

Architectural Research Paper.
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Topic *Vernacular design and contemporary housing solutions for low-income families in the developing world.*



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Introduction

“It is my belief that architecture rooted in cultures and traditions must extend them to reflect contemporary concerns and expectations. Tradition and modernity are two sides of the same coin and must be dealt with simultaneously.” *Hasan-Uddin Khan, editor of MIMAR Journal.*¹

In the year 2000, for the first time in history, more human beings are living in cities than in rural settlements. Families who for generations subsisted by traditional means are finding it more difficult to survive by rural industries. This is perhaps no more true than in the underdeveloped countries of Africa and Asia, where governments are not in the position to compensate for the effects of natural disaster or downturns in rural economy. As a consequence, many people abandon the physical aspects of rural life and migrate to the cities in search of employment, shelter and food, while bringing with them the intangible baggage of culture, religious belief and ritual practice.

Schemes to provide housing for such a demographic would benefit from a non-classist approach, which aims to meet the specific needs of a people who despite their lower economic status, still have the right to be provided with comfortable, affordable, and culturally relevant homes.

An understanding for the requirements of such housing may take root in the study of the notional typology referred to as the ‘*vernacular*’.² Vernacular design is not only of anthropological or historical significance, but can also provide a valuable contextual model from which to inform and inspire contemporary architecture. A characteristic of vernacular design is the manifestation of cultural memory in the built form, and the reflection on the way of life of the people it shelters. Since traditional means of subsistence in the developing world are based on rural industry, what role then does the vernacular play in the development of a language for the expanding city, when this way of life is no longer relevant for survival in the urban environment?

Industrialization, and its affect upon the production of mass housing, has a history intertwined with the concept of the vernacular. Industrialization has found a vehicle for widespread influence in the phenomenon known as globalisation. Globalisation has the effect that industrialized nations profit from the resources of developing countries without fair compensation to them. These people have the problem that they are unable to discern between the aspects of industrialisation and globalisation which are beneficial to them, and those which are harmful. They are unable to take full advantage of a modern lifestyle, and yet have lost the tradition which ensured their quality and sustainability of life in the past.³ The inevitable desire to modernize cities should be met with concern, and broader understanding by the architects who are charged with the responsibility for the realization of this desire.

¹ Hasan-Uddin Khan, (former editor of MIMAR journal, published 1982 - 1992.) *Cultural Identity*, in David Pearson, *Earth to Spirit*. p.122.

² The definition of vernacular architecture has been widely discussed and debated since the 18th century, but it is generally used to describe a building type indigenous to a specific race, culture or region. The key elements of this typology are use of local building materials, appropriateness for the climate and site, and a regionalist aesthetic. Vernacular architecture has also been referred to as folk, traditional, or indigenous building.

³ Phillip Gibbs, *Hassan Fathy's contribution to Architectural Thought*, in *Owner-Building and Earth Architecture National Conference*.

The Problem of Homelessness

The 'urbanisation of poverty' is a phenomenon becoming more apparent in the developing world. In 1980, 30% of the population of developing countries were urban dwellers. In the year 2000, 40% lived in urban areas, and this figure is expected to rise to 52% in the next two decades, exemplifying the rapid rate of rural to urban migration.⁴ The rate of growth in urban settlements of developing countries is presently five times greater than that of industrial countries. Such an impact on cities whose social and technical infrastructures, which are already under resourced and under strain, will be further overwhelmed to the detriment of citizen welfare. An estimated 100 million people are homeless worldwide, while one billion live in seriously substandard shelter, but this figure is difficult to gauge accurately when many governments deny even having a problem of homelessness.⁵

Unemployment stands as an obvious cause of homelessness. National policies aimed at increasing employment opportunities, as well as implementing social welfare systems, are major combatants for this problem. Another key strategy is the provision of low-cost housing which can either be afforded by low-income earners, or is able to be subsidised for the unemployed under labour equity incentives, or 'sites and services' schemes⁶ for example.

Design requirements for Third World housing

Low-cost housing in the past has generally subscribed to the principle of standardisation and mass production of components as a method of cost reduction. This emulation of Western construction techniques also allows, (but does not guarantee), the adoption of the pragmatic functionalism intrinsic to the modern house typology. Functionalism elicits modern convenience and efficient planning, and the restraint in the unnecessary and superfluous decoration further emphasise the financial and aesthetic economy of this model.

However, adoption of industrialised construction methods as a design driver may compromise two other important requirements for Third World housing:

Cultural response, concerned with a link to the country's cultural heritage; and
Climatic response, concerned with the moderation of natural elements upon the interior environment.

The design criteria for housing in the developing world is thus; low-cost, functional, cultural and climatic response, and according to Paul Oliver, these are the inherent characteristics of vernacular architecture.⁷ Furthermore, Oliver explains that the physical quality of vernacular building is determined by how materials have been utilized and assembled, according to the type of tools that have been developed or are available. Materials used are usually those available within the region, and are ready for use without industrial refinement.⁸

⁴ UN-Habitat publication, *Basic Facts on Urbanization - General Demographic Trends*. p.1.

⁵ Klaus Toepfer, *Strategies to combat Homelessness*. p.1.

⁶ Sites and services schemes are a government initiative where serviced allotments are provided to establish new housing developments. Houses are typically owner built using locally available materials. Refer to Appendix 1 for details of the Aranya low cost housing scheme by Balkrishna Doshi.

⁷ Paul Oliver, *Architecture: an invitation*. p.32.

⁸ Paul Oliver, *Architecture: an invitation*. p.28. Refer to Appendix 2 for Amos Rapoport's description of physical characteristics of vernacular architecture.

We then have a dichotomy of seemingly antithetical models for housing, the vernacular and the industrial, but as shall be discussed, the two are not completely incomparable arguments.

The Vernacular Model

The meaning of the term *vernacular* and all that it entails has been widely considered and debated since the word was first used in the context of architecture. Alan Colquhoun traces the origins of the word to its Latin root, *verna*, meaning slave, and *vernacular* signified a person residing in the house of his master.⁹ Therefore the term had connotations of social and economic status, and was later used to refer to qualities of local and indigenous arts. The practice of such arts was considered anterior to the classical theory, or certainly at the lowest level of the artistic hierarchy. If architecture conforming to the classical canon was categorized as 'High Art', then the vernacular was relegated to the status of 'Low Art'.¹⁰

During the German Romantic period of the late eighteenth century, vernacular forms of art were seen as independent from any broader style canon, and were studied for their own significance. The Romantic movement attempted to reverse the belief of the classical as been the ideal, and that in a relativist theory of historical development, the non-classical would be precursory to the classical canon.¹¹ Colquhoun uses the expression 'vernacular classicism' to describe the process of the post-rationalisation of the origins of the canon.¹²

One proponent of this myth of origins was the eighteenth century theorist Marc-Antoine Laugier. Although his writing focussed on the notion of the 'primitive hut'¹³, Colquhoun maintains that his real concern was not with the origin of shelter, but with the formation and distillation of classical doctrine.¹⁴ In Laugier's 1753 publication of *Essai sur l'architecture*, he reconstructs the scenario for which man first built shelter, "determined to compensate by his industry for the omissions and neglect of nature."¹⁵ Laugier's statement here may be misleading of his contention, which is that the primitive hut was less a result of wo/man's practical need to protect themselves from the elements of nature, and more a manifestation of an ideology concerned with the abstraction of natural shelter such as the tree and the cave.¹⁶ To rationalize this theory, Laugier determines the circumstances of human existence where the extremes of the micro-climate, the sun's heat, the rain and the wind, were incidental and not essential conditions for primitive human's existence. The hut was more of a filter or threshold space between nature and human-made shelter, but what it symbolized was the mediation from nature to art, borne of instinct and reason acting together.¹⁷ Contemporary anthropology at the time of Laugier argued against his reasoning for the origin of the primitive hut, but his regard for

⁹ Alan Colquhoun, *Modernity and the Classical Tradition*. p.22.

¹⁰ Alan Colquhoun, *Modernity and the Classical Tradition*. p.22.

¹¹ Alan Colquhoun, *Modernity and the Classical Tradition*. p.25.

¹² Alan Colquhoun, *Modernity and the Classical Tradition*. p.30.

¹³ The term 'primitive hut' used here refers to the concept of human kinds earliest form of shelter based on anthropological and theoretical speculation.

¹⁴ Alan Colquhoun, *Modernity and the Classical Tradition*. p.30.

¹⁵ Joseph Rykwert, *On Adam's House in Paradise*. p.43. For full account of Laugier's scenario see Appendix 3.

¹⁶ Joseph Rykwert, *On Adam's House in Paradise*. p.46.

¹⁷ Joseph Rykwert, *On Adam's House in Paradise*. p.46.

the concept of architecture as an art form was his defence against the opposition made by the pragmatic majority.¹⁸

The hut Laugier describes is congruent with the basic components of the classical order: column, entablature, and pediment, and it is with these elements that perfection in architecture is achieved. (*figure 1.*) Thus, one can distinguish between the essential components of an order of architecture, and those introduced capriciously as ornament. Among these additions of caprice, Laugier includes walls, windows and doors, and although they may be necessary architectural elements, they contribute nothing to the essential beauty of the building.¹⁹



Figure 1. *The primitive hut, after Laugier.*

About 200 years later, Laugier finds an ally in the French modernist architect Le Corbusier, whose manifesto *Vers une architecture* of 1926 supports the argument that the progression of the hut was inspired by conceptual motives, rather than by demands made from adverse weather conditions. Le Corbusier describes the example of the primitive temple (*figure 2*) whose mathematical geometries are engaged to contrast with that of the natural surroundings, so that wo/man knows that they have created. Of these forms, rhythm and proportion have been introduced by using a unit of measure such as the pace, foot, elbow or finger.²⁰ This is the creation of order by means of meaningful measurement, and is an assurance against the arbitrary.

¹⁸ Joseph Rykwert, *On Adam's House in Paradise*. p.46.

¹⁹ Joseph Rykwert, *On Adam's House in Paradise*. p.44.

²⁰ Le Corbusier, *Towards a new architecture*. p.67.

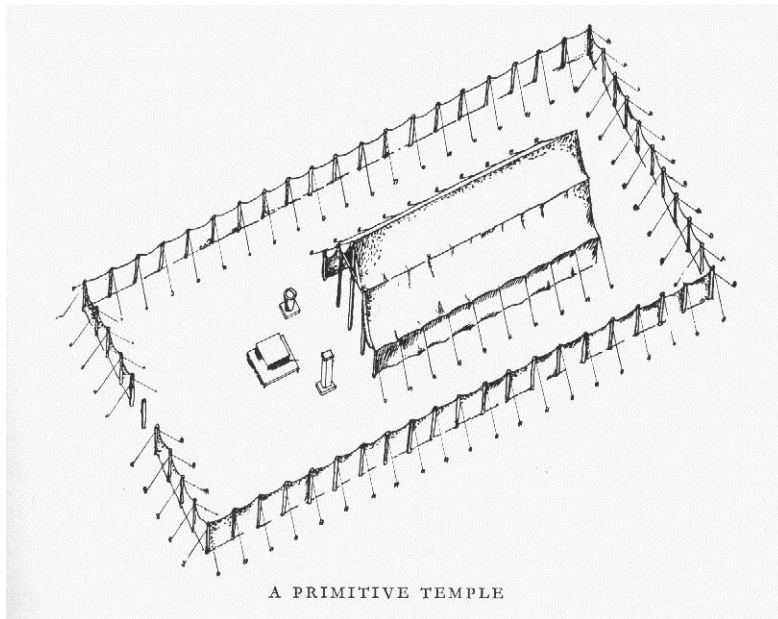


Figure 2. A primitive temple, after Le Corbusier.

Le Corbusier compares the primitive temple to the architectural ruins of Pompeii, or the Temple of Luxor, and discovers the same spirit of human endeavour underlying the creation of each. “There is no such thing as primitive man; there are primitive resources. The idea is constant, in full sway from the beginning.”²¹

Le Corbusier was interested in the notion of the ‘fundamental truth’ which existed in the vernacular form. The masterful primitive builders of the Greek Isle of Santorin had created in their villages an architectonic idiom of mass walling, vaults, arches, cubes and spheres. These forms revealed the hierarchy of the functions they were built to serve, and reflected humble motives, with no ambiguity: the essence of great architecture.²²

In contrast to Laugier’s romanticized notion of the primitive hut, the text *Histoire de l’habitation humaine* (1875) by French anthropologist Eugene Viollet-le-Duc, describes an alternate motivation for the development of the hut. Where Laugier’s primitive human is at ease with their natural surroundings and lives in a temperate climate with green meadows and pleasant streams, Viollet-le-Duc’s early humans were a brutish Neanderthal, barely able to protect themselves against a hostile environment with inadequate shelter. Their earliest attempts at constructing shelter were inferior to those of most animal dwellings, placing humankind very low on the evolutionary ladder.²³ Then, driven by instinct to better protect themselves, the shelter became more elaborate to better serve their needs. (figure 3) There is no further imitation of a natural model here other than the use of natural materials which were bent, cut, or modified in some way to suit the purpose. This is shelter borne out of necessity, as opposed to Laugier’s act of building borne out of artistic abstraction.

²¹ Le Corbusier, *Towards a new architecture*. p.66.

²² Paul Oliver, *Shelter and Society*. Oliver’s account of the manifesto of Le Corbusier. p.18.

²³ Joseph Rykwert, *On Adam’s House in Paradise*. p.40.

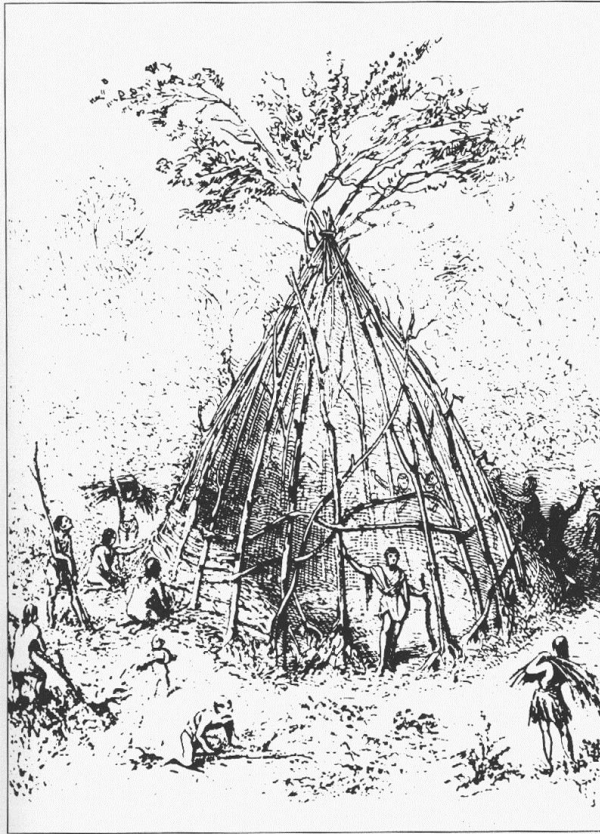


Figure 3. *The primitive hut, after Viollet-le-Duc.*

Examples of vernacular building

A study of two building cultures by Amos Rapoport suggests that climate, site, and constraints of materials and technology will modify, but not determine the form of the building.²⁴ That form will be the result of a choice among alternatives, generated not by the force of physical constraints, but by socio-cultural forces which express the image of the ideal life for the people. As many different cultural groups may share similar climates and have access to similar building resources, Rapoport's theory explains the reason why then, there are such a great variety of vernacular built forms.

The Indian Pueblo of the United States south west, refers to the villages of the native people of the region, who share common characteristics of economic base, social structure, personality type, religion, and who all dwell in a similar setting. The Pueblo is a tightly clustered complex of thick walled rooms, multi-stories, flat-rooves, terraces, with entries often been through roof top hatches, and with passages interconnecting the internal spaces. The grouped, cellular arrangement expresses the importance of community living, and also forms an inward-focussed plaza, in which ceremonial dance takes place, and the *Kiva*, (sacred room) is located. The Kiva is an essential element of the Pueblo, and its importance is expressed more so by its focal position within the plaza. Rapoport describes the Kiva; "The southern part of the floor where observers sat was raised above the northern part where the fire pit and the *Sipapu* were located. The Sipapu is the sacred 'place of emergence', an opening in the floor symbolising the link with the lower world from whence mankind emerged. Along the walls of the north part were

²⁴ Amos Rapoport, *The Pueblo and the Hogan*, in Paul Oliver, *Shelter and Society*. p.66.

compartments for sacred objects.”²⁵ Orientation and form is therefore dictated not by physical constraints, but by spiritual and ritualistic needs.

The thick walls of the Pueblo were either built in stone or in mud, tamped between formwork, and apart from the adoption of the adobe block from the Spanish since the sixteenth century, the construction method has remained unchanged. Peeled log beams set into the walls formed the roof structure, and as wood was often scarce in the area, these precious materials were transported from great distances. The logs were not cut to length, so they could be re-used in later applications. As room sizes were often small, the protruding log beams create the most characteristic visual feature of the Pueblo. Due to the compact and cellular nature of the Pueblo, large volume was created with minimal exterior surface area. This combined with the thick, mass walls created a lengthy thermal lag, which moderated internal temperatures. Window and door openings were minimal, which restricted ventilation, especially in those deeper rooms furthest from an entry point. This is thought to be partly deliberate due to the belief that newborn babies should be gradually weaned to fresh air.²⁶

Pueblo culture is highly integrated with religion, symbolism, mythology and social organization, and is based on harmonious equilibrium with the environment. Nature, gods, animals and people are all interdependent, and of who's mutual welfare is reliant upon obligation and ceremony.²⁷ Rapoport believes that the form of the Pueblo also reflects the attitudes and world view of the Indians who dwell there. Pragmatically, the form of the Pueblo can be attributed to defensive needs, as well as in response to the climate and known construction methods. Symbolically, the planning and tiered massing defines the sacred place of the plaza, in which the Kiva is focussed on and protected. The colour of the insitu materials and the massing of solid forms, are reminiscent of the dramatic rocky landscape which provides the background, and emphasizes the cultural attitude of harmony with nature.²⁸ One is reminded here of Laugier's abstraction of natural models, and Le Corbusier's geometric forms contrasting with the natural surroundings.



Figure 4. Taos Pueblo.

²⁵ Amos Rapoport, *The Pueblo and the Hogan*, in Paul Oliver, *Shelter and Society*. p.68.

²⁶ Amos Rapoport, *The Pueblo and the Hogan*, in Paul Oliver, *Shelter and Society*. p.69.

²⁷ Amos Rapoport, *The Pueblo and the Hogan*, in Paul Oliver, *Shelter and Society*. p.69.

²⁸ Amos Rapoport, *The Pueblo and the Hogan*, in Paul Oliver, *Shelter and Society*. p.70.

The largest surviving indigenous tribe of North America, the Navajo, also occupy the same terrain as the Pueblo Indian, but in vastly different dwellings. The Navajo had much cultural interaction with the Indians, the Spaniards, and later the American colonials, which had an effect on economic base and ritual life, but did not, however, significantly alter their traditional shelter which was brought with them from former northern homelands. The *Athabaskan* type, a simple conical structure of wooden poles covered in available material such as bark or leaves, underwent a number of gradual changes after the migration to the south-west, due to the drier climate and new available materials, and became what is now known as the *Hogan*.²⁹ The Hogan was a more permanent structure, using larger timber sections for framing, and was covered in mud mixed with straw for binding strength. The plan was circular and with the framework aligned to the four cardinal points; the east pole representing the Earth Woman, the west the Water Woman, the south the Mountain woman, and the north the corn woman; thus dividing the interior into space relating to the path of the sun

Hogans are generally arranged in clusters which house related families, and shelter for animals, shading structures and storage structures are also grouped close by. Subsistence is by agricultural means using permanent crop fields, and so a single family grouping may have a number of Hogan clusters within their property. Sleeping and living may take place outside the Hogan when weather permits, otherwise, a central fire will effectively heat all parts of the Hogan and allow the occupants to sleep comfortably around it. Seating arrangements and placement of objects are predetermined which allows the most economical use of space, however this organization is symbolic rather than functional. Even the smallest daily activities carried out within the dwelling are strictly controlled by repetitive ritual practice, which is used as a means of controlling the threat of supernatural forces in the universe. As a consequence, the design of the Hogan, based on the sacred prototype of mythological origin, must always be adhered to.³⁰

The basic Hogan type as we see, is a structure more capable of adapting to the availability of local materials than the Pueblo. The instances of varied construction techniques to assemble what is a strictly predetermined design are proof of this. The adaptability of the Hogan to suit new environments would suggest the evolving nature of Viollet-le-Duc's primitive man. In this case the application of new materials are a response to the instinct to build the only type of shelter that they deem suitable to serve their needs. The need remains constant, while the means change.

The vast differences in the two forms of shelter, despite hundreds of years of cross cultural interaction, can be accounted for by the differing world views, expressed by social organization, religion and ritual. The round Hogan, aligned with the four points of the compass, serves to restore harmony within the individual, while the inward looking Pueblo, is designed to restore harmony to the whole universe.³¹

²⁹ Amos Rapoport, *The Pueblo and the Hogan*, in Paul Oliver, *Shelter and Society*. p.74.

³⁰ Amos Rapoport, *The Pueblo and the Hogan*, in Paul Oliver, *Shelter and Society*. p.75.

³¹ Amos Rapoport, *The Pueblo and the Hogan*, in Paul Oliver, *Shelter and Society*. p.77.

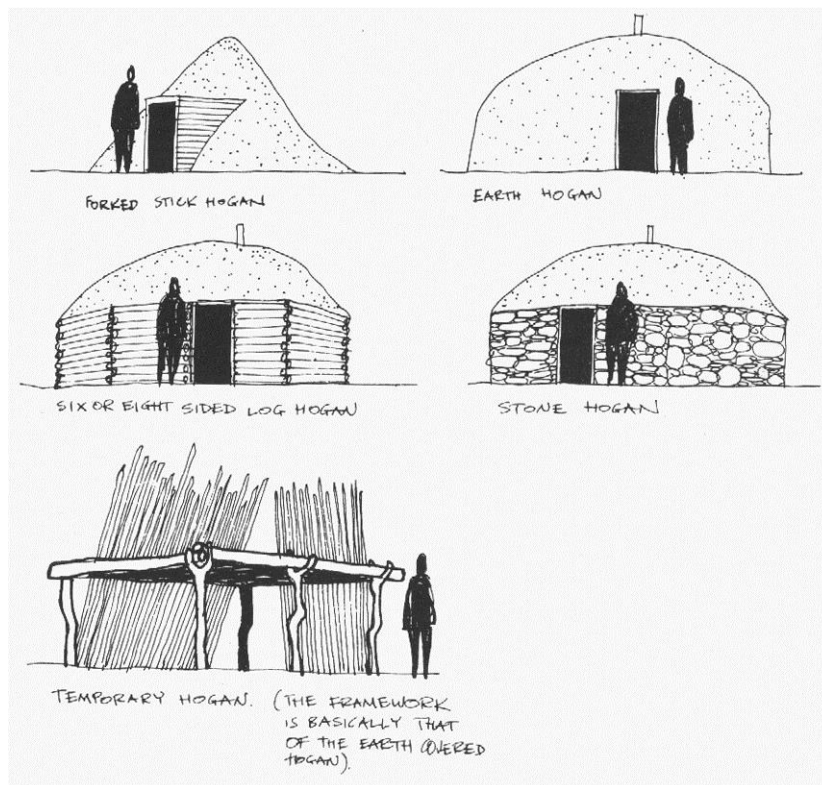


Figure 5. *The Navajo Hogan.*

The Industrial Model

Standardization and mass production are concepts borne of the Industrial Revolution. The development of pre-fabricated building components and high strength materials such as reinforced concrete, were quickly exploited by architects and planners to provide post World War II housing in Europe.

The Modernist movement took hold in the virtue of machine age manufacture, as the means allowed a plasticity for expression of their ideology. Two notable exponents of the movement were Walter Gropius and Le Corbusier, who both shared a common vision for a new era beginning in the twentieth century. Their vision was of a new architecture that should meet the new needs of men and women, and would be universal, democratic, functional, economical and beautiful, and would presumably last forever.³²

The acceptance of industrial mass production became the premise for the Bauhaus movement, whose ideology was manifest in the work of Gropius. The *Am Lindenbaum* housing district in Frankfurt (1930), expresses the modernist ideals of practicality, economy, and social organization, rather than an aesthetic for beauty's sake only. The modernists rejected the convention of progression in architectural style, and advocated revolution rather than evolution.

However, Gropius' principles were not formulated a priori. His empirical observation of Japanese vernacular architecture was interpreted from a modernist perspective, as he wrote in the introduction to the text, *Katsura, Tradition and Creation in Japanese Architecture*.³³

³² Ian Sutton, *Western Architecture*. p.318.

³³ Walter Gropius, *Introduction*, in Walter Gropius, Kenzo Tange, Herbert Meyer, Yasuhiro Ishimoto. *Katsura, Tradition and Creation in Japanese Architecture*.

“The Traditional house is so strikingly modern because it contains perfect solutions, already centuries old, for problems which the contemporary western architect is still wrestling with today: complete flexibility of movable exterior and interior walls, changeability and multi-use of spaces, modular co-ordination of all the building parts, and prefabrication.”

One of the most important of the modernists was Le Corbusier, whose archetypal high-density housing solutions were to influence generations of architects and planners to come. Although the merit of his housing schemes such as the innovative *Unite d'Habitation* (1946-52), and radical planning projects such as the *Plan Voison* (1925) for the redevelopment of Paris, were highly scrutinized, justification for his motives can be found from his derivation of vernacular principles. The problem may be that Le Corbusier's manifesto is too abstract from the aspects of the vernacular that he admired, to the extent that the element of humanity has been replaced by industrial progress; an inhuman response. What Le Corbusier argues for in his manifesto, according to Spiro Kostof, is the rejection of historical imitation or reference. “What was put up must look fresh and immaculate, patina proof, in no way affecting a natural, mellow look.”³⁴ Le Corbusier argues that inspiration should be drawn from the principles of antiquity, but should not resemble it.

His attitude is to reduce the use of materials down to a purely functionalist minimalism, where a thick stone wall used for thermal regulation is now replaced with light cavity walls in breeze slabs.³⁵ Naturally occurring and ready to use materials are replaced with materials which are composites, or have undergone an industrial refinement process, in order to eliminate impurities which cause structural defects, and to minimise wastage. It is an attitude of compulsion to build in a fashion commensurate with the full extent of modern industrial technology.

The mass-produced house of Gropius and Le Corbusier, while demonstrating altruistic intentions, perhaps did not achieve the utopian ambition of the new epoch as they had envisaged. Le Corbusier required that the right state of mind need exist to both conceive of and live in the mass-produced house. As the advancement of technology provided tools and solutions to deal with problems of industry, we should also allow technology to provide us with the tools for living, and hence the concept of the *house-machine*. The ideals of Le Corbusier would have our lifestyles dictated by the capabilities of technology, of which the extents of human endeavour have seemingly diverged from the primal motives of responding to human need. Mass-production of houses removes the essence of meaning from the fundamental act of home building for the self. In a vernacular context, it was not just the self but also the dynamic of the community which was responsible for the physical and ethereal shaping of the home

Contemporary Low Cost Housing

A pioneering architect of the Third World who championed architectural services for the poor, was Hassan Fathy, (1900-1989). It has been suggested by his critics that Fathy's work was expressive of a modernist approach towards functionalism, form, and unembellished structure and materials.³⁶ In his defence however, Fathy did not employ the tools of industrial technology to achieve architectonic expression, as the proponents of modernism did, but relied on the more vernacular attitude of exploiting locally

³⁴ Spiro Kostof, *A History of Architecture*. p.702.

³⁵ Le Corbusier, *Towards a new architecture*. p.214.

³⁶ James Steele, *An Architecture for the People*. p.183.

available materials to achieve both sound structure and a meaningful aesthetic. Fathy pronounced against a culturally anonymous style resulting from imperialistic building technology, particularly the dogmatic attitude of Le Corbusier whom insisted on the use of inappropriate industrial materials even in his projects for Developing World countries, such as Chandigarh (1953-61).³⁷

Fathy's most well known work of mass housing is that of the village of New Gurna, near Luxor in Egypt's Valley of the Kings. (1945-47) Fathy saw this commission as an opportunity to provide a prototype for a low-cost solution to the problem of housing the country's poor. From the outset, Fathy did not approach the problem merely as an architectural one, but realized that the relocation of an entire village would involve moving

“a complex network of blood and marital relations. This, together with their customs and taboos, their friendships and their disputes, a social organism delicately balanced, intimately integrated into the topography, to every wall and beam of the village. The whole society was going to be dismantled and reassembled in a new place.”³⁸

The key to the success of the new village was going to lie in the willingness of the people to relocate and to pursue the generation of a new economy based on agriculture and craft, rather than on the sale of black market artefacts being robbed from the tombs surrounding Old Gurna. Fathy also intended that during the construction of the village, master craftsmen, highly skilled in the tradition of building, actually train the people in the various trades. Not only would the villagers be gainfully employed and be able to build each others houses, but old traditions could be revived, and a sense of independence and self-reliance achieved. It was envisaged that travelling merchants and tourists who have come to the area for the significant archaeological attractions, would stop in New Gurna to trade in crafts and agricultural produce.

The mechanics of the new village was therefore primarily dependant on the planning of, and the provision for public space of utilitarian function. Planning also has a direct relationship with the function of social interaction. Fathy has divided the accommodation into four zones, which as in Old Gurna, houses five separate tribes. The main thoroughfares are wide and link the public buildings with the residential zones. The tribal quarters are permeated by narrow, kinked laneways to dissuade strangers from entering, and to form a more intimate relationship between the public and private realm, and to promote social interaction. Fathy deliberately refrained from piping water into the homes, in favour of retaining the communal well. According to Egyptian custom, the daily act of gathering water by the young women, may be the only opportunity for them to be seen by prospective husbands. Here Fathy is aware of the ramifications of subtle changes to traditional lifestyle which transcend any advancement in home convenience, and in a prescriptive manner he draws the line at modern infiltration.

The provision of housing for the poor then was perhaps not the primary objective of the New Gurna scheme, but rather a necessary component which belied a much greater good. For the people, it was to perpetuate a sense of collective pride and self-purpose, and it was the promise of a better life. Externally, to the world, Fathy demonstrated the potential to house the world's poor and that this approach of resource organization and application of vernacular wisdom could be applied anywhere.

³⁷ James Steele, *An Architecture for the People*. p.183.

³⁸ Hassan Fathy, *Architecture for the Poor*. p.17.

Stage	Week	Activity	Grade	Grade Cost			Repayment		
				Wage PT	No. of days	Total	V-A	No. of days	Total
A	1	Learns to square lay-out, dry brick walls, 1, ½, 2	Helper	8	12	96	—	—	—
	2								
B	3	Works on job, handling materials and watching	Helper	8	12	—	0	12	0
	4								
C	5	Learns to do above work, but using mortar. Also partitions	Helper	8	12	96	—	—	—
	6								
D	7	Works on job, helping 2 masons by filling cores of walls. Does ¼ work of two masons	Apprentice	12	12	—	8	12	96
	8								
E	9	Learns to build segmental arches	Apprentice	12	6	72	—	—	—
Stage	Week	Activity	Grade	Grade Cost			Repayment		
				Wage PT	No. of days	Total	V-A	No. of days	Total
F	10	Works on job as assistant mason with one master mason (40 — 18 = 22)	Asst. mason	18	6	—	22	6	132
G	11	Learns to build vaults and a Byzantine dome	Asst. mason	18	12	216	—	—	—
H	12	Works on job as mason	Mason	25	12	—	12	180	—
I	15								
I	16	Learns to build domes on squinches, vaults on unparallel walls	Mason	25	12	300	—	—	—
	16								
J	17	Practices stone building on the job	Mason	25	6	—	15	6	90
			Master mason	30	24	—	10	24	240
						780	738		

Fig. 6. New Gournia in-service training.

In a highly unorthodox approach within the profession of architecture, Fathy consulted with all the families for whom he was to house, in order to ascertain the programmatic requirements for each home. This, combined with the irregular layout of the housing plots, generated variety in design and a fine grain of visual interest, despite the fact that every building was crafted in the same medium, and with the same homogeneity of construction. Fathy stressed that despite the poor economic status of the people, this should not exclude them from individualized shelter.³⁹ Herein lies his departure from the expounding of the modernist master architect, who confines the act of dwelling to a set of ideals to apply to all.

Fathy's point of departure is to use traditional techniques and forms, but in order to satisfy the institutional code of conduct implied by his profession, and that of his European based education, Fathy must rationalize his actions in a Westernised manner. That is, to justify the use of earth building technology in terms of economic merit and practicality, (*figure 6*) and given the desperate circumstances of his country's peasantry, Fathy's work could not appeal to the people or authorities based on cosmological qualities alone. This demonstrates a self-critique for Fathy's work, and acts as a mechanism for evaluating his actions against his ideals. Some work of Fathy's was seen as contradictory, particularly the Dar al-Islam community in Abiquiu, New Mexico, where the language of mud dome and vault derived from an Egyptian tradition, was transplanted into a foreign context. While having a similar climate to the Middle East, the typology was uncondusive to the demands of the severe diurnal temperature swings and so was of inappropriate climatic response. Also, the American clients were not

³⁹ Hassan Fathy, *Architecture for the Poor*. p.73.

prepared to procure the building in the same self-participatory way as the *Sa'idi* people of New Gourni, nor to regularly maintain the earthen structures. As a result, the local building authorities required that the structures be built predominately from concrete using contract labour, and consequently the cost became considerably higher.⁴⁰

In a commentary by James Steele, he argues that Fathy's characteristic use of bold, traditional forms for which he had become renowned, were not used here for their contextual appropriateness, but rather as symbols of rebellion against technological advancement and globalisation which threatens cultural autonomy. The mud vault and dome represent environmental and contextual sensitivity, and reject global homogeneity.⁴¹ Alternatively it could be argued that Fathy's willingness to transplant a contextual idiom may be misinterpreted as the creation of a global homogeneity, the very opposite to what he set out to achieve in his native Egypt and a deviation from vernacular principles.

Conclusion

Economics

Despite the economies of standardization and prefabrication, the use of refined materials in developing world housing means that it can still be unaffordable to the average income earning family. When materials are being produced centrally by large, often Western owned corporations, costs to rural consumers can quickly rise, perpetuating the economical dominance of a monopolized market. This becomes a problem for the financially underprivileged classes of economically divided countries, when housing shortages continue to escalate. Middle Eastern countries who gained wealth from the oil boom have tended to abandon the use of their building traditions in favour of Western technologies, while their neighbours who remain poor are compelled to continue to build in readily available local materials. This result is evident in other cases such as Bangkok, Athens, and Delhi, whose modern, commercialized city centers are flanked by suburban slum dwellings.

As a proposal, developers and investors should be offered incentives, or educated on the national benefits of supporting more environmentally sustainable building projects using local, unrefined materials, which are as much about satisfying the interests of the user, as it is about generating economic gain.

Style

The influence of globalisation on the style of contractor built housing in countries that have a strong tradition of vernacular building, results in a corporeal manifestation of a visibly uneasy conjunction. There is an unresolved conflict between cultural representation and a desire for modern living. This compromise in architectural embodiment is of detriment to the character of an existing built environment, which has been shaped over time by a vernacular idiom of a more localised response, and more importantly, is of detriment to the quality of life for those people devoid of a choice of where to live, who become estranged from a lifestyle rooted in tradition and meaning.

A balance of the useful and relevant qualities of the vernacular and industrial, seems to be the most viable and moral aspiration for mass-housing development, and will aim to achieve an architectural idiom relevant to the ethical and environmental responsibilities of the twenty-first century. Cultural values that are manifest in material,

⁴⁰ James Steele, *An Architecture for the People*. p.186.

⁴¹ James Steele, *An Architecture for the People*. p.185.

structure and form, will provide a vital link to national identity, in order to provide a recognisable program within a modern home.

Expression of identity

Lifestyle and the built environment, it can be argued, are inseparable constituents which make up any culture, and the two are mutually influential. Our cities' public buildings can reflect the ideals and technological achievements of society at the time. Does this mean that the planning of our homes, an individual space, is prescribed by the ideals of the self, or is it dictated by a collective idea of lifestyle. In the latter case, the home is designed to compel a certain methodology for activity within the space which may be either restrictive or conducive to the needs of the inhabitants. Conversely, a determined lifestyle may inform the programmatic resolution for a housing design, and it is this desire for cultural representation which must be allowed to manifest itself in the human dwelling, if we are to be allowed to evolve and express the true self.

The architect's role

The problem of providing mass housing in the Developing World is one not simply overcome by clever design. It is not essentially an architectural problem, but rather one of social engineering, and requires an understanding of social dynamics, and the intricate network of cultural, religious, and economic characteristics of a community. This may require a consultative team, of which the architect is the co-ordinator, but not the prescriber of every detail. Sites and services schemes have proved successful where the architect creates a master plan, and allows the site owners to construct their own homes from designated materials and components while under supervision. This allows for self-customisation and incremental growth as finance and need permit. The attempt of Fathy to revolutionize and instigate the rebuilding of rural Egypt is commendable, but also demonstrative of the reluctance faced with the attitudes of the government, the conventional construction industry, and even the villagers themselves.

The architect must persist, but perhaps in this difficult field of developing world housing, must also re-evaluate his/her role as defined by the conventional institution, and be prepared to take a step back to allow human need to prevail.

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Appendix 1

Balkrishna Doshi, *Aranya low-cost housing*, Indore. 1992-95.

From James Steele, *The Complete Architecture of Balkrishna Doshi*. p.114-129.

Description

- Government provision of sites with service cores ready for house building
- Materials purchased from a co-op and repaid over time
- Houses are designed to be incremental using standardized components so that they can be added to as finances and need permits.
- Site buyers are trained in building techniques.
- Success relies upon the involvement of public and private agencies to provide skills, materials and amenity services to seek financial security in the industry of developing the housing complex.

Objectives

- To establish a secure township with good living environment
- To develop a community character of harmony between built environment and people.
- To promote co-operation between different socio-economic groups.
- To create a framework which allows desirable expansion of building work.

Problems

- Families were unable to pay mortgages and forced to sell.
- Lack of involvement by NGO's.
- Lack of financial arrangements to help poor families initially secure a plot.

Conclusion

The problem of slum resettlement projects is not simply overcome by innovative architectural design, but also takes understanding of social dynamics and the development of intricate networks of social, religious, and economic characteristics of a true community.

Appendix 2

Product characteristics of vernacular environment.

From Amos Rapoport, *Defining vernacular design* in Vernacular Architecture. Ed. Mete Turan. p.83.

1. Degree of cultural and place-specificity.
2. Specific model, plan forms, morphology, shapes transitions (eg. inside/outside; interface, entrances) etc.
3. Nature of relationships among elements and the nature of underlying rules.
4. Presence of specific formal; qualities: complexity, solid-void relationships, fenestration, massing and volumes, articulation level changes and how handles, the nature, complexity and articulation or urban spaces and degree of variations in their use of light and shade, use of vegetation etc.
5. Use of specific materials, textures, colours, etc.
6. Nature of relationship to landscape, site, geomorphology, etc.
7. Effectiveness of response to climate.
8. Efficiency in use of resources.
9. Complexity at largest scale due to place specificity.
10. Complexity at other scales due to use of a single model with variations.
11. Clarity, legibility and comprehensibility of the environment due to the order expressed by the model used.
12. Open-endedness allowing additive, subtractive and other changes.
13. Presence of 'stable equilibrium' (vs. the 'unstable equilibrium' of high style).
14. Complexity due to variations over time (changes *to* model not *of* model (as in *process* characteristics No. 15).
15. Open-endedness regarding activities: types, numbers, overlaps, multiple uses, etc.
16. Degree of multi-sensory qualities of environment (large range of non-visual qualities).
17. Degree of differentiation of settings – number, types, specialization, etc.
18. Effectiveness of environment as a setting for lifestyle and activity systems (including their latent aspects) and other aspects of culture.
19. Ability of settings to communicate effectively to users.
20. Relative importance of fixed-feature element vs. semi-fixed feature elements.

Appendix 3

Extract from Marc-Antoine Laugier's *Essai sur l'architecture*, 1753.

“...Man in his earliest origins, without any other help, without other guide than the natural instinct of his needs. He wants a place to settle. Beside a tranquil stream he sees a meadow; the fresh turf pleases his eye, the tender down invites him. He approaches; and reclining on the bright colours of this carpet he thinks only of enjoying the gifts of nature in peace; he lacks nothing, he desires nothing; but presently the sun's heat begins to scorch him, and he is forced to look for shelter. A neighbouring wood offers the cool of its shadows, he runs to hide in its thicket; and he is content again. Meanwhile a thousand vapours which had risen in various places meet and join; thick clouds obscure the air, and fearful rains stream in torrents down on the delicious wood. The man, inadequately sheltered by leaves, does not know how to defend himself against the discomfort of a humidity which seems to attack him on all sides. A cave comes into view: he slips into it; finding himself sheltered from the rain he is delighted with his discovery. But new defects make his dwelling disagreeable as well: he lives in the dark; the air he has to breathe is unhealthy. He leaves the cave determined to compensate by his industry for the omissions and neglect of nature. Man wants a dwelling which will house, not bury him. Some branches broken off in the forest are material to his purpose. He chooses four of the strongest, and raises them perpendicularly to the ground, to form a square. On these four he supports four others laid across them; above these he lays some which incline to both sides, and come to a point in the middle. This kind of roof is covered with leaves thick enough to keep out both sun and rain: and now man is lodged. True, the cold and the heat will make him feel their excesses in this house, which is open on all sides; but then he will fill the in-between spaces with columns and so find himself secure.”

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