

ARCASIA FORUM 12: Relevancy of Search for Colloquial / Local Architectural Identity through western architectural discipline.

Sub-theme: Culture & Identity

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Abstract: It has been quite a while since a debate started why the profession of architecture here in Bangladesh has failed to come with a relevant architectural identity of its time, for our region, yet the deliberation of this formal discipline has been around here for the last fifty years. The architectural profession in neighboring India, Sri Lanka has had a better success in this regard with quite a few pieces of architecture that portrays the notion that they have reference to the style and methodology of "building creation" that were valid for this region. Time has come for us to look into why, as of now, we have been unable to derive a convincing architectural identity for ourselves and for our populace. It is very important to focus and make the distinction that identity of architecture for a region develops over time through relevant intervention from all ages, giving maturity to the process. This distinctive input contributes to the holistic development of architecture, achieving unique identity and forms the foundation for the next generation of interventions allowing continuity & development of identity.

So the question arises, how much of our present deliberation in architecture contributes to the above-mentioned identity. The objective of this paper is to examine the relevancy of western style discipline of architectural methodology in appreciating colloquial and indigenous built environments and whether applying the same can we derive our architectural identity for our time.

Methodology:

To appreciate indigenous architecture, the tools that we apply in our architectural process will not suffice and understanding should be developed into the work process and methodology of local designers/artisans/craftsmen and be aware of the distinction between these methods and our formal methods. The paper shall proceed while shedding light on three aspects: a) *The design methodology of local artisans (assessment of the performance of objects, in this case product of rural use, designed by local designers-artisans and their relevancy to the life style of the people for whom it was designed. As case study a specific product is analyzed, the evolution of light or 'the container of light'. An assessment into how light evolves from the 'Prodip' to 'Diya' to 'Kupi' to 'Gacha' to 'oil lamps' - it's change of ergonomics to the function, to the user and within the space it is being used and show the difference to formal design approach and show that no intervention is an isolated event and contributes to the development of the product in a very relevant manner.* b) *The layout of individual building in context to its surroundings (study into how the life style greatly influences the morphology of the built environment and even though each region of Bangladesh has its own distinction in this regard yet there is a common notion running through all these building typology reflecting the life style of the people and thus relevant and sustainable).* And c) *The*

Energy Level (*the 'energy input' into the built environment and it's comparison with the surroundings and focus on the fact that 'Identity' not only evolves from specific morphology to design but also from the aspect of matching of material to the surrounding and the energy it consumes from the environment*).

Summation/statement: The paper will focus on the absolute different approach and understanding of our indigenous people towards design & the built environment and it may be very much relevant to look into these informal methodologies to assist us in our search for colloquial architectural identity.

Key Words: Colloquial (*pertaining to the character of the region*) architecture, Architectural identity, Ism-less design, Habit design, Vastu Shastra, Energy level in building materials, occidental & oriental architectural philosophy.

INTRODUCTION

Taking a walk down a popular shopping avenue in Dhaka, the Elephant Road, one is bemused at the various facades coming up along the street. Some are boasting sand stone cladding, supported on columns wrapped by shiny stainless steel sheets (!), while others have multi tinted glass in aluminum frames and all these applied on the skin of the building. It is interesting to note how these facades are generated. One has clarity of structure when these buildings are coming up with clear perception of slabs and supports, but all of a sudden, these slabs are "trimmed" at the edge in peculiar profile to give shape to a façade superimposed on the building regardless of the functions they envelop. It seems there is confusion within these buildings in what identity they want to express and not sure what these buildings " ... what to wear for the evening party...". And this is not limited to one particular shopping district but is the story seen occurring all around Dhaka City.

But lets take a different tour, this time parts of old Dhaka, down the streets of Farashganj, and we see a totally different scene. One can relate to the time & style of the buildings. Whether we endorse the colonial or Mughal influence is not the point of contention. What is note worthy, is that these buildings reflects in unison, a period in history of our society in a direct unambiguous manner. In other words it gives 'identity' to the society in a particular period in time. So how many buildings built during our period within the city or even in the country reflects our 'identity' in the progress of time? Has our profession of architecture been able to provide this ' identity' looking back on which, our future generation can say 'this was the contribution in the field of architecture by our society during that period'?

ARCHITECTURE AS "DESIGN ARTIFACT":

The author, participating in a workshop at the ICSID design education seminar, 2003 Hanover, professed the idea that design vocabulary might be such that it should not confirm to any 'ism' i.e. modernism, post – modernism, minimalism, hi- tech and so on, for true architecture do not care if it falls in any particular school of thought. This is evident in all the seminal work of the master builders (I stress on the word builder, rather than use the word architect). In the light of globalization and internationalization architecture may fall into certain 'ism', there is no harm in that, but when architecture is to be used as an element that gives cultural identity & representation of it's time, it may not be and should not be influenced by the 'ism' dogma. The reasoning is such that, representation of people / culture in architecture is through manifestation of their cultural habit in architecture. Both visual aesthetic and function evolves following this 'Habit'. But our modern architecture¹, in spite of its successes and relevancy, incorporates the 'habit' within this aesthetic and function and not before aesthetic & function. Thus the results are always predictable. Probably, this is the reason why we have so many 'ism' running around, each claiming to be more relevant than the other but few results coming out of such architectural exercises, do touch the heart of the common people. May be it is time to realize, and this was one of the findings of the design education seminar in Hanover, that deliberation in architecture practice & architecture teachings should start with 'Ism-less design' - Habit design' which will then be followed by 'Aesthetic design'.

So, if 'Habit' is the key word, how much of our present architectural deliberation & methodology of application addresses this issue? If design methodologies have limitation in this regard, probably it is time to take assistance from other Art discipline, i.e. philosophy, anthropology to incorporate 'habit design' in the main stream of architectural deliberations. When 'habit' is incorporated with design, the result is that, the design becomes an 'Artifact', representing the user in a specific period of time. So how many of our present architectural work is a 'design artifact' which is representative of our contribution in the development of architecture identity which has been evolving through the ages?

DESIGN IN OUR CULTURE:

The word 'DESIGN' does not have an exact translation in the Bengali Language. The corresponding word used in this regard is: 'Naksha' – meaning 'diagram' or more appropriately 'pattern'. The spirit of the word 'design' is hardly communicated through the word 'Naksha.' So, does it mean, design is absent in our culture, are not the people of the region not involved with design creativity? On the contrary, design is very much an integral part of the life of the rural people. And design is applied by almost every person of the various professionals in the villages, be it 'Kamar', 'Kumar', the weavers – 'Tati', the carpenters – 'Sutradhar'. But what is the nature of design activity by these people? Is it not true, that most ancient treatise in architecture, the 'vastu shastra' was developed in this region? And now the West is looking into this discipline for richer understanding in architecture regarding nature. If we are to assess the design activity of this region with our present understanding of design methodology, it will be a gross error on our part, for how do you begin to analyze a system of designing where even the word 'design' does not exist?

Working for DTC - Design & Technology for product development, the author had the opportunity to visit & survey various rural regions within Bangladesh for over a period of two years, observing various art, craft & architecture. It is the understanding derived from such survey & eventual research work that, design activity in rural areas are intertwined amongst various discipline and one aspect of activity greatly governs the other discipline. Thus to understand these design activity, a holistic approach has to be undertaken, looking into various other crafts apart from architecture, to truly appreciate architectural morphology of these regions.



Fig. 02 development of Weaving construction in cane

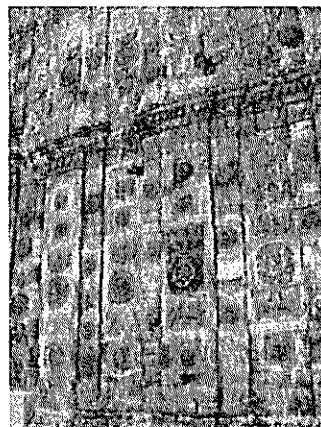


Fig. 03 intricate terracotta design & building technique at Atia Mosque in Tangail. The freeze prevents development of water stains & growth of fungi.



Fig 04. Light bounces back from stripes of cane.

Using these approach of analysis, one may look into other design related field apart from architecture – be it weaving or textile construction technique, day to day products of use such as terracotta items, bamboo & cane weaving constructions, or even food recipes of various region that tells upon the lifestyle of the people. It is appropriate if products of use in rural life should be discussed in this paper, since products like architecture refers to functionality, aesthetics and material application. As example, the gradual evolution of light (1), from 'Prodip' to 'Gacha' can be discussed and it's interrelation with ergonomics and the built

space within which these are being used. It should be noted here that the author does not want to focus on the level of advancement these designs incorporate, rather focus on the rational and methodology used for their gradual evolution, understanding of which may help us to appreciate these products in their own merit.

PRODIP:

The rational behind this product is to hold light. So it's starts with the absolute basics. It has to have a container to hold the oil for the light and to hold the light itself it also supports the filament that burns in oil.

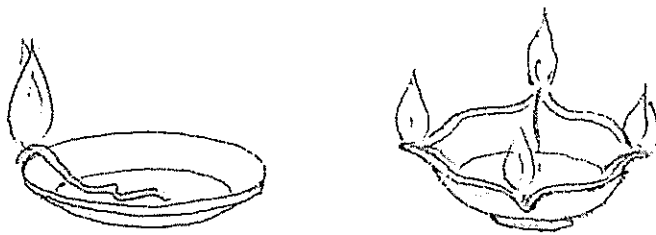


Fig. 05 Simplest form ever possible for containing oil in clay

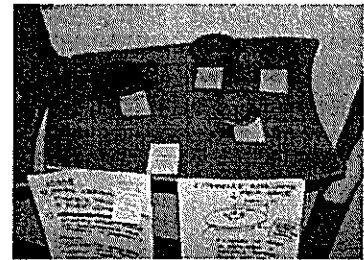


Fig. 06 gradual development of 'prodip' to 'diya'

In the case of traditional lamps, probably the most effective design development was based on a simple problem – safety. The question of safety was the logical sequence to that would follow the question of lighting quality. Round shape came as a design solution because of the hand or finger tipped process of clay, as well as may be the inherent idea of the round shaped property of oil in a free container.

DIYA:

The Diya would evolve by incorporating clay nosing for the fingers to hold it and at the opposite would be a tip in the terracotta for the filament to be held. The intervention is at absolute minimal, done to set the hand as far from the source of the filament tip.

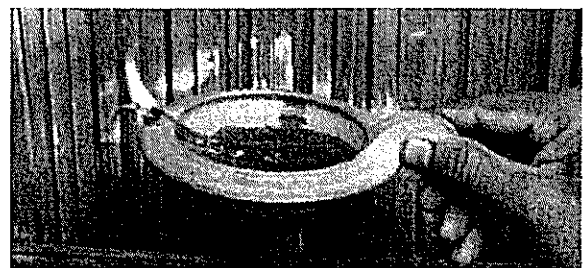


Fig. 07: From Prodip to Diya, intervention at the minimum

Kupi:

The safety of lamp centers with the containment of oil. So protecting the oil from spilling out was the main concern. And the best way to do this was to make a closed oil container. This simple modification was

actually the main pull factor in the later development in lamp. Use of extra element also introduced the possibility of another guiding factor– ‘mobility’.

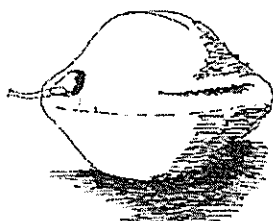


Fig. 08: terracotta kupa

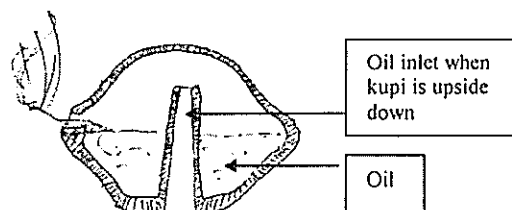


fig: 09. Section of kupa

The Kupa in fig. 08 is made of clay with provision of oil filling from beneath the container, yet the section of the kupa is such that it prevents the seepage of oil & absolute foolproof. Here we observe ingenuity at work with minimum technical intervention, yet making the Kupa user friendly like a container with a lid. But the design is such that it does not have any moving part, making the Kupa almost maintenance free!

Gacha:

The next phase in the evolution of light is the ‘Gacha’, a stand made of terracotta about 18 inches height for propping up the diya or the kupa to be kept on it. At first glance it may seem very simple, but a closer look into the ergonomics & structure of the product reveals a different story. The first thing that catches one eye is the cylindrical structure. It tends to be too elaborate as a stand for the kupa, but the nature of terracotta is such that to gain height it has to be a hollow cylinder, a solid rod or cylinder made of terracotta will develop cracks. So, here is material the village people are using which is readily available everywhere and as if the structure is gradually being borne out of the earth. Nothing is done forcefully.



Fig 10: terracotta Gacha



Fig 11: optimum height of Gacha for daily domestic Chores



The next thing that has to be appreciated of this product is its relationship to the ergonomics of the user and also with the overall dimension of the village hut within which it is being used. The village people conduct their daily domestic chores while working close to the floor, seldom using a table. For this purpose, when the kupa is placed on the floor, it has limited radii, resulting in limited lighted area. The situation is improved when the kupa is placed on higher vantage point with more of the room being lit. However, this has another disadvantage. The shadow cast by the kupa itself increases, resulting in the inefficiency of the light. It seems there is an optimum height at which the kupa has to be placed with relationship to the intensity of light

casted, how a work is being conducted within the hut & the amount of shadow cast. It was revealing to find out that the optimum height is about 18" from the floor level and that is the height of the 'Gacha'!

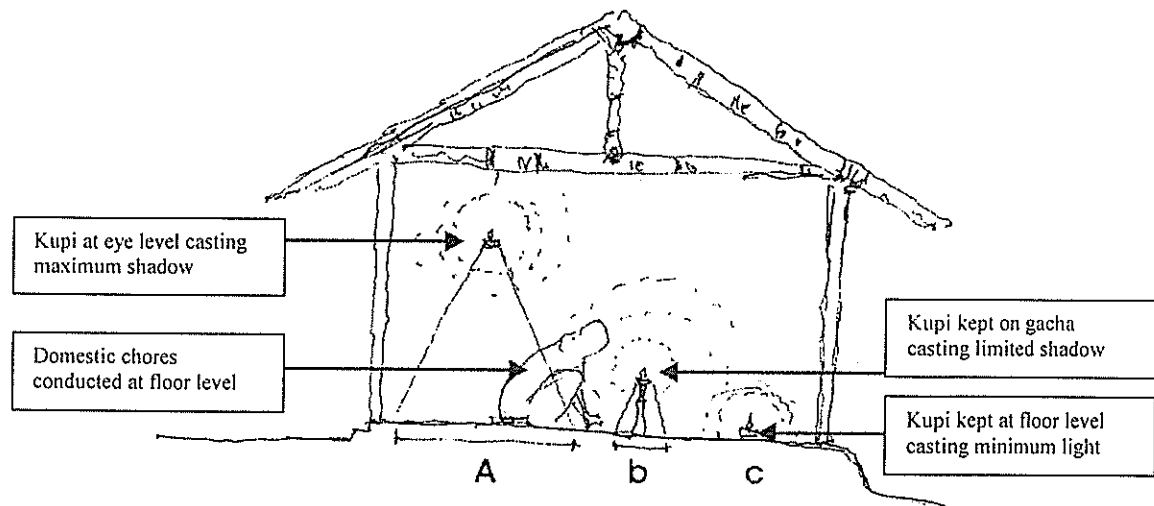


Fig 12: relation of light to the space & working environment

Also the intensity of the light from the kupi is also one of the determining factor of the height of the space within the hut. It is pointless of having a space of so much height if it cannot be lit up in the first place. So there seem to be a harmony between the ceiling height of the hut and the intensity of the light from the kupi, thus the ceiling of the hut would always be within 8', where ever kupi is being used as lighting device.

So, here we are, with a very simple product – an oil lamp, but it is fascinating to see how development of the lamp is always on the optimum line, nothing is unnecessarily applied, yet all intervention to the design is done on a very rational & harmonious way. It is, as if, design is at the very being of the product itself. In the rural areas, design itself is a problem-solving tool.

More effort should be given to understand the design philosophy of our region. Design, as if, in the west always tend to evolve into more complex functions and at times resulting in design solution that is more than it should be. But the oriental approach to design has always been based on relevancy, and always been low key, resulting in design solutions be it in architecture, or products of use, or in costume, at the very essence of reason. So it is time to evaluate if applying western design methodology, we will be able to derive design solutions, which are relevant to our culture and way of life.

BUILDING LAYOUT & CONSTRUCTION MORPHOLGY:

"Various analogies have been drawn between the symbolic function of architecture and formation of personal and social identities. Their accumulation has reached the point where the idea of 'architecture as identity' now rivals that of 'architecture as space' and 'architecture as language' as one of the principal metaphors and themes in architectural discourse" (2)

The author in his numerous field trips to various parts of northern & southern rural Bangladesh was amazed at different building technique & technology by the local artisans in building their abode, but was equally amazed at how every place confirmed to a hidden notion of building layout principal & how the micro environment of the village abode would interact in a similar manner with nature. There have been even cases where the inhabitants of one region had little or no contact with people from the other region. The reason behind this phenomenon are many fold, beyond the topic of this paper. But one aspect has to be mentioned here.

The profession of architecture is not new in Bangladesh. On the contrary it is an ancient 'shastra' (discipline), dating back to the Vedas. Pronounced as Vaastu, it is an integral part of Vedic astrology and also 'Tantra' (practical science). It is a way of life, where the inhabitant is put into an optimistic position with nature aligning himself with the 'energiers', allowing him to say 'I CAN' in any circumstances (3). The shastra speaks about four types builder profession, i.e. Sthapati (the chief architect) ,Sutragrahin (the designer & draftsman), Vardhanthi (the painter) & Sutradahara (the carpenter). The shastra elaborately defines the quality and job of these professionals. Even in those classical times it is mentioned, that "the architect should have novel ideas, be capable of acquiring knowledge, be a good writer, a skillful draftsman, versed in geometry and optics, informed in the principles of natural & moral philosophy, not ignorant of the law of sciences & physics and most important he should be well versed in astronomy – astrology and mathematics. (4)

So what has happened to these professionals and body of this immense knowledge? If we look back in history, at the beginning of colonialism in this region, we had disciples of this discipline in our society, proud people of renowned 'Gharanas', who were eagerly patronized by the Zamindars. But after the advent of colonial power and forceful change into oppressive economic activity, all these people like other proud artisans of other discipline like the 'Tati's' were forced to change their profession and into life bondage and forced labor on the fields of indigo cultivation. What remains are the 'Sutradhara' and notions of building layouts. And that is why there is this hidden similarity among building morphology in various parts of rural Bangladesh. It is time that the profession of architecture looks into this phenomenon without any prejudice.

While talking to a traditional builder in a 'Pal' village, Delduar, Tangial, it was revealed how the soil was tested when any construction work is to be undertaken. It starts with digging a pit about one cubic yard (hath) on the site at sunrise. Next morning at the same time the pit is to be filled up with same dug up soil. If the pit overflows, the soil is said to be fit for construction work. If the pit just fills, the site is moderate and if the pit is insufficiently filled, the soil is not fit for construction.

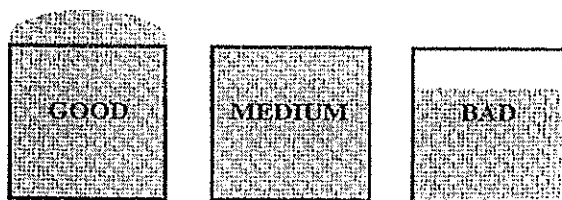


Fig 13: traditional way of soil testing

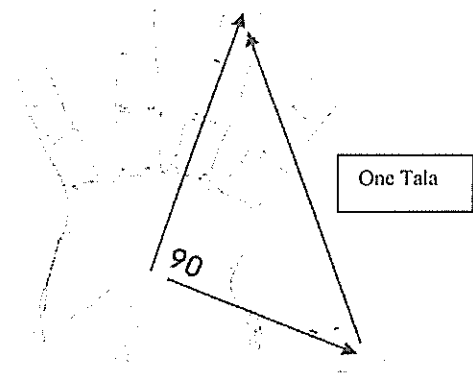


Fig 14: traditional unit of measurement : Tala, derived from out stretched palm of the hand. This has resemblance with what Le Corbusier chose as icon for the capitol in Chandigarh , the "Open Hand" .

When this practice is scientifically analyzed, it is apparent that in the first case when the soil over flows the pit, it indicates the same volume of soil in the ground is more compact , thus suitable for construction. In the third case when the pit is insufficiently filled , it indicates the soil in the ground is porous. What is noteworthy is that the test is conducted in similar environmental condition i.e. during sunrise on consecutive days when the temperature & humidity of the soil will remain the same.

There are numerous instances of such knowledge existing in the colloquial tradition, i.e unique principal in developing carpentry joinery in wood, principals of joinery in bamboo & cane, treatment & splitting and use of structural strengths of bamboo, the technique of which are not applied in western architecture. *(As example the author is tempted to site an example of a student research team working on 'pivot less wooden hinge' at Offenbach University, in Germany. The author was surprised to find out that, the solution of the students was very similar to the wooden detail that is used in the traditional stand for the Holy Quran - the*

'Rehal' here in Bangladesh!) . For limitation of space the author will only focus on the planning issues of the traditional manner.

DIG & FILL:

In the Vaastu Shastra, the vaastu purusha is the deity responsible for the overall well being of the site. Three position for the vaastu purusha are mentioned. These positions indicate the various seasonal changes on the permanence of the structure. The treaties of the purusha is inexhaustive, dealing with measurements, proportions, climatic conditions, living habits, governed by the eight cardinal directions i.e. Uttara (north), Eashanya (north-east), Poorva (east), Agneya (south-east), Dakshina (south), Nairutya (south-west), Paschima (west) and Vayuva (north-west).

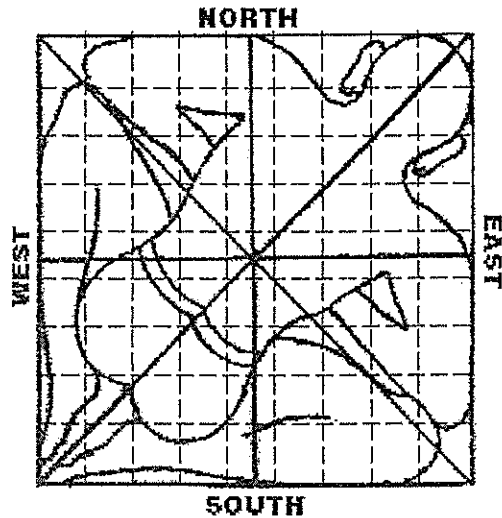


Fig 15: the deity Vaastu Purusha responsible For strength & happiness in the site

N.E.		EAST				S.E.			
Shikha	Parjanya	Jyotisha	Indra	Surya	Surya	Bhuvaha	Anantaksha	Amisha	
Ditih	Apaha						Savitr	Pasaha	
Aditih		Apasaha	Aryama			Savitr	Vishvaha		
Bhujagaha		Prthiviksha	BRAHMA			Vasava	Drikaksha		
Soma							Yama		
Bhallata							Gandharva		
Makhyaha		Rajayachma	Mitra			Indra	Bhargava		
Akhi	Rucra	Shesha	Anura	Varenda	Kusumadanda	Sagvada	Javah	Mitgah	
Rogaha	Papayakhine						Paavankaha	Paha	
N.W.		WEST				S.W.			

Fig 16: Astrological significance of different portion of the site.

The treatise asks of the builder to dig a pond or well as soon as possible after the rites for the construction has been performed even before the actual construction of the building. The pond should be dug preferably in the north of northeast (5). When rationally analyzed this have several implications.

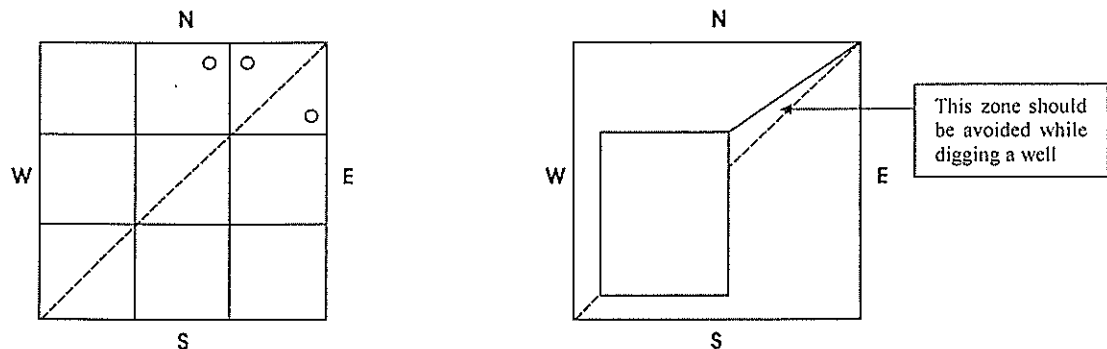


Fig: 17 method of identifying the location of the well or the pond

The soil from the dug up pond is used for the foundation work of the actual building. The nature of the soil from the depths is more compact in nature & plinth is raised above the flood plain. Water gradually seeps into the dug up pond, which then acts as source of water for daily use and also source of subsistence through fish cultivation. Interesting is the location of the pond, which placed at the north-east. The reason behind this is that the pond will always be in the shade of vegetation or building structure, allowing the water to

remain cool which is suitable for fish cultivation & domestic use. Also absence of direct sunlight discourages the growth of water hyacinths & algae

CHECKERED PATTERN LAYOUT:

Like the phenomena of existence of a pond in almost every house hold in rural Bangladesh, is the notion in the layout of structures and ponds. They seem to follow invariably a zigzag pattern, never to align in a row. In vaastu shastra, there are numerous treatise showing how the building should be laid, but to sum it up, it reveals the idea that all the cardinal points are ascribed to deities of good/bad omen and to larger than life notions. i.e. fortune, bliss, happiness etc. Thus human movement should not be along the cardinal axes. As such, circulation in rural villages always tend to be angular rather than axial. It is also encouraged to have the extension of an existing structure towards the north –east in an angular direction.

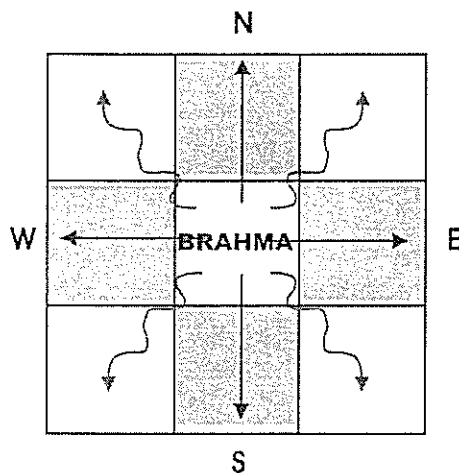




Fig 18:  formal position of houses, associated with larger than life notions, thus approaches avoid cardinal directions
 Informal movement of people

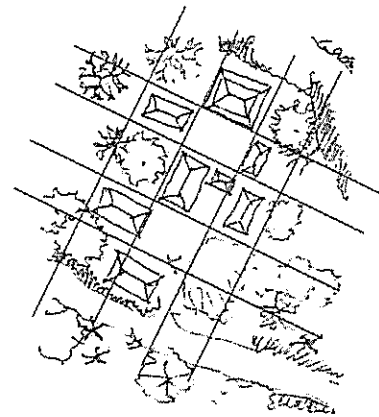


Fig 19: the traditional understanding of Vaastu shastra has influenced checkered pattern building layout

This phenomenon has numerous implications. The built spaces tends to surround courtyards and open spaces are entered at the corners, thus always having the notion of spaces opening up & close again to flow into other open spaces. This allows the humanization of the man made environment and also to infuse easily with the surrounding nature. When compared to European layout, which is essentially based on axis, these types of layout is much softer and do not require the forceful assistance of landscaping to infuse it with nature.

ENERGY INPUT LEVELS IN BUILDING MATERIALS:

Identity of architecture is not only based on visual vocabulary, building technique & technology but also very many depend upon the type of material used for its manifestation. One has to recognize the level of energy required for particular building material to be produced. Summation of energy level of these materials in the built environment determines the average energy level in that environment. Thus any material with unusually high energy level would be inappropriate to be used in an environment that is built on low energy. This should act as a hint for architects who aspire to use a lot of shiny metal sections to mimic certain 'ism' in visual vocabulary. It is often seen that, on excuse of globalization, architects are tempted to use various international architectural languages of which some may not be relevant for our society and environment. Perhaps this is one of the way to objectively assess if a certain international style is relevant to our architecture by evaluating the energy levels in materials endorsed by these styles.

Energy level in materials is assessed by appx. two methods, i.e. input / output method and the process analysis method (6) The first one considers the economic value of the raw materials that was used to produce the building material itself & the value of the processed material to installed at the location. The difference

between the two determines the energy value of the processed material. The unit is MJ(mega joule)/US\$ or in case of Bangladesh this would be MJ/tk. Thus using an inappropriate material (say using aluminum in rural areas), there would be a sharp contrast in the unit energy value when compared with other local or traditional materials. But when the same material is used in the urban areas, the comparison would be similar as such areas do have high level of energy input. Thus use of such material may be logical.

The Input/output system has its drawback, as a lot of economic statistics has to be available for the system to assess properly – statistics that the manufacturing industry would not like to share or is not recorded in the first place. Thus a more acceptable system would be the process analysis method. This system involves the systematic examination of the direct & indirect energy inputs to a process. The analysis usually begins with the final production process and works backwards as the energy of each contributing material or energy input needs to be ascertained. In spite of the considerable time required, this is the most accurate system of energy analysis in building material i.e. Aluminum (not recycled) extruded and anodized requires 227 MJ/kg while hardwood timbre kiln dried rough sawn requires only 2MJ/kg (for air dried 0.5MJ/kg)!

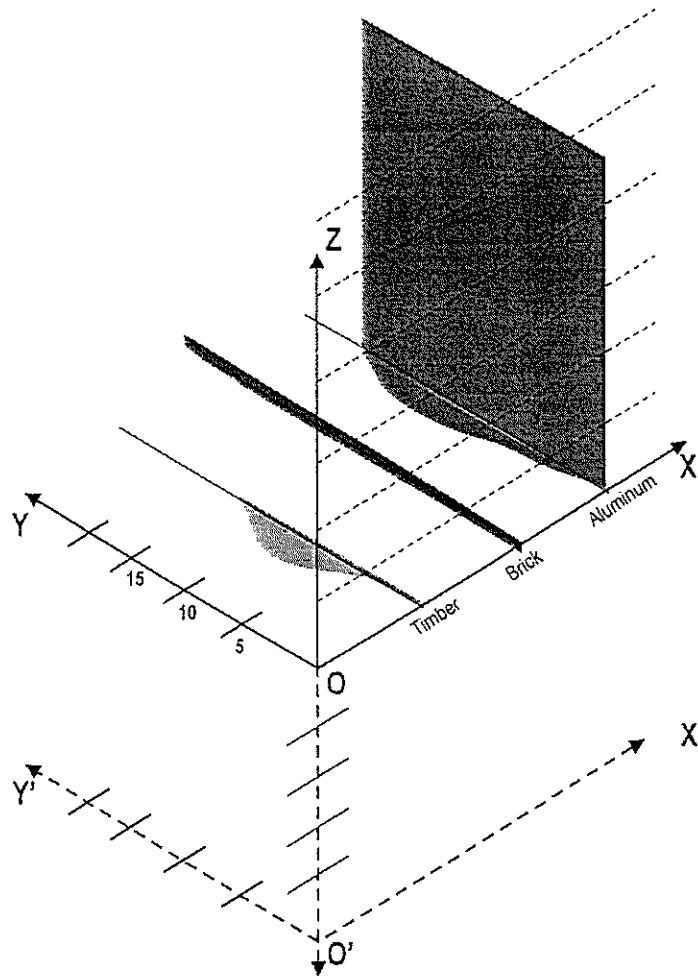


Fig 20: the material energy level chart (copyright by the author)

OX = materials, OZ = energy level in MJ/kg (timber = 2 MJ/kg, brick = 2.5 MJ/kg, aluminum = 227 MJ/kg)
 OY = longevity of material in years, OO' = level of maintenance involved, O'Y' = years of maintenance.

The more a material stays closer to OXY plan the more environmentally green it is . Longer the graph in the Y direction the more durable the material is.

To sum it up, certain architectural vocabulary, which may be appropriate for Europe, may not be relevant for Bangladesh, for energy levels in those societies are so many times higher than ours. When there is sharp increase in energy level input in building material than the usual consumption level, the economy and the environment has to bear this extra pressure. Thus architecture which is relevant for western world will not be sustainable for our society.

CONCLUSION:

So we see, there are gulfs of differences between occidental & oriental architecture in terms of philosophy, technique as well as in material. Is it not then, foolish to assume that the teaching methodologies of the two should be the same? In his book 'Architecture & Identity' Chris Abel writes (under the heading of 'Bauhaus Brainwash') "..... the tendency to import Western forms of architecture brought with it the worst aspects of Bauhaus education ideology and method. According to this legacy, the ideal state of mental preparedness for beginning students of architecture is assumed, in line with the clean sheet theory of creativity, to be that early state of childhood innocence as yet uncorrupted by historical awareness or any other cultural or educational persuasion. Though this is all –too efficient system of brainwashing, has now exhausted its most destructive effects in the west, its influence is still strong among teachers in the developing world (who usually picked up their methods while completing their own occidental education), with negative consequences for the encouragement of any sensitivity toward regional culture. While constructive experiments occasionally surface, the educational knowledge base required for any widespread and creative reinterpretation of regional history simply does not yet exist." (7). It is noteworthy that how Bauhaus teaching was styled was a reaction to a reality relevant for that period. So why should we assume our need and criteria are the same? To sum it up in the simplest manner is to come up with corollary from the language. If you are to appreciate 'Bangla' literature, you will have to do that in light of Bengali grammar, will it not be futile to do so in accordance with some other foreign grammar? If this is true, it is time we start understanding our own architectural grammar in our own context. It is hard work, but it has to be done. If not, then we might as well hold our peace and not talk about architectural identity & conceptuality.

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REFERENCES

- [2] Abel, C (2000), "Architecture & Identity", second edition, pp. 141 [book]
- [3] Babu, N (1997), "Vaastu", fourth edition [book]
- [4] ibid
- [5] ibid
- [6] www.ab.deakin.edu.au
- [7] opcit, Abel, C