdesign.com, last accessed: 1/11/18.

Figueiro ,M, Lighting the way- A key to independence. Available online at: [-http://www.lrc.rpi.edu/programs/lightHealth/AARP/pdf/AARPbook2.pdf](http://www.lrc.rpi.edu/programs/lightHealth/AARP/pdf/AARPbook2.pdf), . [Accessed 13 November 2018].

NEHELP,helping older see well for a lifetime.Available online at: <https://nei.nih.gov/health>. Last Accessed: 12/11/18

Sherwin-Williams. 2018. Color and the Elderly. [ONLINE] Available at: <https://www.sherwin-williams.com/architects-specifiers-designers/inspiration/styles-and-techniques/SW-ART-STIR-COLOR-ELDER.html>. [Accessed 13 November 2018].

The ACA 18 TOKYO Asian Congress of Architects

ARCHITECTS REGIONAL COUNCIL ASIA, ARCASIA

10th to 14th Sept. 2018

10th Sept. 2018

In ACA 18, 10th Sept was dedicated for the various committees meetings:-

ARCASIA Committee of Architecture Education (ACAE)

Official Delegate - Ar. Gyanendra Singh Shekhawat -
(Chairman Elect)

Member - Ar. Akshaya Kumar Beuria

Observer - Ar. Yash Pratap Singh Shekhawat

Observer - Ar. Divya Kush

ARCASIA Committee on Professional Practice (ACPP)

Official Delegate - Ar. Dilip Chandra Chatterjee
(Chairman Elect)

Member - Ar. Mukul Goyal

Observer - Ar. C.R. Raju

Observer - Ar. Anupam Mittal

ARCASIA Committee on Social Responsibility (ACSR)

Official Delegate - Ar. Sudhir Balakrishnan Pillai - (Chairman)

Member - Ar. Manguesh R. Prabhugaonkar

Observer - Ar. Mauktik Trivedi

ARCASIA Committee on Green & Sustainable Architecture (ACGSA)

Official Delegate - Ar. Debatosh Sahu - (Chairman)

Member - Ar. Tushar Sogani

Observer - Ar. Gaurav Agrawal

ARCASIA Committee on Young Architects (ACYA)

Official Delegate - Ar Antony Susai Louis Morais

Observer - Ar. Siddharth Jain

Observer - Ar. Nikhil Agrawal

Fellowship Committee

Ar. Divya Kush

Ar. C.R. Raju

Ar. Lalichan Zacharias

Council Meeting

Official Delegate - Ar. Divya Kush

Official Delegate - Ar. Lalichan Zacharias

Observer - Ar. C.R. Raju

Total No. of IIA Delegates were 31 and Five No. of Students attended the events.

11th to 12th September

THE ARCASIA COUNCIL MEETING

Ar Divya Kush, President IIA and Ar. Lalichan Zacharias,



Ar. Lalichan Zacharias elected Vce-President-Zone A.

Jt. Hon Secretary IIA were the official Delegates from IIA to the ARCASIA COUNCIL meeting.

11th September

The ARCASIA Council Council meeting was commenced by a Procession of the office bearers and Official Delegates, who walked into the Council Hall under the respective flags of their countries.

The meeting was called to order by President Ar. Jahangir Khan.

- The minutes of the council meeting held at Nepal, hosted by IIA was presented and was adopted. This was followed by the Hon. Treasures Report, The Presidents Report and the Vice President's, reports, of Zone A, Zone B and Zone C.

Later the following presentations were given to the council.

- Update on the Heritage Program- Ar. Abu sayeed, Vice President Zone A
- Update on Continuing cross Regional Corporation – Ar. Jahangir Khan, President
- Report, on International Teachers and Students exchange programs- Ar. Nuno Soares, Vice president Zone C.
- Updating on ARCASIA History Book- Ar. Ramiz Baig Hon. Secretary
- Revision on Constitution and By laws.

12th September

- * The day started with a review on the Information Dissemination. Reviewed the existing MOU's with other organisations.
- * A report on the ARCASIA AWARDS AAA 2017 was presented by the Awards convenor, Ar. Divya Kush.
- * It was decided to expand membership in the 3 Zones of ARCASIA.
- * Ar. Gyanendra Shekhawat Convenor ARCASIA FORUM Jaipur, Presented a detailed report before the council.



The Council appreciated the grand way in which the ARCASIA Forum Jaipur was organised and conducted.

- * Institute of Architects Bangladesh, Presented the progress report on the organisation of ARCASIA FORUM 20 to be held at Dhaka, Bangladesh.
- * ACA 19 2020 bid was won by Institute of Architects China, to be held at Shanghai in 2020
- * Later committee Reports were presented by the various Committee Chairmen.
 1. ACAE Report – Deputy Chairman
 2. ACPD Report – Ar. Trilogachandran., Chairman
 3. ACGSA Report – Ar. Debetosh Sahu (IIA) , Chairman
 4. ACSR Report – Ar. Sudhir Balakrishnan (IIA) Chairman
 5. ACYA Report – Ar. Ten Szue Hann Chairman
 6. Fellowship Report – Ar. Rita Soh, Chairman



- * The country Report of IIA was presented by Ar. Divya Kush.
- * Later the Incoming President Ar. Rita Soh presented her Vision statement for the coming term.
- * Hon Secretary presented the summary of Decisions and Actions during 39th Council meeting. The next item in the agenda was the Elections to the following posts.
 1. Nominations and Election of fellowship chair. Ar. Qazi Arif (IAB) was elected on the fellowship chair.
 2. Nomination and election of Vice President Zone A Ar. Lalichan Zacharias of IIA was elected Vice President Zone A, Unopposed, during the meeting.
 3. Nomination and elections of vice president Zone -B Ar. Saijuddin Ahmed (PAM), was elected Vice president Zone -B



4. Nomination and election of Vice President Zone- C
Ar. Wu Jianj (ASE) , was elected Vice President Zone-C

3. Ms. Sanjana G, BMS College of Architecture, Bengaluru.
4. Mr. Sindhujaa S, BMS College of Architecture, Bengaluru.
5. Ms. Akhila Kosaraju, Indian Institute of Technology, Kharagpur

THE FRIENDSHIP NIGHT 13th Sept 2018

The Friendship night was celebrated in a grand style, marked with presentations from various Institute Members. The presentation from India was lead by Ar. Tushar Sogani and all 42 Delegates participated in the cultural event by IIA. The IIA presentation was adjudged as the second best of the year.

Student Jumbooree

Five no. of students participated in the student jumbooree, selected and sent by IIA .

The following are the students delegates participated in the event.

1. Ms. Sejal Ranka, BMS College of Architecture, Bengaluru.
2. Ms. Rakshantha V, BMS College of Architecture, Bengaluru.



THE INDIAN INSTITUTE OF ARCHITECTS

Prospect Chambers Annexe, 5th Floor, Dr. D. N. Road, Fort, Mumbai – 400 001.
Tel. : +91.22.2204 6972 / 2281 8491 / 2288 4805 • Fax : +91.22.2283 2516
Email : iiapublication@gmail.com / iiaho1214@gmail.com
Website : www.indianinstituteofarchitects.com

**STUDENT MEMBERSHIP FORM
Yearly Subscription Rs. 200/-**

**Add GST @18% on
the amount payable**

NAME : _____

ADDRESS : _____

TELEPHONE : _____ MOBILE : _____ EMAIL : _____

YEAR OF JOINING ARCHITECTURAL STUDIES : _____

DATE OF BIRTH : _____ NATIONALITY : _____

NAME OF PARENTS / GUARDIAN : _____

ADDRESS : _____

I have gone through the rules and regulations of the The Indian Institute of Architects and shall abide by them.

Signature of Student

SHRI / KUM. _____
is a bonafide student of our institution & He / She is at present
studying in _____ Class

The above information is correct to the best of my knowledge
(Proposed & Seconded by Members of I.I.A.)

- 1)
- 2)

Signature of Head of Institute

Foster's Amaravati | Consciousness of Continuity

Ar. Vardhan Mehta



Ar. Vardhan Mehta, graduated from Pratt Institute with a Bachelors of Architecture in May 2018. He currently works as an architect at Weiss/Manfredi based in New York. He is presently working on the design for the new US Embassy in New Delhi. He has been awarded the coveted Presidential merit scholarship five years in a row, among other travel and research grants. He has also won three international design competitions in the past 2 years, based in France, China and Germany. As an academic, Vardhan is interrogating and exploring issues of affordable housing, tactical urbanism and smart cities.

vardhanmehta.architect@gmail.com

For the AEC industry in India and beyond, the developments of Amaravati smart city have been dramatic and dream-like, no less than the last undertaking of this magnitude - Chandigarh. India's first planned city was like the materialization of a dream sequence with themes as follows:

1. **A Nation's Rediscovery:** Following the 1947 partition of India, Prime Minister Nehru orchestrated the dream of Punjab's new capital, Chandigarh as the beacon of light that carries India's identity forward post-independence from the British, towards modernity and prosperity.
2. **Western tour-de-force:** Ironically, to create this new version of the Indian Dream, the government opted to consult American architect Albert Mayer and his collaborator Matthew Nowicki. Mayer's idea was to create a master plan based on the Garden city model that was then gaining recognition of parts of North America and the UK.
3. **America to Europe:** Mayer and Nowicki were part of an unfortunate accident in 1950 and project Chandigarh found its new maker in Le Corbusier, a French visionary architect who was already adept at concocting futuristic cities tabula rasa.



Source : Foster + Partners

4. **The Master's plan:** Corbusier expanded on the garden city model, synthesizing it with his doctrines of the Five Points of Architecture, Unite d'Habitition and Villa Radieuse.
5. **Un-democracy:** While Chandigarh enjoyed a position of prominence and attention, also came along heavy criticism. Historians at home and abroad described it as a undemocratic failure on grounds of Corbusier's indifference to the sensibilities of Indian way of life.

While this new-found democracy was emerging in South Asia, something similar unfolded in a South American nation - Brazil.

The idea was "to build a new capital to bring progress to the interior of Brazil", a new immaculate capital - Brasilia. Architect Oscar Neimeyer and urban planner Lucio Costa were tasked with this creation of a city of rational modernist planning, clarity of lines and anthropomorphic symbolisms. All of these principles, again, developed and manicured by influence of the first world nations. The city was a field of beautiful objects and pristine division of where you live, work and play. However, this was still not empathetic to the sensibilities of Brazilian lifestyle, but more so aspirational of a different, new life.

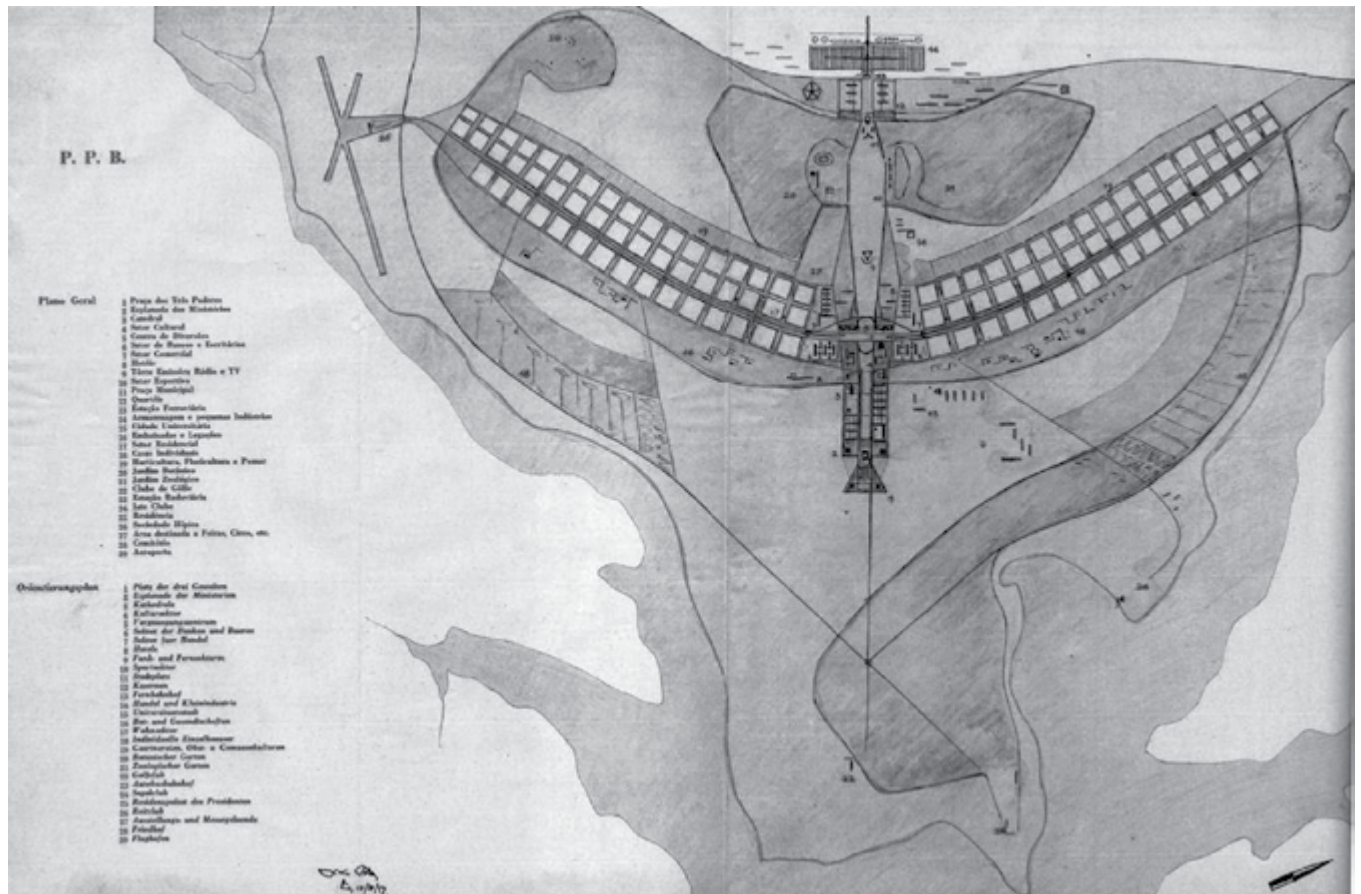
60 years later, the newly elected Indian Prime Minister Narendra Modi launched the Smart Cities Mission - "an

urban renewal and retrofitting program by the Government of India with the mission to develop 100 cities across the country making them citizen friendly and sustainable." This was perhaps the real estate development feat any nation had ever launched. Chandrababu Naidu, chief minister of Andhra Pradesh, saw an opportunity here, a new capital of South India similar to Nehru's Chandigarh in North India. Amaravati is pegged to be a greenfield development that brands the new identity for the region. But the story so far has been rather dramatic.

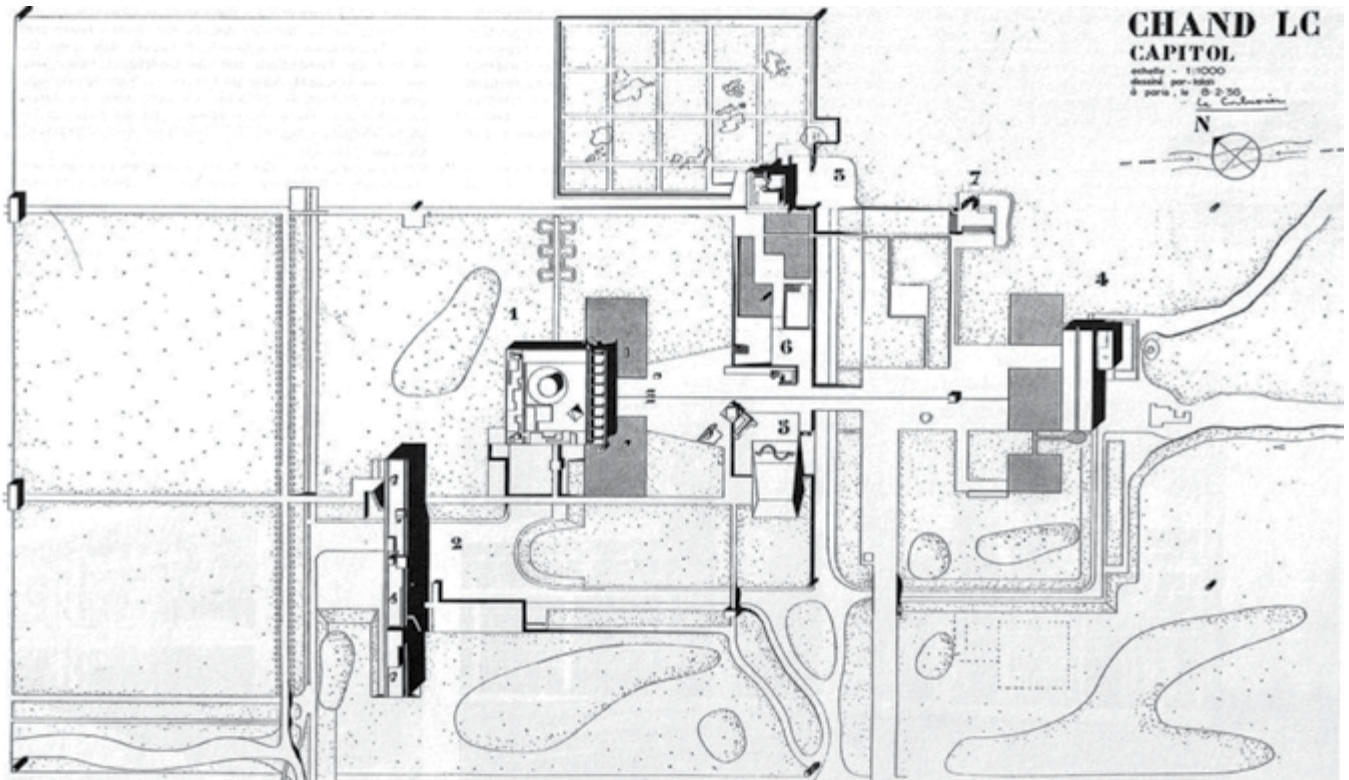
Amaravati capital complex design competition was conducted in 2016 and Japanese starchitect Fumihiko



Source : Foster + Partners



Source : Flickr



Source : Flickr

Maki emerged victorious. His design drew inspiration from the waterways of Amsterdam and the eco-innovations of Singapore, but was deemed to be missing the context of local influence encapsulating the global vision. To that effect, the commission was later awarded to British architect, Sir Norman Foster aligned with legendary Indian architect/developer Hafeez Contractor. This article shall focus on Foster's design intentions.

Foster, much like Corbusier, is no stranger to city-scale greenfield developments. Earlier this decade, he curated the Masdar City in UAE which brought in great curiosity for its technological and sustainability innovations. But with Amaravati, Foster pays homage and absorbs the more

successful planning principles that have shaped design of cities, hence the consciousness of continuity.

As Foster said, "The project includes the design of two key buildings: the legislature assembly and the high court complex, along with several secretariat buildings, where the offices of state administration are located." The planning of this government complex is complimented by low-tech efforts to benefit from an abundant fresh water supply in the region. About 60% of surface is occupied by green cover or water channels

A major attempt to associate the Indian context seems to be absorption of principles of Vaastu in the two major buildings - legislative assembly and high court complex. Vaastu, much like Feng Shui, dictates certain organizational logics for the programs of a buildings based on directionality and astronomy. It is perhaps the oldest and most traditional form of Hindu spatial system and one of the foundations of the religion. It has manifested itself at the domestic scale as well; about 65% of housing in India, new and old, accommodates Vaastu principles in some form.

"The people's capital" has been planned to pick up to the existing grid of the city, with the organization of 13 urban plazas / public spaces that are dispersed throughout. The major design move is ofcourse the green spine, that runs as a linear parkscape. Its diagram is reminiscent of the Central park, but only 100 times smaller.



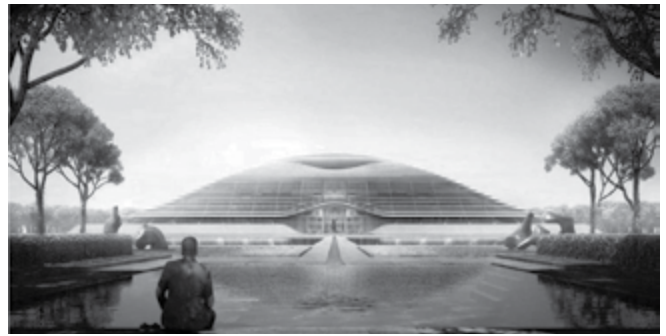
Source : Foster + Partners

Foster also managed to bring in the learnings from Masdar; such as the large off-site solar farm that is theoretically sufficient to generate electricity for the transportational and operational usage in the complex.

At the architectural scale, the two big gestures are the Legislature and the High Court complex. The legislature with its hybrid form of an elliptical disk transforming into a tower, is about as monumental as some structures in Neimeyer's Brasilia. Perhaps an amalgam of the Cathedral and Congresso Nacional. Foster differentiates it from Corbusier's legislative assembly in Chandigarh by bringing in the public domain through viewing decks, museums and hospitality. Mixed use programming such as this has been widely accepted around the world as they allow for interactions across user groups; in this case, the government and its public.

In contrast, the high court complex borrows formal inspiration from yet another source, namely the Indian Stupas, or dome shaped shrines. "The most publicly accessible parts, the administrative offices and the lower courts, are located on the outer edges of the building, while the inner areas are reserved for the Chief Justice's court and private chambers. The building has a courtyard and a roof garden, that allows the greenery to penetrate the interior spaces."


These parallels frame Amravati as the next avatar in the development of smart cities around the world and also ascertain the city as a palimpsest and not a product. But what does this imply for Amravati's context? In an age where majority of the large scale planning projects are conceived



Source : Foster + Partners

of by privatized industries and corporations (Masdar City, UAE by Masdar Development and Ordos, China by Ordos Loop), Amravati manages to sustain an interest for the public domain. To be fair, the size of development and attention to design has still attracted a lot of attention from critics and industry leaders alike, and will potentially go on to attract foreign investment too. My optimism comes from a place of regard for Foster's subjective focus on the Indian environment and landscape, in addition to the Naidu's leadership in championing this project.

In conclusion, this is a zero sum game. The financial success of Amravati has been undoubtedly proven by the latest numbers and the public response to its widespread amenities has been quite jovial. As an architect and designer working in New York, I only hope for the Indian government to continue these efforts forward to compete with the other emerging economies, where responsible eco-development has brought economies and its subjects to fruition.



UPDATING OF RECORDS

IIA is updating database of its members to facilitate the correspondance.
You are requested to follow the below steps in order to send the form to the IIA Head Office at the earliest.

<div style="border: 1px solid #ccc; border-radius: 15px; padding: 10px; margin-bottom: 10px;"> <div style="display: flex; align-items: center;"> <div style="border: 2px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin-right: 10px;"> 1 </div> <div> <p>Step 1 Visit:</p> <p>The Indian Institute of Architects Website</p> <p>www.indianinstituteofarchitects.com</p> </div> </div> </div> <div style="border: 1px solid #ccc; border-radius: 15px; padding: 10px;"> <div style="display: flex; align-items: center;"> <div style="border: 2px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin-right: 10px;"> 3 </div> <div> <p>Step 3 Click on the link to download the form:</p> <p>Form for Updating of Record</p> <p>We are updating IIA's database of its members, so you are requested to send us the details in attached form.</p> <p>Click here to download</p> </div> </div> </div>	<div style="border: 1px solid #ccc; border-radius: 15px; padding: 10px; margin-bottom: 10px;"> <div style="display: flex; align-items: center;"> <div style="border: 2px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin-right: 10px;"> 2 </div> <div> <p>Step 2 Go to the section:</p> <p> Announcements</p> <p>Form for Updating of Record</p> </div> </div> </div> <div style="border: 1px solid #ccc; border-radius: 15px; padding: 10px;"> <div style="display: flex; align-items: center;"> <div style="border: 2px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin-right: 10px;"> 4 </div> <div> <p>Step 4 Fill the form and send it to:</p> <p>THE INDIAN INSTITUTE OF ARCHITECTS</p> <p>Prospect Chambers Annexe, Dr. D. N. Road, Fort, Mumbai 400 001</p> </div> </div> </div>
---	--

JIA ONE YEAR SUBSCRIPTION

GENERAL

MEGASAVER

GENERAL SUBSCRIPTION
Other than IIA members

JOURNAL
OF THE INDIAN INSTITUTE OF
ARCHITECTS

Prospect Chambers Annexe, 5th Flr., D.N. Road, Mumbai 400 001
Tel.: +91 22 22046972/22818491/22884805 Fax: +91 22 2283 2516
Email: iiapublication@gmail.com / iiaho1214@gmail.com
Website: www.indianinstituteofarchitects.com

Please enter my annual subscription at ₹ 1,000/-
Payment is enclosed herewith. (Please tick
appropriately)

Demand Draft Cheque Money Order

Name : _____ Title _____

Address : _____

City : _____ Pin : _____

Signature : _____ Date : _____

Please tick the appropriate box only

Architect registered with the
Council of Arch
Arch. CA No.

Planner

Engineer

Builder

Designer

Educationist

Administrator

Business

Other than above
(Please Specify)

STUDENT

MEGASAVER

GENERAL SUBSCRIPTION
Other than IIA members

JOURNAL
OF THE INDIAN INSTITUTE OF
ARCHITECTS

Prospect Chambers Annexe, 5th Flr., D.N. Road, Mumbai 400 001
Tel.: +91 22 22046972/22818491/22884805 Fax: +91 22 2283 2516
Email: iiapublication@gmail.com / iiaho1214@gmail.com
Website: www.indianinstituteofarchitects.com

Please enter my annual subscription at ₹ 500/-
Payment is enclosed herewith. (Please tick
appropriately)

Demand Draft Cheque Money Order

Name : _____ Title _____

Address : _____

City : _____ Pin : _____

Signature : _____ Date : _____

CERTIFICATE

This is to certify that

(Student's Name)

is a bonafide student of

(School, College of Arch.)

City _____

Please enter student Subscription

Signature of Head of the Institution
(Please affix stamp of the Institution)

Mughal Art and Architecture of India

Fatehpur Sikri and its reflection in Contemporary Architecture

Ar. Bindu Agarwal



Ar Bindu Agarwal, an Associate Professor with Graphic Era Hill University, Dehradun, Uttarakhand's prestigious institution, completed her Diploma in Architectural Assistantship from Government Polytechnic for Women, Chandigarh (1990) with first Division followed by Graduation from AIIA in 2000. She then went on to complete her M. Arch from YCMOU, NASIK with first division in 2012. An avid photographer and Nature lover, Ar. Bindu with over eight years of teaching and eight years of practice experience had interests in the domain of Change in Land Use laws in the State of Uttarakhand, is currently pursuing PhD in Architecture from Himgiri Zee University, Dehradun.

binduagarwal100@gmail.com

ABSTRACT

Mughal style of art and architecture was developed in India from 16th century to 18th century. Muslims originally from desert nomadic tribe. These tribes later came under one flag hosted by Prophet Mohammed and a new religion called Islam came into existence. With the Mohammedans, new era started in India. Mughal's in India is well known for their excellence in art and architecture. This style has combined features of indo-Indo Islamic- Persian style. On one hand was the rhythmic mind of the Hindu, on the other the formal mind of the Masulman.

The aim of writing this paper is to do comparative study by using descriptive research method of mainly two factors which were largely responsible for excellence in Mughal style in India firstly is Indian craftsmen mainly in the art of working stone and secondly architecture for perfection, manipulation of stone or manipulative skill in new elements such as kiosks, calligraphy, brackets, jails, pillars etc. Decoration, carving, arabesque and ornamentation on every element of every building made Islamic art and architecture great weather it is on red sand stone or on white Makrana marble. Carving using floral designs, geometrical patterns and line work are very common in Mughal buildings are still in fashion.

The present paper tries to find out the development of art and architecture during the great Akbar's period particularly Fatehpur Sikri city in India and their reflection in contemporary India by giving various live examples.

INTRODUCTION

There is superb combination of art and architecture in the period of the "Great Mughal's". Mughal architecture in India was widely appreciated and debated with respect to its origin and development. Same uniformity in its architectural character as well as in its structural principles in whichever part of the empire it was introduced. There were many factors responsible for this remarkable development of the building art and architecture for the high standard of buildings that was consistently maintained for two centuries. Undoubtedly the principle factors were that aesthetic nature of the Mughal rulers themselves.

Mughal work representing five generations in all- each ruler has keen interest in art and architecture. In India it developed

from 16th century to 18th century as practiced under A Art work is either big or small is beautifully used in Mughal architecture. Carved stonework is another interesting feature in the Mughal architecture, ranging from shallow relief depictions of flowers to intricate pierced-marble or stone screens known as jalis.

There is the existence of various influences of the Persian and Hindu architecture in the Mughal architecture. The trabeated stone construction, shallow arches made out of corbels rather than voussoirs and richly ornamented carved piers and columns are some typical Hindu features that have been incorporated in the Mughal architecture. Other constructions like the chhatris- a domed kiosk resting on pillars, bracket support, chajjas and jarokhas- a projecting balcony supported on corbels with a hood resting on columns

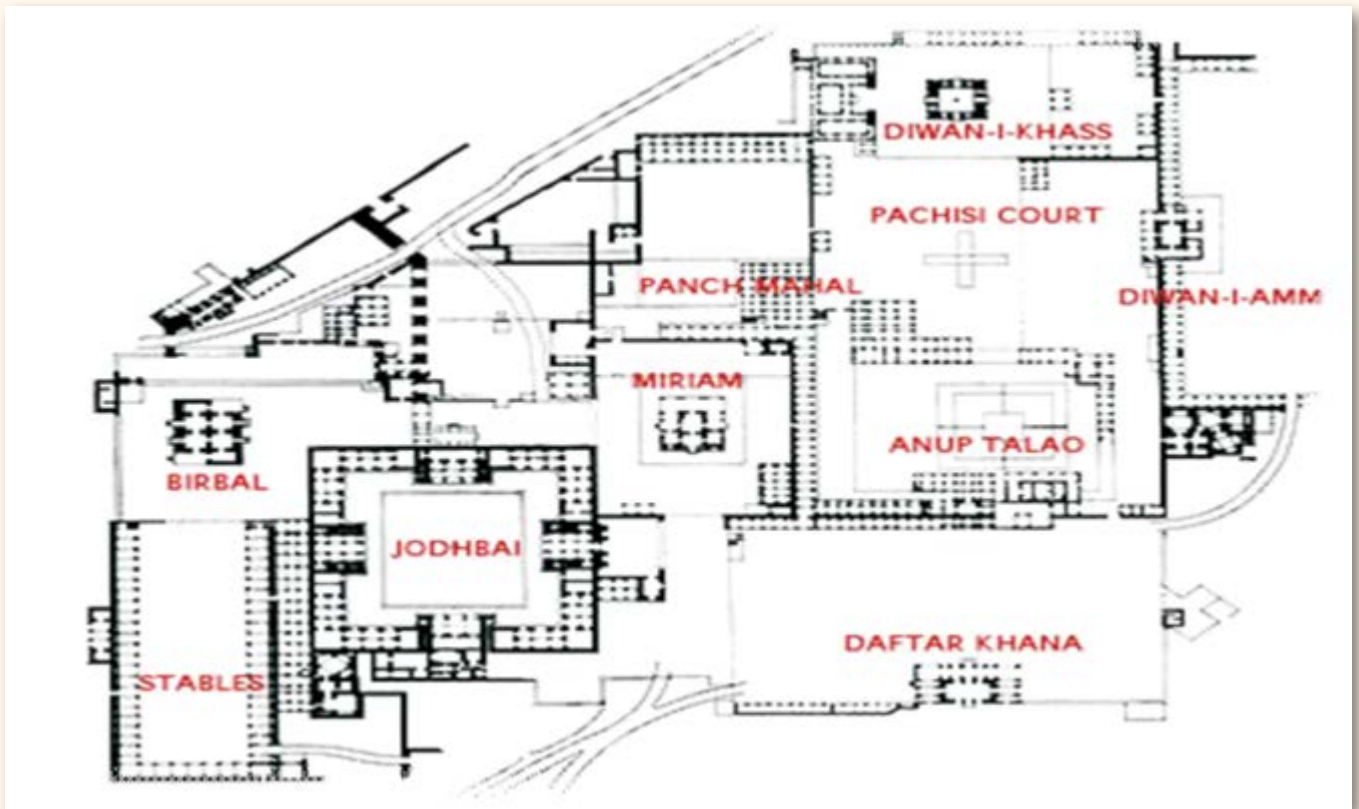


Fig. 1: Plan of Fatehpur Sikri city

became a part of the Mughal features. Extensive use of tile work, the iwan as a central feature in mosques, the charbagh or garden, divided into four and the four-centre point arch and the use of domes are the features borrowed from the Persian architecture.

The features of Mughal architecture includes perfect or near perfect radial or bilateral symmetry, red sandstone with white marble inlays, design of gardens.

The Mughal Period under Akbar the Great (1556-1605)

Akbar the great built widely and the style developed vigorously during his reign. There is almost limitless range of structural projects that formed the outstanding features of his rule. The architectural achievements during this dynasty selected to fulfill the preferences to appropriating the readymade style from Persia. He provides contribution and the experiences of other countries. Among his accomplishments was tomb for his father Humayun, Agra Fort, city of Fatehpur Sikri and the Buland Darwaza. For building arts Akbar found the artists of India executed in red sand stone. Architecturally used trabeated style except arch was often used in its capacity as decorative arcading. As to the ornamentation carved or boldly laid patterns were common while painted designs were often introduced on the interior walls and ceiling.

Akbar highlighted the best in the Hindu and Islamic traditions of Architecture. The use of colored glazed tiles and domed

canopies on the exterior were as positively of Persian origin as the interior arrangement were Hindu.

Fatehpur Sikri

In 1569, Akbar a 28 years old bold and political man set about the planning and building of his city Fatehpur Sikri a new capital city of Mughal's, the city of populations of 2,00,000 larger than the contemporary London and Rome. At no other time in history of Indian architecture were buildings of such. The complex is 2x3 km and is surrounded on sides by wall opened by nine gates some of them collapsed. The layout plan of city has four groups. The planning is in form of concentric rings placed the most private areas such as queen's palaces in the center, surrounded by semi-private areas. The outermost spaces and buildings are meant for service functions and public activities. All of Fatehpur Sikri's buildings are built from the red sandstone. Sandstone cut to shape in the form of lintels, columns and roofing tiles which was used as much as like precast concrete beams & panels or even timber in modern buildings. Akbar's Fatehpur Sikri appears to be "wooden house made of stone." Layout plan of the city consists of 4 groups, the religious buildings, the Royal Complex, public courts and others buildings.

GROUP-I : The Religious Groups: The Sanglarashan Mosque, Great mosque with Buland Darwaza , Tomb of Shaikh Salim Chisti .

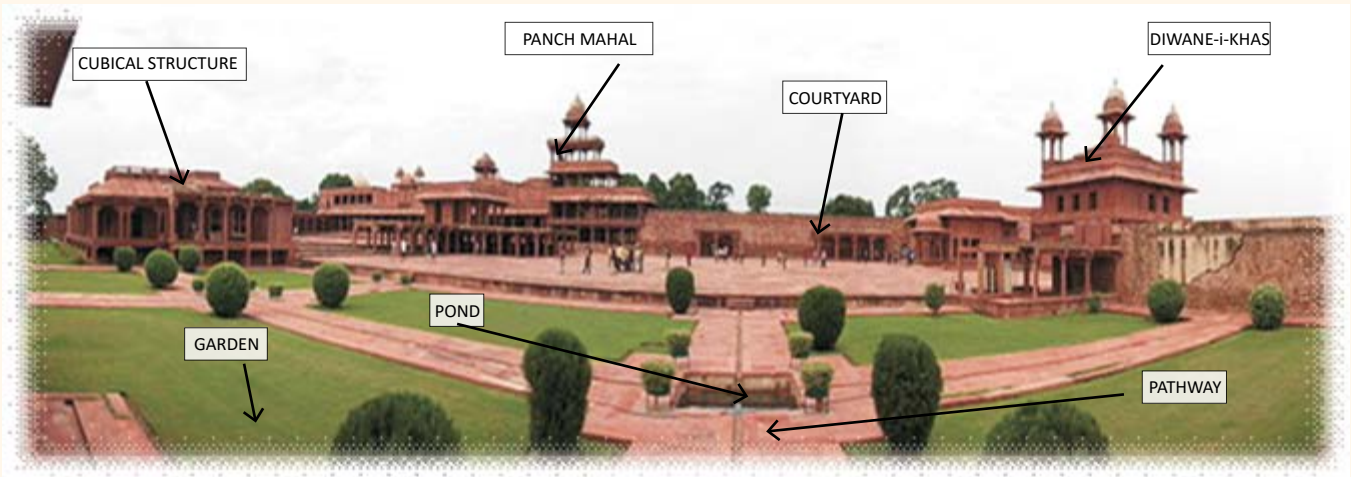


Fig. 2: Panoramic view of the city of Fatehpur Sikri Source: Wikipedia

GROUP-II: The royal Complex: Palace of Jodha Bai , Two bazaras , Palace of Birbal & other sultans , Rang Mahal .

GROUP-III: Public Courts: Terraces, Panch Mahal , Khwabgah (private apartment of Akbar), Akbar Khana (girls school), Diwan-i-Khas, Diwan-i-Aam (workshops) .

GROUP- IV: (Other Buildings) : Hiran Minar , House of Faizi , Abul Fazl (scholars at Akbars Court), Elephanta gate , Naubat Khana (Drum House) ,Gardens, paths etc.

Diwan-I-Khas or Hall Of Private Audience:

- It is a plane square building side 13.8 m.
- Material used is Red sand stone.
- On front and rear side there are two windows with jali at lower floor.
- Upper floor has two openings on each side protected by an extremely wide chajja square in shape.
- It has four chatris on the roof.
- It has trabeated style

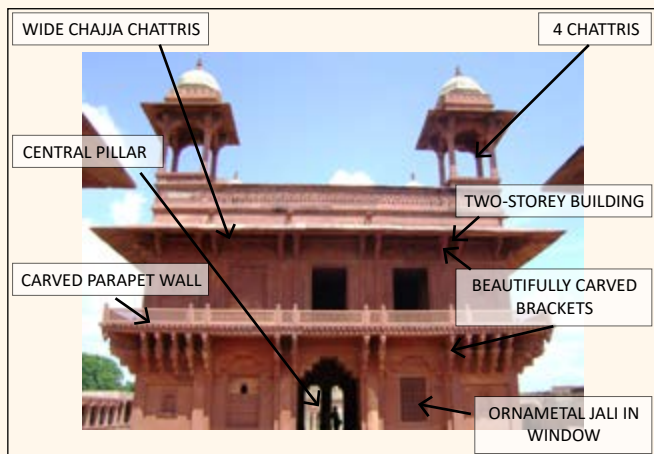
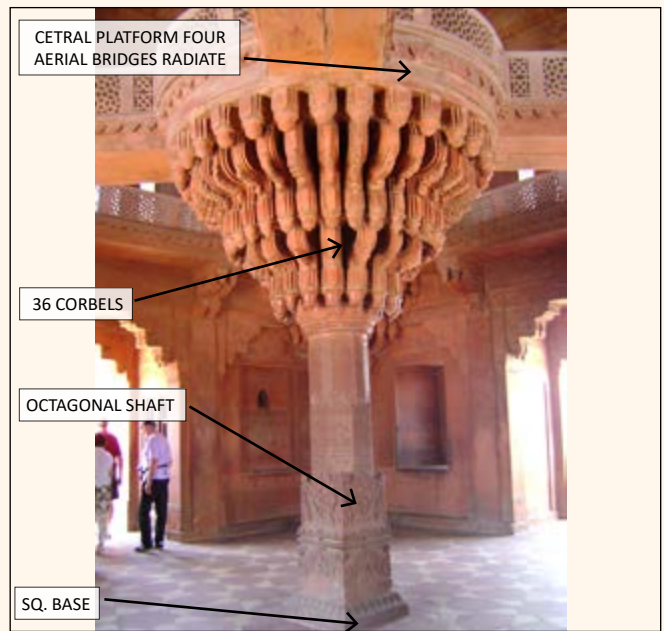
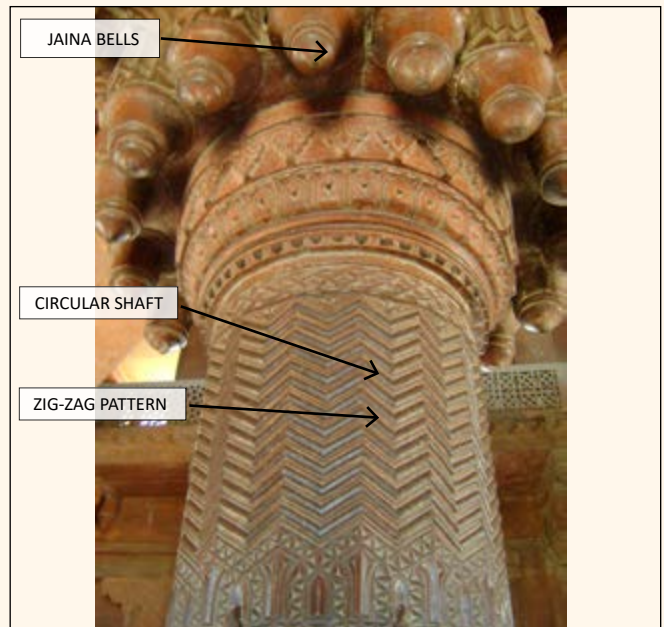


Fig. 3: Fatehpur Sikri - Diwan-i-Khas : Hall of Private Audience Source: Author



Central Pillar Of Diwan-I-Khas (Huge Monolithic Pillars):

Diwan -i- khas is famous for its central pillar which has

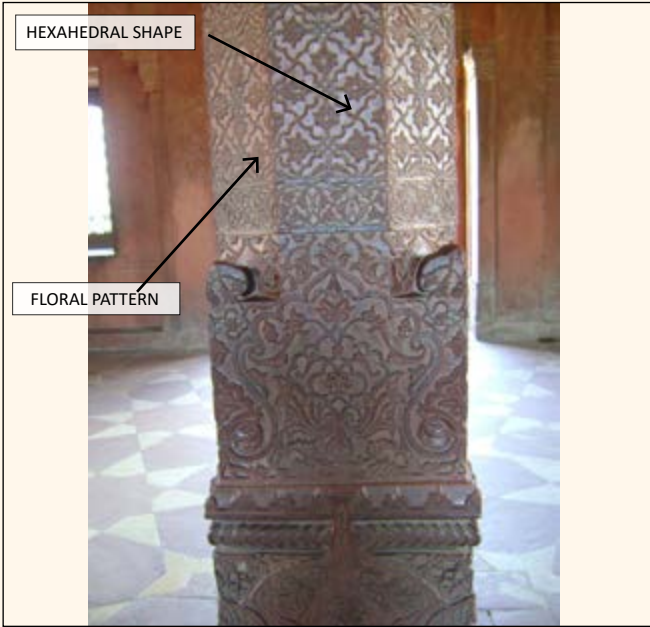


Fig. 4- 6:- Fatehpur Sikri – Interior view of Central Pillar of Diwan-i- Khas
Source: Author

a square base and an octagonal shaft, both carved with bands of geometric and floral designs, further its thirty-six serpentine brackets support a circular platform for Akbar, which is connected to each corner of the building on the first floor, by four stone walkways. Akbar had representatives from different religions who discuss their faiths and gave



Ornamental torana arches are Beautiful carving sandstone used like concrete and timber panels. It is like workmanship of a magician's hand.

Fig. 9: Fatehpur Sikri –Treasury Kiosk (Astrologer's Seat): The design being derived from the medieval Jain temples of western India. Source: Author

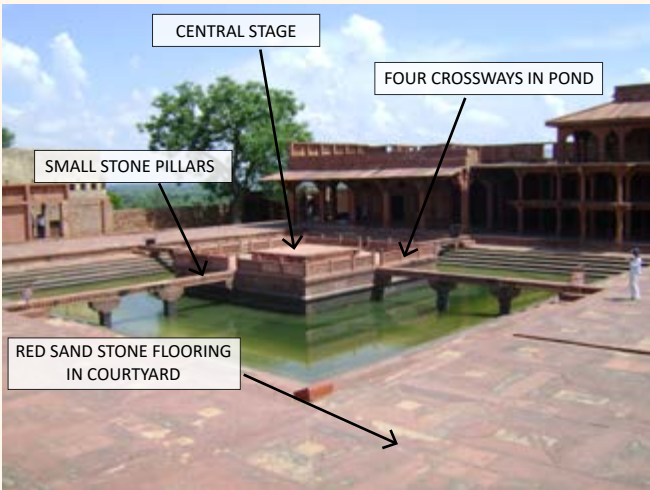


Fig. 7: Fatehpur Sikri –Char Chaman with Anup Talao Source: Author

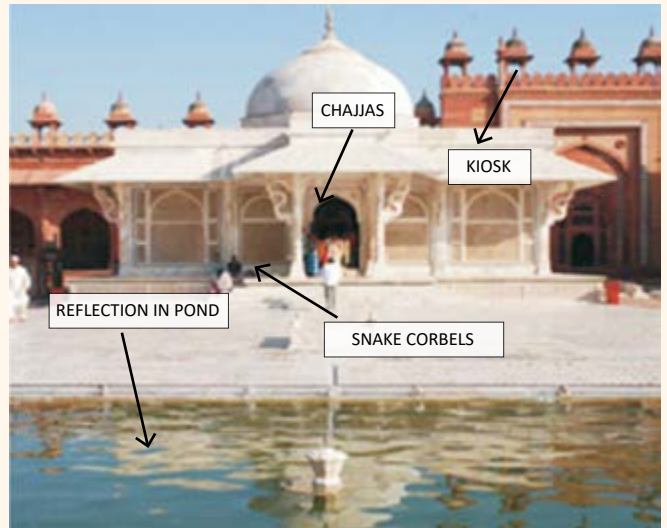


Fig. 10: Fatehpur Sikri – Salim Chisti Tomb only structure in white marble
Source: Author

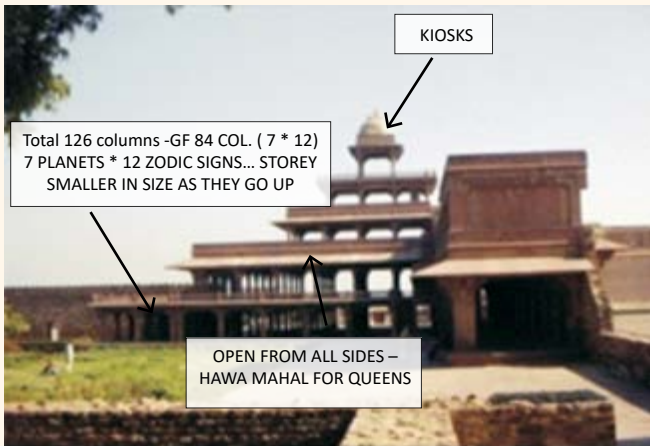


Fig. 8: Panch Mahal – five storied building- the tallest tower in the premises of the Mughal Palace



Fig. 11: View through the hexagonal window of Salim Chisti Tomb
Source: Author

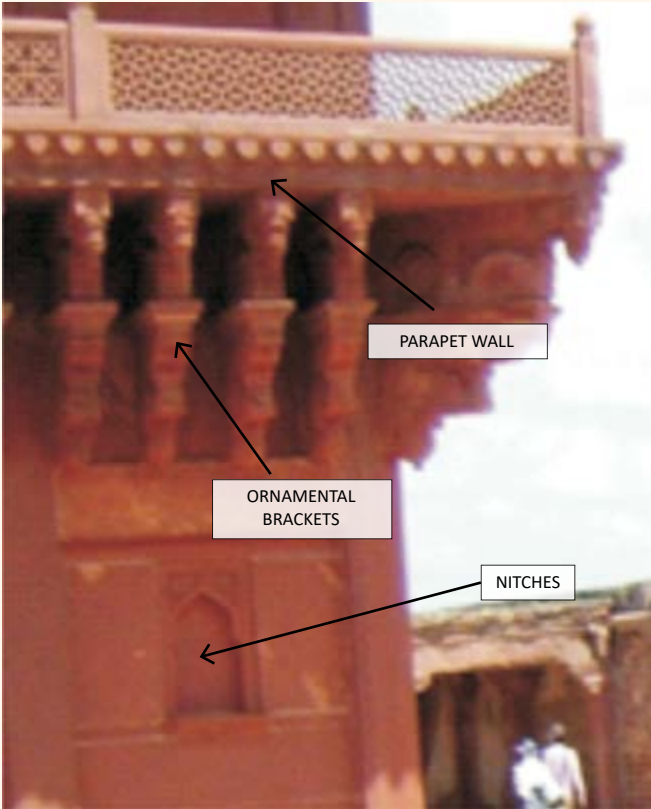


Fig. 12: Fatehpur Sikri – view of Maryam’s house - detail of sandstone carving Source: Author

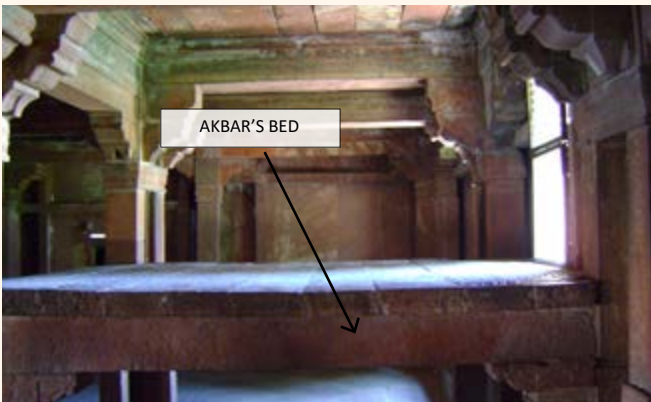


Fig. 11: Fatehpur Sikri- Interior of the Akbar’s bed room Source: Author

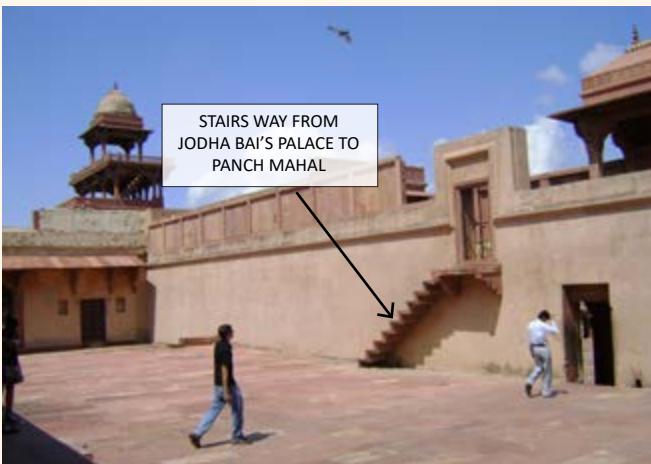


Fig. 12: Fatehpur Sikri – Courtyard of Jodha Bai’s palace Source: Author

private audience. From the exact center of the floor rises a pillar with a sq. base and octagonal shaft, decorated and finely carved stylized design, near the capital the shaft takes a hexahedral shape and then circular.

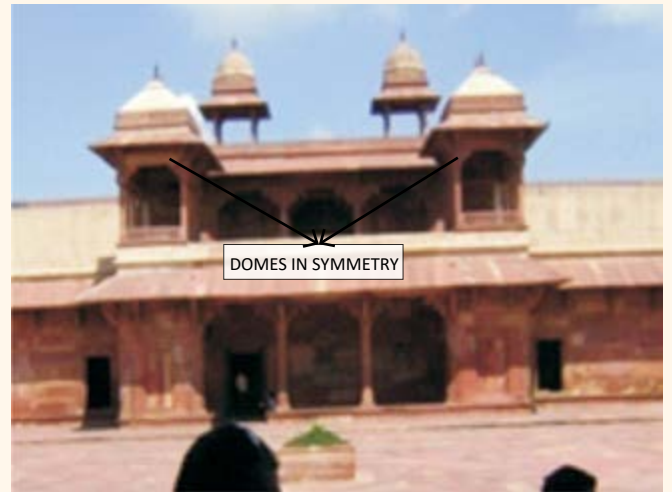


Fig. 13: Architectural principles - symmetry and balance are clearly seen.

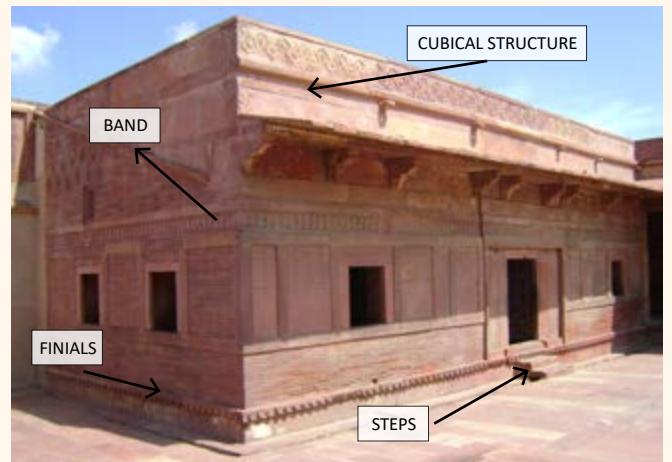


Fig. 14: Fatehpur Sikri - Kitchen in front of Jodhabai palace Source: Author

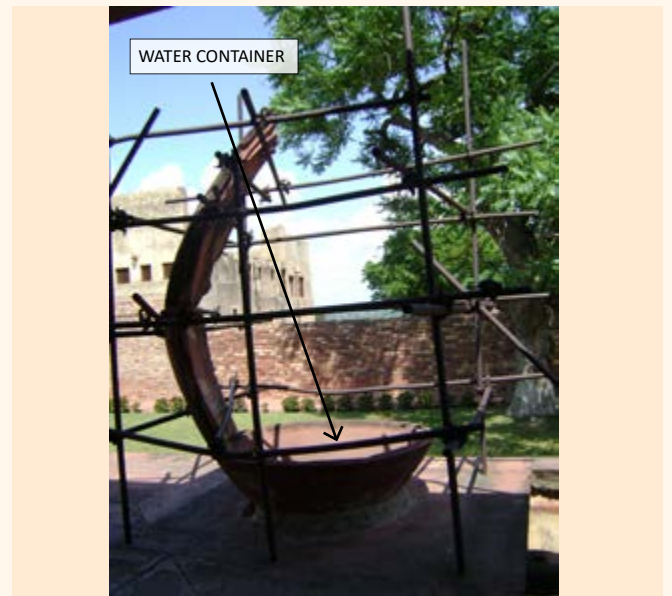


Fig. 15: Fatehpur Sikri - Akbar’s water pot (gangajal) Source: Author

Report: Akbar' Mughal era's impact on Contemporary Era

The Mughal architectural elements - the beautiful decorative Jalis (pierced screens) and other elements of art and architecture were used in Mughal era's history has equally importance and impact on contemporary art and architecture.



Marble jali panel of Mughal Architecture Agra Fort, 16th century
Source: Author



Jali panel by Raj Rewal's the Parliament Library at New Delhi, 2003
Source: <http://ebuild.in/gallery/parliament-library>



Aaup Talo in central courtyard of Fatehpur Sikri, 16th century Mughal Architecture
Source: Author



Pond in central courtyard by Raj Rewal's the Parliament Library at New Delhi, 2003
Source: <http://ebuild.in/gallery/parliament-library>



Fatehpur Sikri –Treasury Kiosk (Astrologer's Seat): Roorkee
Source: Author



NTL Electronics India Ltd. Bhagwanpur, Source: Author

CONCLUSIONS

There are two major points about Akbar's Fatehpur Sikri that have bearings on the origin and development of the Mughal art and architecture are as follows:

Firstly, besides being an Islamic art, there is a wonderful manifestation of a beautiful blend of Christian, Hindu,

Persian, Buddhist and Jain architecture. The planning reflects Akbar's religion "Din-i -illahi". Builders from all parts were free to implement their inspiration and designs.

Secondly, a city containing no streets but an arrangement of broad terraces and courtyards around which grouped numerous palaces and pavilions. It is symmetrical and decorative in style, white marble and red sandstone were favored material.

Fatehpur Sikri has been successful in creating huge aura among the art and architecture lovers. The buildings wore a look of grace, beauty, grandeur and richness.

To sum up, in Akbar's reign a remarkable beautiful change can be seen in Mughal period which is not only an indigenous Indian art but also developed rapidly in the period of Akbar than any other Mughals.

REFERENCES

- [1] Brown Percy. 1942 "Indian Architecture (Islamic Period)": development and planning of Mughal architecture in india.
- [2] Grover Satish, 2002 "Islamic Architecture in India" Second Edition the different buildings of Fatehpur Sikri , material used and their ornamentation.
- [3] Anistoriton Journal, vol. 11 (2008-2009) Art 1 "New Aspects Related to Origin and Development of Mughal Inlay Art in India"
- [4] Figure No. 1 and 2 source http://en.wikipedia.org/wiki/Fatehpur_Sikri
- [5] Figure no. 3 to FIGURE no. 16 Source Author Ar. Bindu Agarwal in November 2011.
- [6] Mondal Puja "The Development of art and architecture under the Mughals in India" from website development-of-art-and-architecture-under-the-mughals-in-india/4099/
- [7] Petersen Andrew (September 2011) "Architecture of Fatehpur Sikri" Abandoned city in northern India founded by the Mughal emperor Akbar in 1571. From website <http://islamic-arts.org/2011/fatehpur-sikri/>
- [8] Bhallacharjee Sanghamitra October 2012 " Fatehpur Sikri : the Mughal sandstone splendor"

Cylindrical Knob and Handle Set Lock

In keeping with the incurring demands of the current customers, related to the needs of door and lock hardware, **Hettich** has recently **launched Cylindrical knob locks for external apartments and office doors.**

The knobs reveal some exciting features in terms of their functional capability. They provide **locking of the door from inside with a push button**; with the push button locking being released by opening the door from inside or by locking the door.

Besides the aforementioned lock operation, the knob technology paves the way for **permanent locking function** where the locking of door from inside is completed by setting permanent locking function of push button **with the help of a screw driver**. In this case the push button locking cannot be released by opening the door from inside nor by locking the door.

In the situation of door being locked, the door can be opened from both inside & outside with turn knob.

The product supports the **version of turn knob with cylinder for operation from outside & turn knob with push button**, arresting, with dead locking latch bolt for the device usage from inside.

Hettich supports another version of **cylindrical knob locks** especially **designed for bathroom/WC doors, bedroom & private room doors.**

The functional expertise of the lock operation here **allows locking of door from inside by pushbutton locking being released** by opening the door from inside or by locking the door.

In the case **where door is locked**, it leads to the **opening of door from inside with turn knob** and the **opening of the door from outside is achieved with a flat object (coin)**. Where the door is not locked, the door can be opened from inside & outside with turn knob.

It supports the version where turn knob with **emergency opening is found on outside** & in the similar vein, **turn knob with push button is found on the inside.**



- Suitable door thickness: 32 mm – 45 mm
- Backset: 60 mm
- Function: Entrance/bathroom
- Material: Stainless steel
- Version: Cylinder with 5 pins
- Finish: Stainless Steel/Polished Brass/Antique Brass
- Set Includes:
 - 1 Knob lockset with latchbolt and striking plate
 - 1 Special key for mounting the knobs
 - 1 Set of fixing material
 - 1 Set of installation instructions



German quality you can trust



Mortise Handles; SS/Nylon/Alu; Fire Rated



Lock Body & Euro Profile Cylinder



Be-spoke Handle

Buy Hettich, Buy Peace of Mind: **Hettich ProLock 2, 3 & 4**
German Locking technology for your Doors
CE/EN Certified, Fire Rated & Guaranteed for 200,000
to 1 Million cycles



CE EN 1906 F

Toll Free : 1800 209 2096 (office hours)
Email: sales_enquiry@in.hettich.com
www.hettich.com

- Door Hinges
- Locking Solution
- Glass Patch & Sliding solutions



JK SUPER
CEMENT
BUILD SAFE

JK
WHITE
CEMENT
THE PERFECT WHITE
ISO 9001, 14001, OHSAS 18001 & SA 8000 CERTIFIED

Architect of the Year Awards

JK AYA

Instituted by **JK Cement LTD.** since 1990

AWARD CATEGORIES

GREAT MASTER'S/ CHAIRMAN'S AWARD

(Once in 2 Years) Next due in 30th JK AYA

Green Architecture (Environment Conscious Design)

(Eligible Countries : India, Bangladesh, Bhutan, Kenya, Maldives,
Mauritius, Nepal, Seychelles, Sri Lanka,
Tanzania & Uganda)

Indian Architecture Awards (IAA)

(Eligible : Any Indian Architect)

Foreign Countries' Architecture Awards (FCAA)

(Eligible Countries : Bangladesh, Bhutan, Kenya, Maldives,
Mauritius, Nepal, Seychelles, Sri Lanka,
Tanzania & Uganda)

Indian State Architecture Awards (ISAA)

[Eligible States / UT : States by Rotation]

www.aya-jkcement.com

THE TROPHY

For Further Information

About JK AYA Pl. Contact :

Award Secretariat :

M. P. Rawal

Administrator (JK AYA)

221, Ashok Nagar

Udaipur - 313 001 (Raj.) INDIA

Tel. : (91) (294) 2412107 / +91 98290 44650

E-mail : mp.rawal@jkcement.com

ujkcement@gmail.com

29th JK AYA
Shall Open For
Sending Entries
From 1st January 2019.



VIJAYSTAMBH™

Our Products :

JK 43 Grade

JK 53 Grade

Ordinary Portland Cement

J.K. SUPER CEMENT

Portland Pozzolana Cement (Fly Ash Based)

J.K. SUPER CEMENT

Portland Slag Cement (Slag Based)

J.K. SUPER Grip

J.K. White Cement

J.K. Wall Putty

J.K. Water Proofing Compound

J.K. Primax

www.jkcement.com

