Context

Built, Living and Natural

Volume III Issue 1 - Spring/Summer 2006

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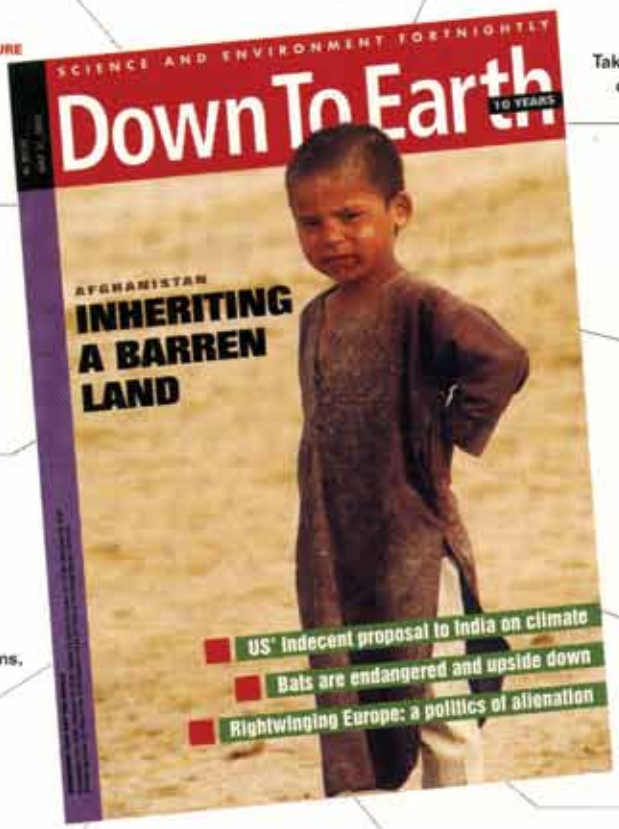

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Editorial

How often do we go beyond the mere recording of the physical and the social context to inquire into the human, anthropological angle? How often do we attempt to understand and interpret the indigenous ways of living, constructing and conserving? As trained professionals, do we ever question the existing methodologies for documentation and conservation or try to evolve new ones?

This issue brings forth relevant questions about our present methodologies for documentation and conservation of heritage. It presents anthropological perspectives - people and their rituals, their reverence for nature, the indigenous solutions to conserve their surroundings and the various representations of their beliefs.

Nold Egenter debates the very basis of existing documentation and presentation of architectural history - and introduces an anthropological framework to study architecture focusing on evolutionary aspects of human beings as opposed to the existing one on subjective, aesthetic values. The article on Malaji's hill by Bhoju Ram Gujar and Ann Grodzins Gold expresses similar views about conservation. It shows that indigenous communities devise their own methods often rooted in traditional beliefs to preserve their surrounding environment. In contrast, and further emphasising the urban-rural dichotomy, Jyotsna Bapat and Joep Verhagen discuss the challenges faced in a World Bank funded conservation project for the water bodies in Hyderabad. Their article *Blue Green Hyderabad* highlights the failure of planned community participation in conserving heritage in an urban setting. The message in the above two examples is loud and clear - the solution for sustainable conservation lies within. Traditional societies often generate their own rules of survival and the real training of professionals is probably through studying such cases.

The heritage albums on Mata ni Pachedi and Chamba festival as well as the book review again emphasise the significance of intangible cultural heritage.

After a comprehensive evaluation of the policies for conserving built heritage in our earlier issues, this time, we present the views of expert environmentalists Vandana Shiva and Sunita Narain on different aspects of the MOEF's National Environment Policy.

Shikha Jain

Compiling Records

Mansions of Chettinad

KAMALAHASAN RAMASWAMY, ARCHITECT pg.7

The author, an architect, has worked on conservation and documentation projects with various organisations such as the Ecole Francais d'Extreme Orient - Pondicherry, Indian National Trust for Art and Cultural Heritage (INTACH) - Pondicherry and the US chapter of International Committee on Monuments and Sites (ICOMOS) – Washington DC. Presently he is involved in the conservation of Chettinad's Heritage.

Documenting Temples

NOLD EGENTER pg.23

The author, architect ETH-Z, ethnologist and architectural anthropologist has done ten years of stationary field research in Japan into 'semantic architecture' (Kyoto University). He is also a Lecturer in ethnology at the University of Zurich and Head of the 'Documentation Office for Fundamental Studies in Building Theory', Zurich, has also researched into semantic architecture in India (Holi poles in Maharashtra). Many publications on the anthropology of architecture, habitat and culture (see 'home.worldcom.ch/~negenter)

Mansions of Chettinad

KAMALAHASAN RAMASWAMY

INTRODUCTION

Chettinad is the name given to a collective settlement of about 75 pockets scattered across two districts (Sivagangai and Pudhukkottai) in the hot and arid region of south-east Tamil Nadu. A flourishing settlement of a longstanding trading community *(Chettiars)*, today the place is receiving much attention for its timber artefacts, cuisine, and elaborate customs. However, the most enduring image of the region is, its well planned settlements, numerous temples, tanks and a variety of grand mansions designed for joint families. Chettinad extends across 50 kms by 40 sq kms and the population of the community is nearly two lakhs.

A typical temple with the tank in front, Chettinad

Plan and Section of Thena Pena House built for two brothers in 1925, Shanmuganathapuram village

ARCHITECTURAL CHARACTER

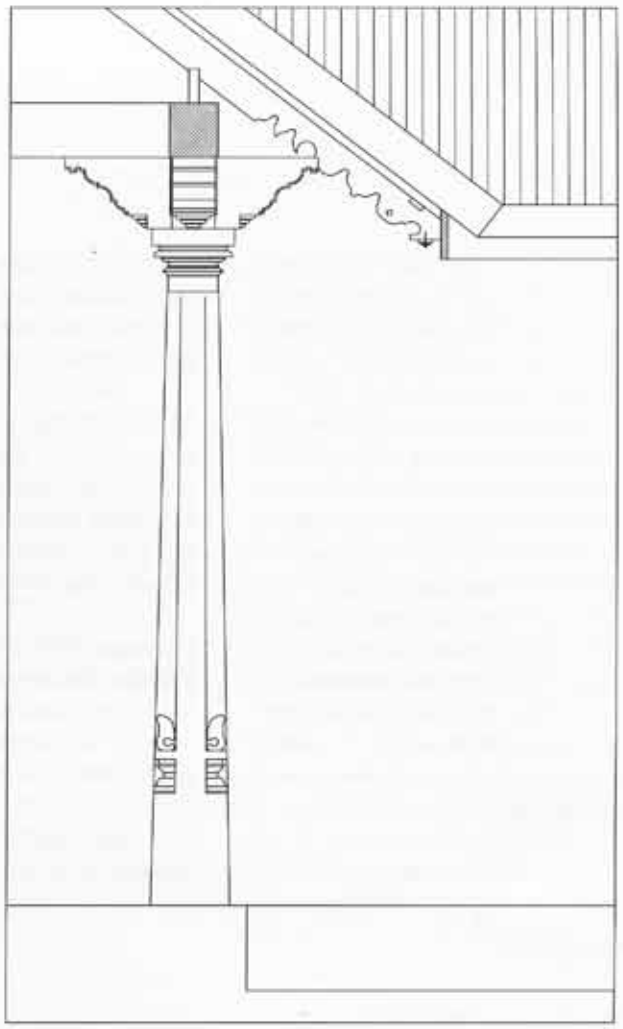
Layout of Chettinad: The entire settlement is grouped into seven circles – Upper, Lower, Upper ten, Lower ten, 16 villages, Longshore and South. These villages have a consistent layout with a temple and tank serving as the fulcrum (mostly sited at the lowest point of the town). Constructed between 1850 and 1930, the houses are built on plots of standard sizes demarcated for this community *(nagarathar)* and are located in grid- patterned, narrow streets with service lanes in-between. Water drains leading from these houses run along the edge of the street and terminate in a common tank or the catchments outside. Surrounding this settlement are farms and pastoral lands which are fed by an informal network of irrigation from the catchments *(kanmai)* around the village and are maintained by the local community *(naattaar)*.

Design Features: The design of the house is derived from two diverse needs:
i) to provide a comfortable routine life for a network of joint families and,
ii) to accommodate mass gathering and dining facilities during times of family functions like marriages, betrothals, anniversaries, *padappu* (veneration of forefathers), grievances and so on. There is a strong central axis with a symmetrical sequence of open, semi-open and covered spaces marked by subtle levels.

Constructed on a high plinth of about 3 m (because of the community's fear of flooding, a common phenomenon in their previous coastal settlement at Poompuhar), the building-front is enclosed by a sturdy compound wall and is entered through an ornate portal with a flight of steps matching the high plinth. A vestibule leads across a small open space to the front of the house where a full-length-foyer *(mugappu)* of raised platforms with wooden or granite is located. This is the place for greeting and accommodating the visitors. In some cases these foyers are split into upper and lower levels; and there may also be rooms at either ends. A common well (often with a simple tiled roof above) used by all the families and visitors alike is sited at one end of the open space. The large main door *(nilai)* usually has elaborate teak wood frames, brass handles and enormous door-locks. A central passage leads to the courtyard *(valavu)*. The single largest space of the house, this courtyard is the site of all family functions as most of the ceremonies are held here under a temporary thatch roof *(pandhal)*. Enclosing this courtyard is a wide corridor *(pathi)* with granite columns around which the private rooms *(arai)* of each family are arranged. These rooms are used for prayers and storage. They also double as sleeping quarters during winters.

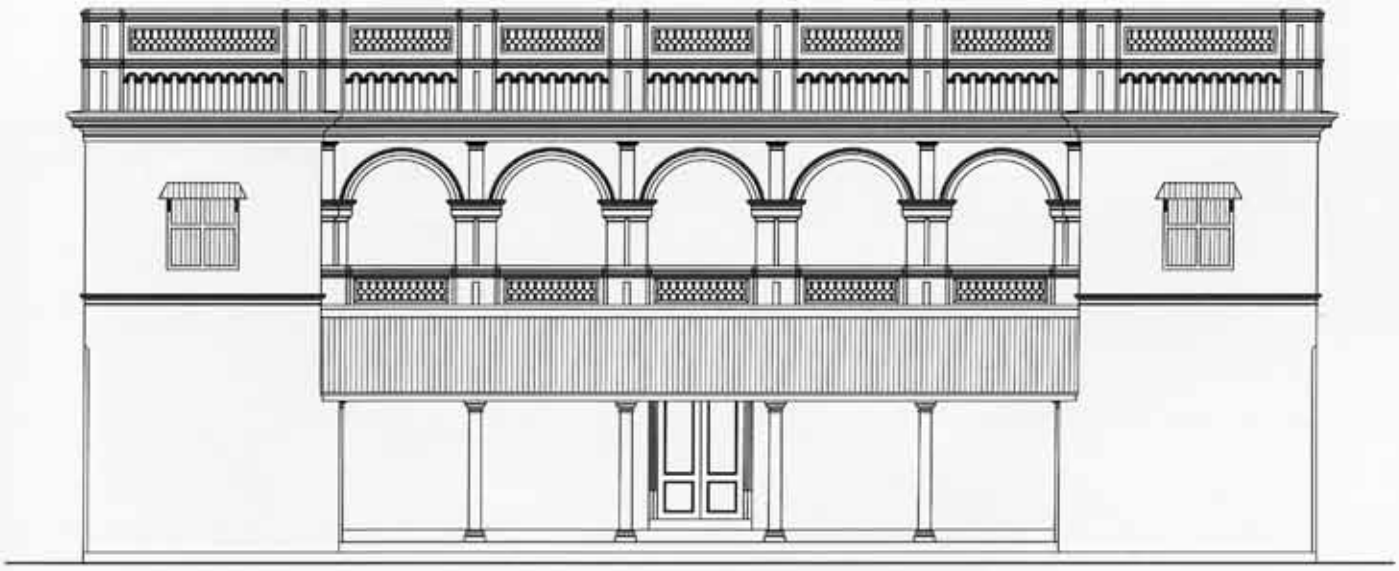
The second courtyard *(irandangattu)* houses the private kitchen spaces of the different families and it is here that the daily activities of the household's

Detail of wooden capital and rafters along the courtyard (Thena Pena house)



LEGEND

1. Entrance portal
2. Vestibule
3. Foyer *(Mugappu)*
4. Entrance door *(Nilai)*
5. Central courtyard *(Valavu)*
6. Private room *(Arai)*
7. Prayer room *(Sami arai)*
8. Passage *(Pathi)*
9. Inner foyer *(Pattaalai)*
10. Store room
11. Marriage hall *(Kalyana Kottagai)*
12. Second courtyard *(Irandangattu)*
13. Kitchen
14. Bhojana hall
15. Mass - cooking area
16. Rear yard *(Thottam)*
17. Well *(Kinathadi)*
18. Servants quarters
19. Toilets
20. Cattle shed *(Mattukotil)*
21. Shops



Front elevation of the Thena Pena house

womenfolk occur. Each unit has its independent exit to the backyard [with space for a well *(kinathadi)*, cattle shed *(mattukkottil)*, womens rooms and carts]. The second courtyard space is usually used for mass dining during functions. In some houses, however, a separate dining hall *(pandhikkattu)* is provided with areas for storage and outdoor cooking. Although garages and toilets were considered in the houses built later, the prevelant custom was that people used their backyard or went out to the open area along the water bodies for their morning ablutions. In the case of wealthy houses, the entrance foyer opens onto a full-length hall *(kalyana kottakai)* with a high ceiling, ornamental floor tiles and wall paintings, to accommodate the attendants during a marriage ceremony.

The plan of the first floor follows the grid of the ground floor foyer and private rooms. The roof of the first floor structure slopes across the ground floor corridor and funnels into the courtyard.

Drainage from the courtyards flow into the side lanes or backyards while the drainage from the well in front falls through a granite spout onto a pit in the street.

Structure and Material: The foundation is of laterite stone blocks *(karungal)* while the superstructure is of flat bricks in lime with mud infill. The structural columns in the foyer are of wood or lathe-turned granite. The columns in the courtyard are of granite and have a square base and tapering octagonal faces. In the case of wooden columns, granite bases and metal bracings are provided. The ornate four-way or two-way capitals *(mathalai)* of these columns carry the teak wood beams which support the closely spaced and carved teak rafters. A tightly packed row of battens form a continuous roof paneling *(nerukkappatti)* over which the pan tiles are laid. Tin foils are used for the gutters at the corners and the edges of the tiled roof. The flat roofs of the foyers and

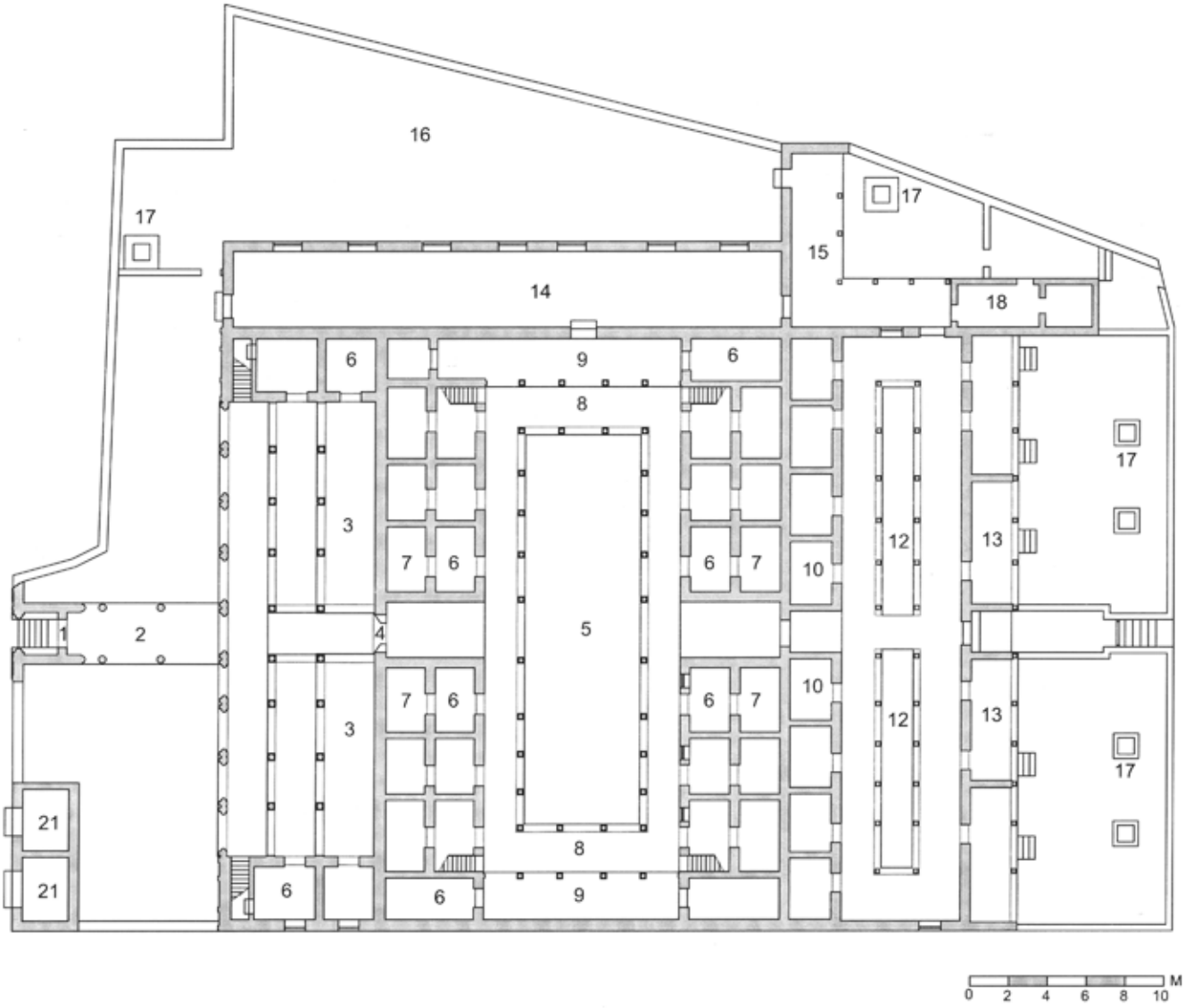
Street view of a Chettinad house

private rooms are of the 'madras terrace' type (i.e. brick-on-edge masonry over wooden rafters). The arches and circular columns used in the first floor are of brick masonry. The flooring is of lime concrete while the central path and edges of levels are lined with white granite *(vellaikkal)*. Windows are provided with arched lintels and wooden shutters that close behind vertical iron rods. The elaborate cornices are of flat brick corbelling while the ornamental mouldings are of a fine mixture of aggregates in thick lime *(kuzhaiputtu)*. The special quality inner plaster popularly known as the chettinad plaster *(nayam poochu)* and consists of a mixture of lime, jaggery, white of egg and *kadukkai* that allows a very smooth, off-white finish. The walls and bands are usually painted in shades of red, navy blue, brown or green that are taken from natural vegetable dyes.

Floor tiles and stained glass are from Attangudi, a local Chettinad village. The sunshades are made of tin sheets attached over wooden or metal brackets fixed to the window frames. Pan tiles are used for roofing the main spaces while Mangalore tiles are used for roofing wells, cattle sheds etc. Teak wood is commonly used for columns, door and window frames, shutters, beams, brackets and rafters which make the roof structure of these houses very valuable in today's timber market. The pots and trophies of the parapet and sculptures of the entrance portals are of terracotta.

The materials used wood, granite, laterite, brick, lime, clay, iron and tin were all locally available (the exception is teak wood which was imported from Burma). All these materials are environment friendly as they consume less energy and cause less pollution during production as well as construction, unlike modern materials such as re-inforced cement concrete, aluminium, emulsion paints, synthetic tiles etc. In addition, these traditional materials suited the climate better – layers of pan tiles trapped the

View of a Chettinad house in Karuthavoorani



LEGEND

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10. Store room
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15. Mass - cooking area
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20. Cattle shed *(Mattukotil)*
21. Shops

View of a Chettinad house in Karuthavoorani

heat and provided insulation while the thick walls and wooden ceilings retained much of the heat. The combination of open, semi-open and covered spaces offered a choice of spaces that adapted well to the changing seasons. In summer, the foyers in front and verandahs around courtyards were used for sleeping while in winter the private rooms were used.

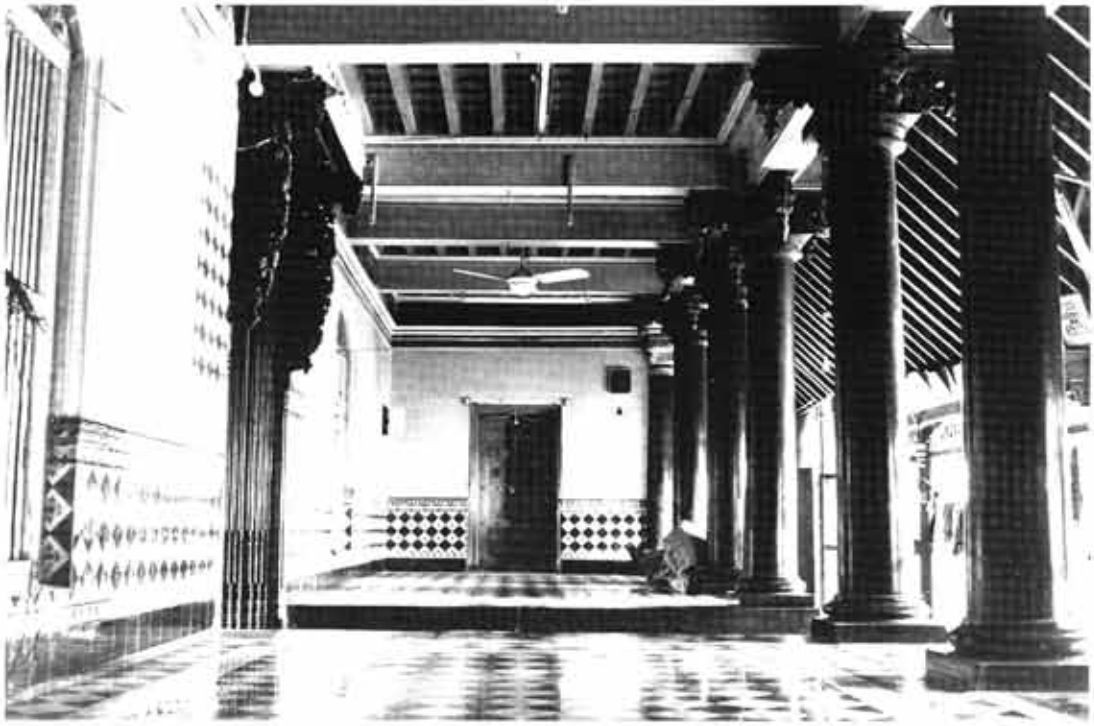
Composition: Seen across the compound wall and entrance portals the facades are characterised by elaborate cornices, windows with segmental or semi-circular blind arches, lightweight sunshades, arcades over twin columns, metal or masonry railing, pilasters with capitals and other fenestrations. The tiled rooftop is enclosed by parapets of two or three tiers with loopholes in the bottom tier for draining rain water. Above these parapets, end-ornament elements like elephant trunks and trophies are provided. The first floor is rather elaborate because it is highly better visibility from the street. The reflection of colonial character in these facades is attributed to the influence of the late 19th century South-east Asian colonies. The Chettinad community was trading with South-east Asian colonies in that period.

Roofscape of a Chettinad house

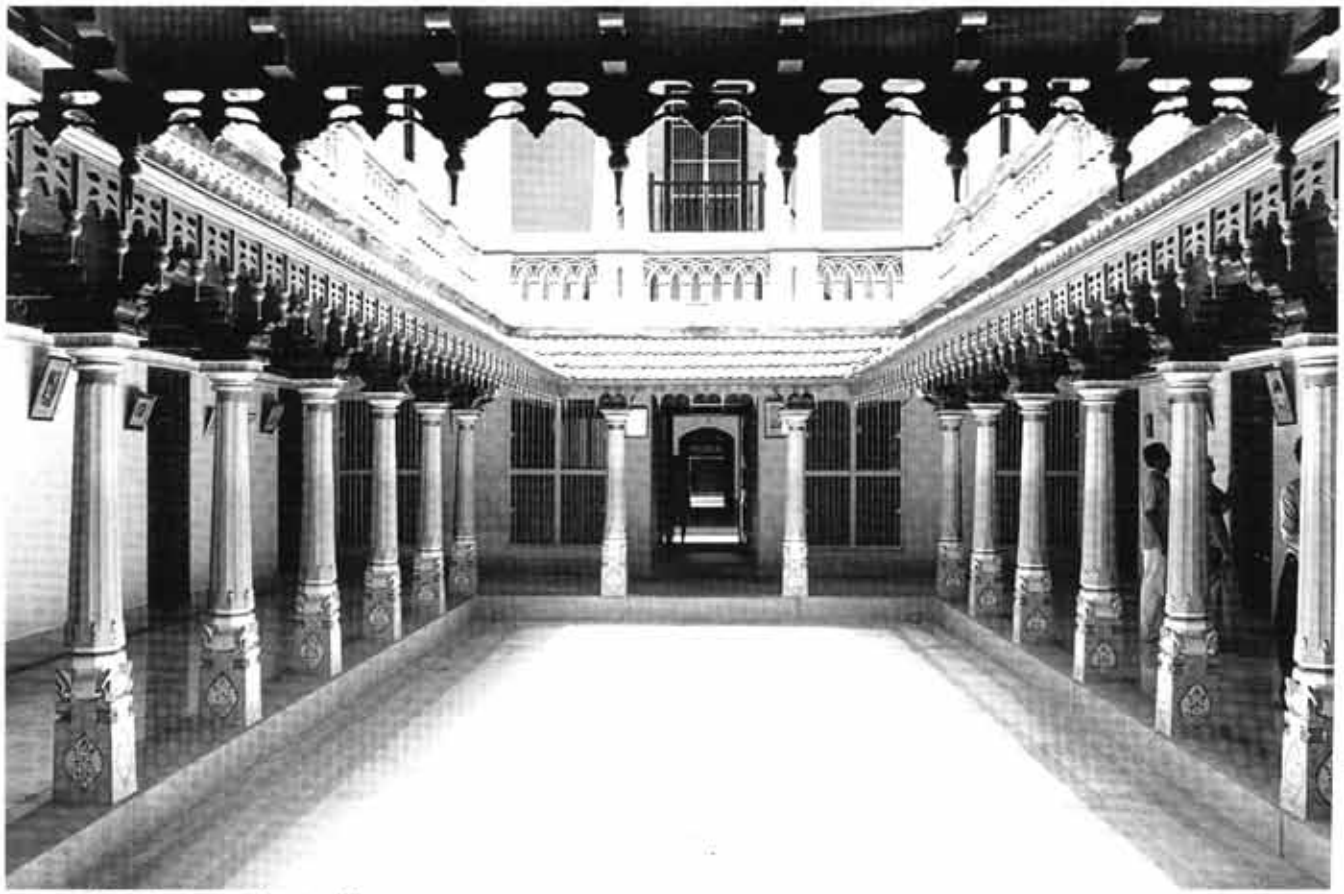
View of a Chettinad house that is now demolished

PRESENT STATE

Unable to keep up with the fast pace of development, the area is today undergoing a chaotic transformation that is causing considerable damage to its environment and cultural values. The water table has significantly fallen in the last two decades – Many of the huge tanks are dry throughout the year, the narrow roads meant for bullock carts are not able to carry the heavy motorised traffic, and many of the stately mansions are being dismantled to make way for substandard new construction. Moreover, public awareness about these issues is absent. These problems are more acute in Karaikudi and Devakottai that are the two town centres. Other pockets in the region (approximately seventy) are rural or semi-rural centres, many of which still have a rural charm with mud roads circling the temple and tank. Frequented by local buses or cars once in a while, these deserted houses follow a languid routine, only fully coming to life during the times of festivals or family functions. However, these places are by now being threatened by unsympathetic development. In Chettinad, on the other hand, there is absence of any action group to analyse or find a solution for the growing urban problems. The involvement of the government is driven by the benefits of tourism rather than by concern for integrated development. It is high time that some serious efforts be undertaken towards the documentation and preservation of the valuable architectural and cultural heritage of this region otherwise most of it will be lost.¶



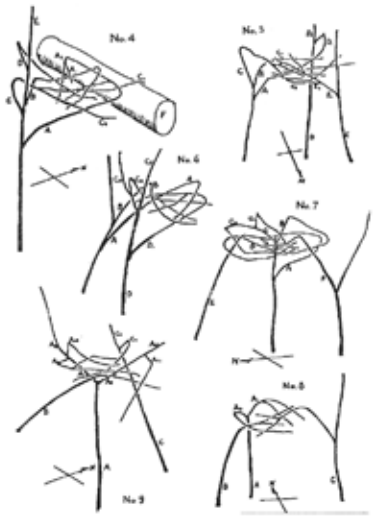
Foyer (Mugappu) in a Chettinad house



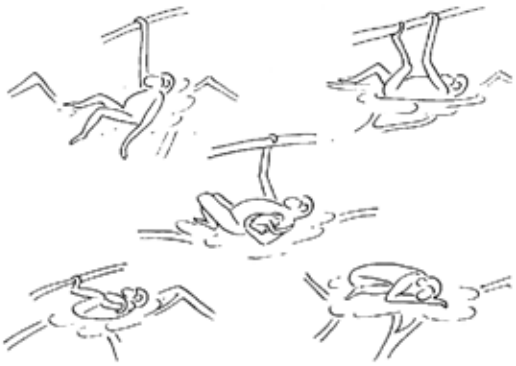
Courtyard (Valavu) in a Chettinad house

Anthropology of Habitat and Architecture

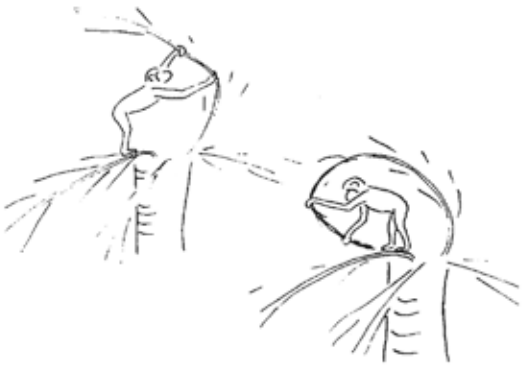
NOLD EGENTER



Schematic representation of construction methods of chimpanzee nests (Izawa/ Itani 1966)



Typical positions of chimpanzees in nest (Goodall 1962)



Chimpanzee female starts building a nest on top of a palm tree (Goodall 1962)

Architecture, as it is produced today in our urbanised environments, is based on restricted knowledge of its evolution. Postmodern 'theory of architecture' determined by conventional history of art with its limited concept of aesthetic values prevents scientific research and reasoning. The wider human condition is not integrated. Man appears only marginally as a user and is represented by standardised functional needs. Consequently, architectural anthropology maintains that theoretical horizons have to be widened. The term architecture is defined in new ways by integrating it into anthropological dimensions, including primatological and paleanthropological considerations. Seen thus, the term 'architecture' implies all that humans and their biological relatives built and build.

In the 20th century, there was considerable interest regarding the achievements of traditional 'architecture without architects' as proposed by Bernard Rudofsky in1965. While many architects became actively involved in this direction of research, a world-wide movement emerged with numerous international associations focussing on the study of traditional environments. The most important result of these efforts can be seen in the *Encyclopaedia of Vernacular Architecture of the World'* (1997) edited by Paul Oliver. Theoretically however, the encyclopedia's methodology is based on the disciplinary anthropology of the house without being conscious of the euro-centric origins of these

interpretations. Many characteristics of house traditions can not be explained in this framework.

The Viennese school of ethnology, and in particular Karl R. Wernhart (1981), has developed a new method called *'Structural History'* or *'Ethno-Pre-History'* which can be used for questioning the historicism separating the three temporally different disciplines in regard to material culture. Did fibrous materials and fibroconstructive processes play an important role in prehistory? Was the evolution of culture closely related to objects which were not durable? Were such objects representative for systems of ontologically high values? Such questions can be taken as a good reason to hypothetically introduce a new period into the periodic system of prehistory: [prelithic] fibroconstructive industries.

Architectural anthropology is closely related to Otto F. Bollnow's anthropology of space. In his book *Man and Space* (1963), Bollnow maintained that, in contrast to the homogeneous concept of universal space, essentially a discovery of the 14th century, cultural, or human space, is closely related to the evolution of human dwelling and settlement. This implies first, that human space perception and space conception originally were formed in small, local settlement units, in which architecture provided the semantic systems for spatial organisation. Second, we have to assume a long extension process of spatial perception and conception. In addition tectonic elements imply vertical and horizontal axial systems (e.g. 'access-place scheme' or 'vertical polarity scheme'). In the framework of a new 'habitat anthropology' we gain new and objective instruments for the reconstruction of basic spatio-cultural patterns with often surprising continuities.

These prerequisites allow a new view on the anthropologically defined concept of architecture. It works with five classes: subhuman, semantic, domestic, sedentary and urban/imperial architecture. These five classes are relatively independent fields of research. Combined with the results of conventional physical and cultural anthropology they can be taken as a new field of stimulating discussions. This shall be outlined in the following.

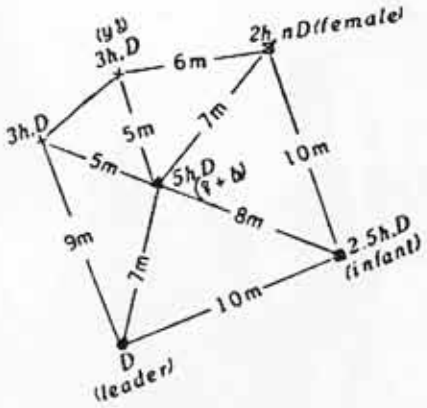
SUBHUMAN ARCHITECTURE

In their book 'The Great Apes' (1929) the American primatologist couple Robert W. and Ada W. Yerkes for the first time had systemtically collected and studied

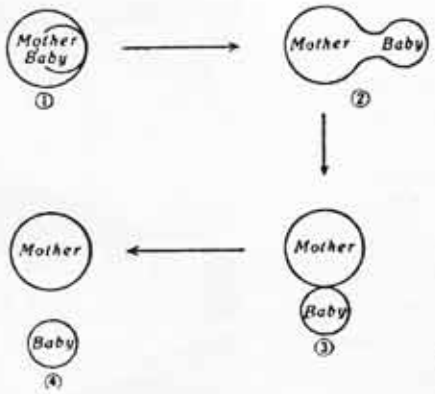
Young Orangutan building his nest on a betel-palmtree (Galdikas-Brindamour/ Brindamour 1975)

observations focussed on the nest building behaviour of the pongids. They considered nest building as a daily practised constructive behaviour which produced definitive alterations of the natural conditions of the environment. They therefore, postulated pongid nest building as the beginning of an 'evolution of constructivity'.

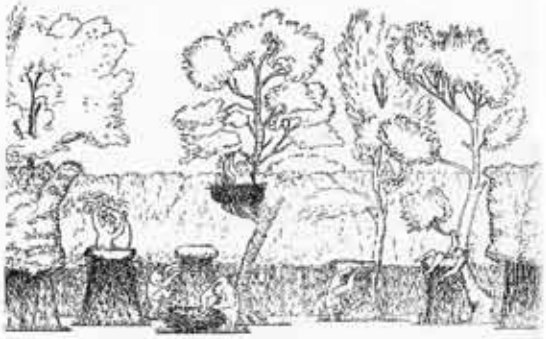
If, on the other hand, the suggestion of the Yerkes is taken seriously and the protocultural artefact character of the nest is emphasised, nest building behaviour is much more convincing as protocultural activity that is intimately connected to the life of the pongids. Infants spend about four years in the nest of their mother until they can build their own nest. Nest building is learned. The young play with nests. The



Plan of six gorilla nests in mountain wood characterized according to constructive types and users (Kawai/ Mizuhara 1959)



Mother and child relation regarding nest: 4 stages (Kawai/ Mizuhara 1954)



Same arrangement in perspective (Bamboo-wood is cu off for better vision; N. Egenter 1992)

completed nest produces an identification of the producer with his artefact. The nest is also used in case of sickness and imminent death.

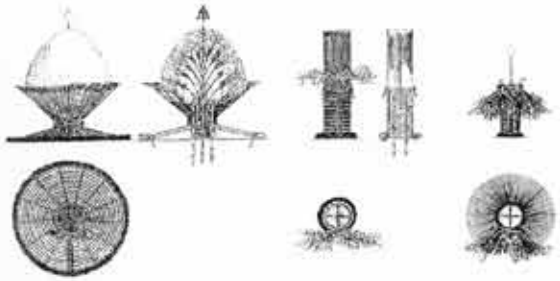
Nest building is daily routine. Quantitatively too, nests are overwhelming. During its life an individual builds a virtual tower about eleven height of 11 times the height of the Eiffel tower. Construction implies specific physical conditions characteristic of humans: extensive rotation of the arms, a precise grip and stereoscopic view while controlling constructive processes. It requests judgement of constructive conditions, static quality etc. One can even speak of the psychology of the nest: several observers noted animals expressing safety and comfort when in their nests.

Night camps are an eminently social arrangement. Further, the night camp of a group shows a strategic organisation with a secured inside and a controlled outside, which is spatially not very different from the principles of a human apartment.

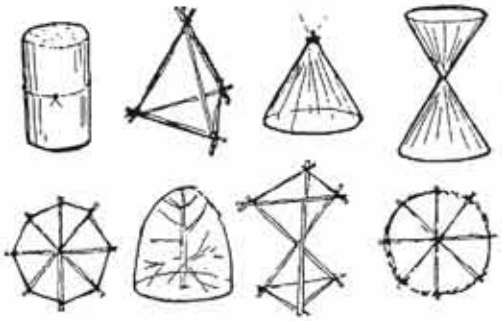
Most important is the differentiation of tree and ground nests. Whether tree or ground nests are built depends on various factors. Weight and age of the individuals are important as are environmental conditions which play a decisive role. Tree nests gain their stability from the structural condition of the tree top in which they are built. Ground nests are usually made with rooted plant materials which act as natural foundations for instance, in bamboo stalks. On a height of three to four meters the stalks are bent, broken and knotted into stable triangles thus forming a perfectly stable type of tower. On its top the nest proper is made with thin, thoroughly interwoven twigs to form a smooth upholstery. Finally, the often heavy animals climb up, position themselves with their body into the central depression of the nest and spend the night sleeping.

Evidently the ground nest is a fully fledged work of architecture. But the ground nest is not only a primordial type of architecture.

If, the routine nest building is put into the foreground, the use of early tools as cutters for fibrous materials might have produced the 'first architectural revolution'. It was mentioned above that the building of the pongid ground nest is bound to the corresponding biotope (rooted materials). Consequently tools of the pebble tool type must have freed constructive work from this fixation to biotopic conditions. Materials could now be 'harvested' where they grew and could be carried to the 'construction site' where they could be combined with other materials. Material combinations of constructions could be extended. Stable and flexible materials could be integrated at the same place into the construction. A process of structural differentiation is initiated which might have led to an elementary material culture of the fibrous or fibroconstructive type.



Vertical and horizontal sections of two basic hutlike and column- type forms in the same village (Ueda). At right is the female variation of the male column type



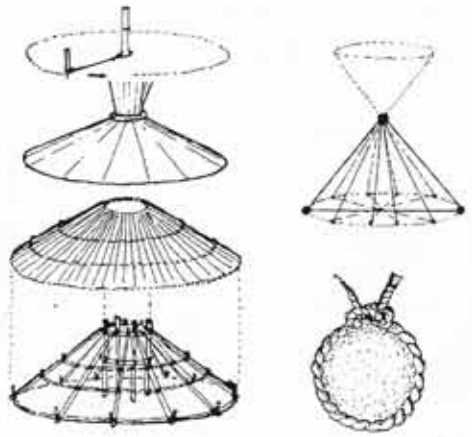
Geometry of the form - Note that Plato considered geometry of divine origin

SEMANTIC ARCHITECTURE

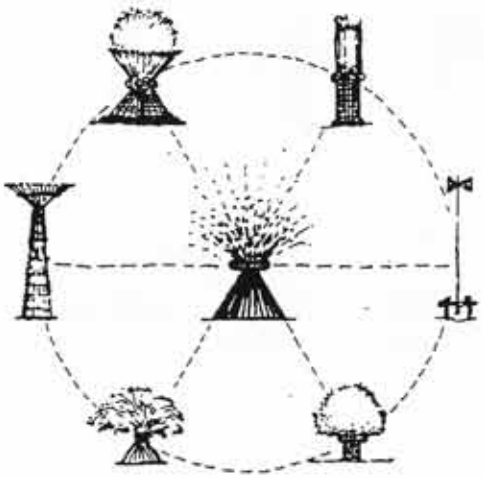
In their important ethnological study on traditional technology, Walter Hirschberg and Alfred Janata showed, that fibroconstructive industries are the main part of the material culture of traditional societies. They also play an important role in the building of dwellings. Tools are rarely used as the hand is the primary tool.

An example: the material culture of the Ainu as it is presented by Shigeru Kayano (1978) with precise technical drawings of 250 such tools, is of great importance here. A large part of the material culture of the Ainu reflects their palaeo-siberian roots - simply constructed traps, nets, cages, fish traps, baskets and bags for transport, boats, weapons, tools for various purposes. Toys for children and status symbols are also present as are small temporary hunting huts. These objects can easily be retro-projected into Mesolithic times, may be even into the Upper and Middle Palaeolithic. It seems that material culture was much richer than the image projected by archaeological studies.

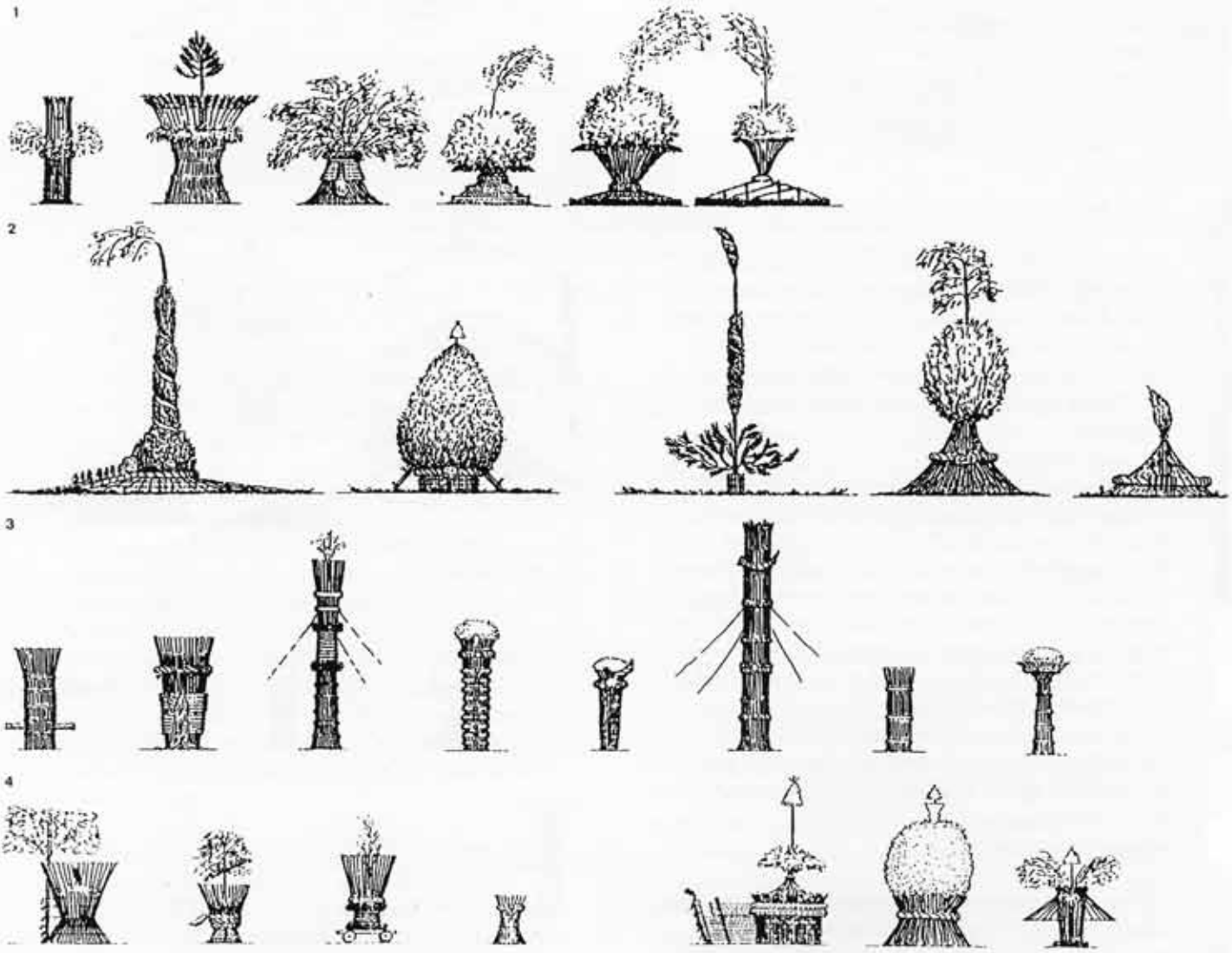
Further, the Ainu have an extraordinary topo-semantic sign system, their *'inau'*. John Batchelor, who was considered an authority on the Ainu, described these signs under the Euro-centric concept of 'primitive religion'. However, earlier, Willy Kremp (1928) had discovered the territorial implications of the Ainu signs within the framework of a systematic survey. They are primarily related to dwelling, but in a larger sense they are also used to control economical 'incomes'. The altar behind the Ainu house functions as a co-ordination point for gift exchange for all that comes in from the wilderness to the house through



Geometry is produced by a specific technology- a bundle of stalks will always be round, cylindric



Philosophy: forms are differentiated following their function as territorial representation, but they have a common structure and show categorical polarity. This principle of 'polar analogy' shown in this scheme is very important for the anthropology of cognition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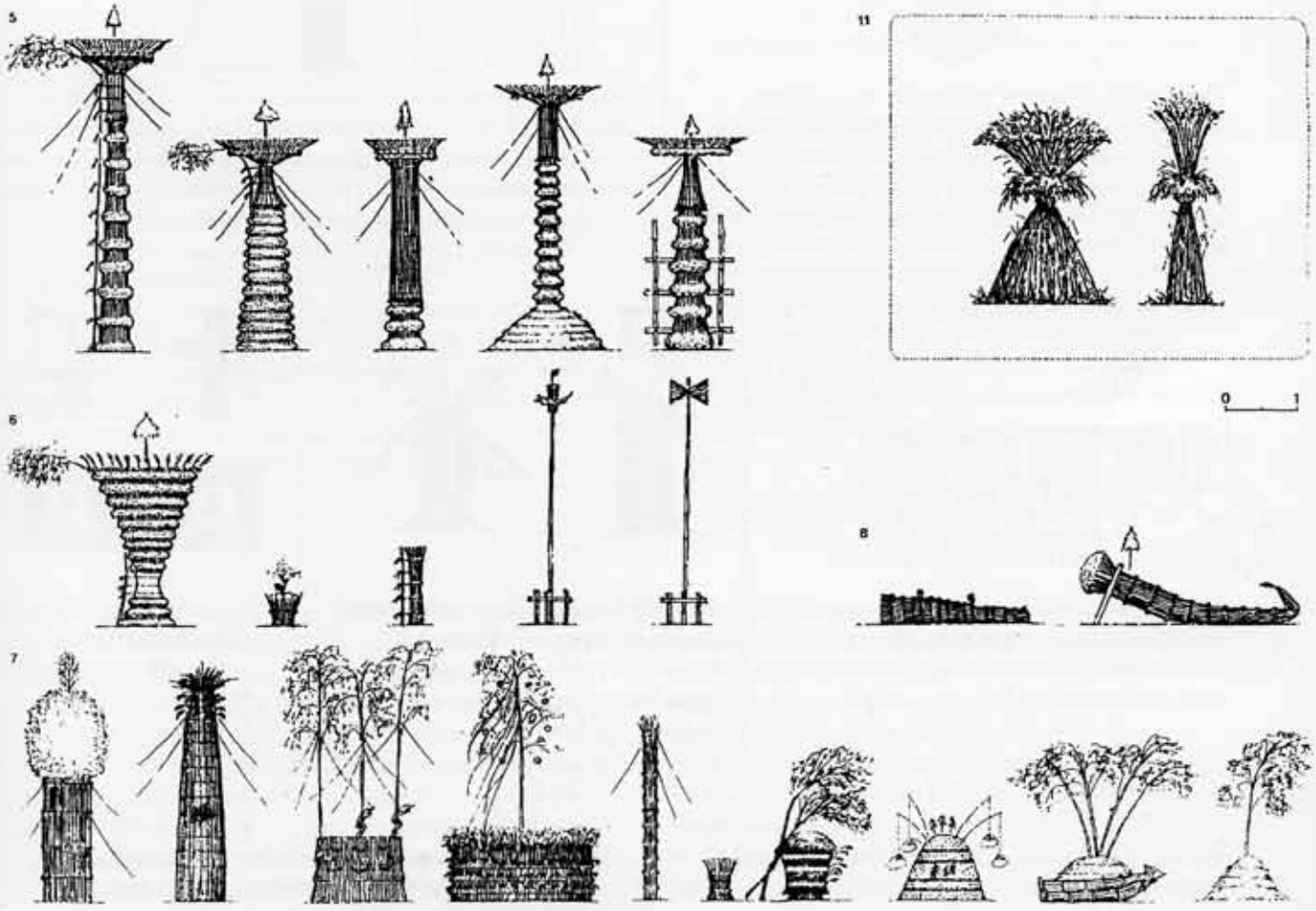
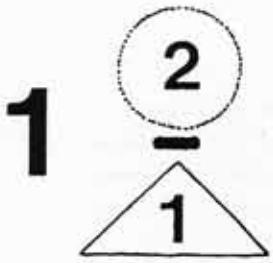
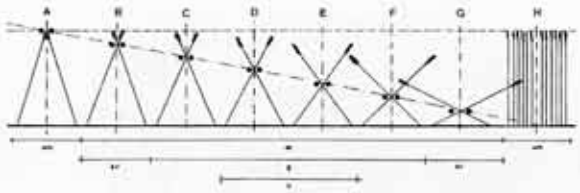
Fibroconstructive 'semantic architecture' surveyed in 100 villages of Central Japan. Locally they are considered as the 'seat' of the village protective deity (*ujigami*). Such toposemantic and stucturo-symbolic markers are still widespread in Japan. It is possible that before the introduction of wooden temple and shrine architecture, these were the markers of sacred places in agrarian villages of Japan. In the framework of architectural theory, these signs must be considered as an age-old laboratory of architectural form, symbolism and toposemantic functions. Note the primordial rooted form. Column and hutlike forms differ in basic diameter only.

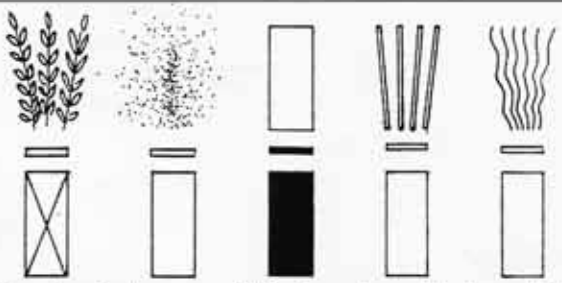




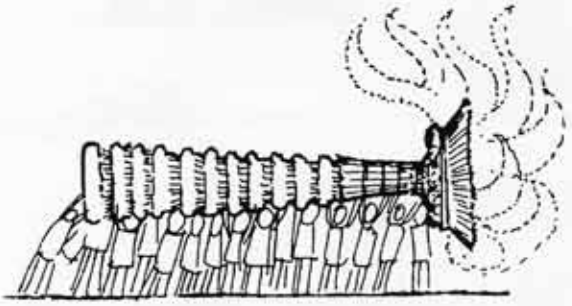
Philosophy: Territorially the forms are considered as units, but philosophically they are considered irrational, aesthetic forms which show the harmonious balance of two contradicting parts united by a third element, the (sacred) rope. As such they are models of categorical polarity and were evidently of great importance in the evolution of culture.



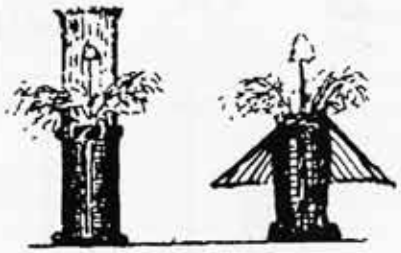
Theory of art: The term 'proportion' shows a new empirical dimension. A naturally mobile part (PRO) protrudes over a technically static part (portion). Evidently, this is a primordial type of what is called proportion in the abstract geometrical or mathematical sense.



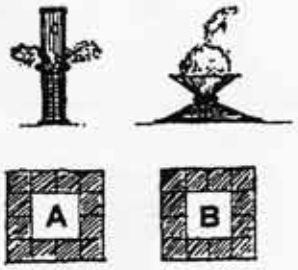
Philosophy: In the sense of objective science, it is impossible to describe these objects. They are technical and natural at the same time, clearly defined and ambiguous, compact and loose, static and mobile, one and many etc.. This is not a matter of lacking precision, it is their essence. We call this essence categorical polarity



Symbolic function: The object has no fixed identity. Carried during the rite, the topo-semantic high pillar type changes into the mobile form of a fire spitting dragon or a boat



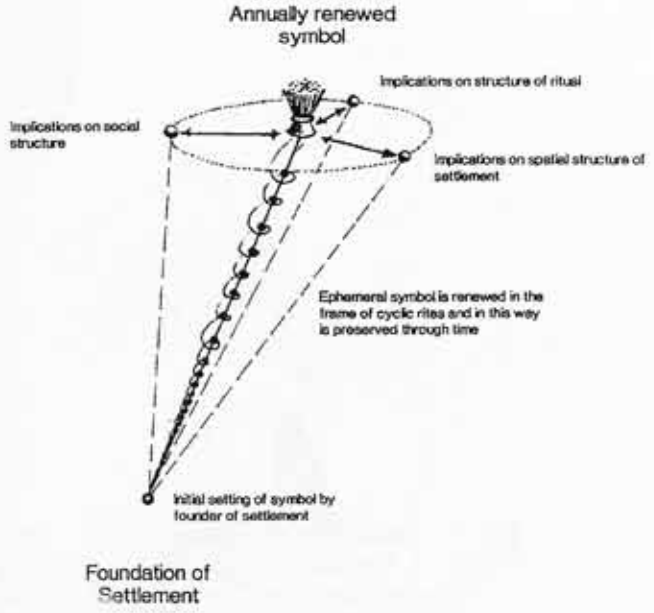
Symbolic function: The column type is considered male, its variation is female. The variation is not physical but related to traditional hair style, upwards and hanging down



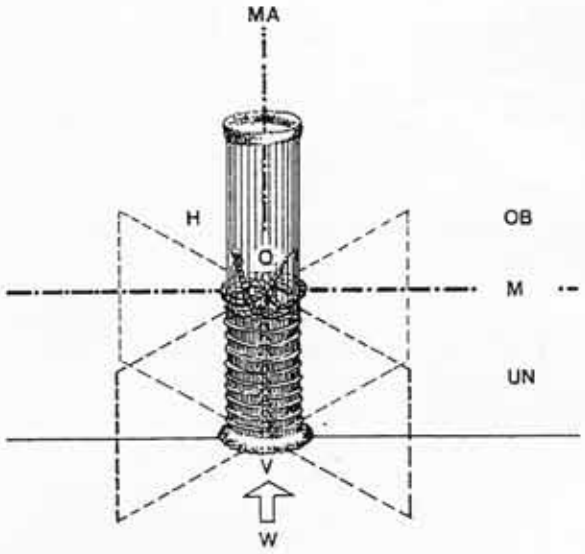
Forms vary from village to village to emphasise their territorially representative function

hunting, fishing, collecting and gardening. Hitoshi Watanabe (1973) has described the river system with mountain and ocean oriented contrasts and its role as an orientation system in the local cosmos. Emiko Ohnuki-Tierney (1972) too has contributed important data towards an understanding of these environmental orders controlled by signs, but she interpreted the Ainu microcosm macro-cosmologically, following Mircea Eliade's Euro-theological concept.

Japanese agrarian culture also contains numerous indicators of autonomous local cultures with fibroconstructive industries. With the title 'Straw' *(wara)*, Kiyoshi Miyazaki (1985) has described the rural straw culture of Japan in a beautiful two-volume study including coats, bags, shoes and other practical things, but objects of ontologically high value that are related to the world view of Japanese farmers. This fibroconstructive culture is without doubt more ancient than what we know of from the Yayoi period of Japanese object culture. Without doubt, it was carried along as a vital tradition by the early agrarian settlers. The autonomy of the tradition might have been helpful for local integration.



Settlement Core Complex: the marker set up by the village founder as a 'nuclear border' in the 'centre' of the (planned) settlement is cyclically renewed in the framework of a local event of ontologically high values. The marker functions as an archive of village history and local constitution defining the founder line as chief, head priest and local ruler. This structural model allows new interpretations of state formation in continuity with 'predynastic' agrarian village cultures.

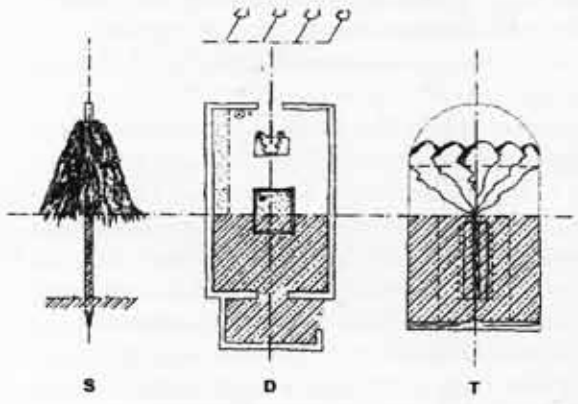


Semantic architecture as a place-marker in a system of spatial organisation. The column type shows an interactive front (knot) and a 'transcendental' back part. The human access path stops in front, defining a 'face' with spatially equivalent sides. Vertically it sets up an axial system structured according to polar categories, the upper part being empty and mobile, the lower part compact,massive and technically emphasised (12 ropes for the 12 months, 1 sacred rope for the year)

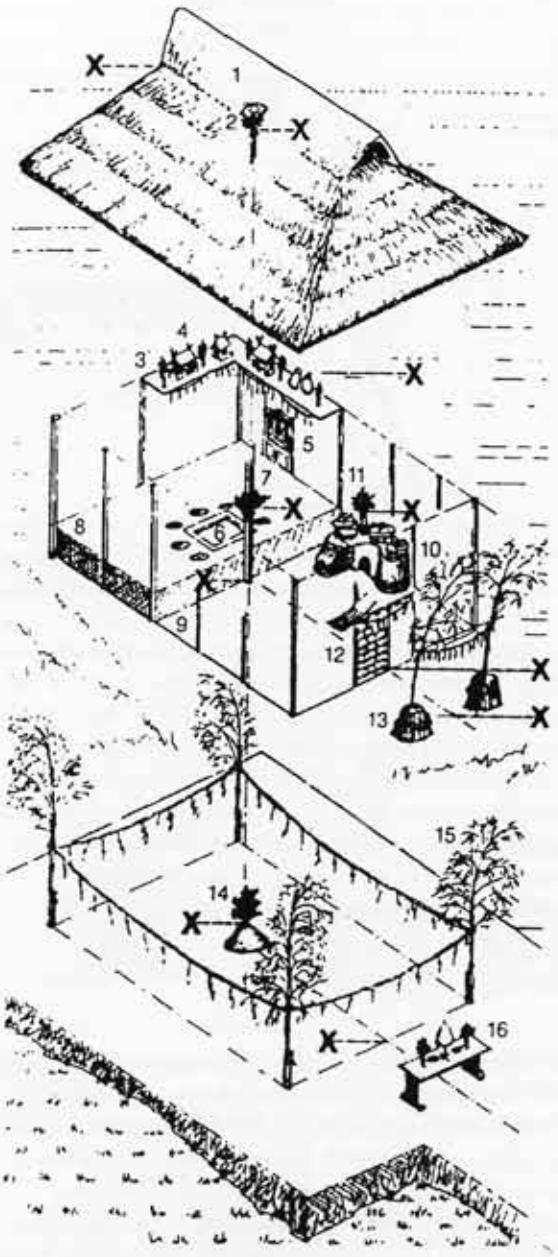
However, most surprising in Japan are the traditions that have been preserved in the framework of traditional village Shinto - a fibroconstructive topo-semantic system which has traditionally until today survived in a surprising density. The elementary technological characteristics appear in combination with highest ontological values (sacrality). The signs are considered deities or temporary seats of local gods and are completely integrated into historical Shinto. In the framework of architectural anthropology, the tradition can be considered as an archive of local village history. In the framework of the cyclic renewal of cults, the signs document the early residence of ancient families or of the settlement founder line represented by one or several houses. Since these houses express a moderate hegemony in the villages, the cult also supports the political and social structure of the settlement. The fibrous nuclear border demarcation set up on the occasion of the settlement foundation is renewed.

In the case of Japan we become aware that such fibrous topo-semantic demarcations must have been an important structural characteristic of prehistoric agrarian settlements. Guenther Kapfhammer's book on alpine traditions of Central Europe (1977) discusses the presence of such demarcations as maypoles and the like within European folklore. They also appear in many traditional cultures as 'fetishes' and 'idols', i.e. in the framework of the so called 'lower mythology' of history as defined by Sir James George Frazer and William Manhardt. In the discipline of Archaeology they are known as life-treesand they appear in many forms throughout the Bronze Age. It is likely that many of the rock-art 'tectiformes' had similar functions. Semantic architecture can thus be taken as an universal architectural type of pre-domestic significance. Semantic architecture was therefore probably the experimental field of architectural form and corresponding symbolic meanings.

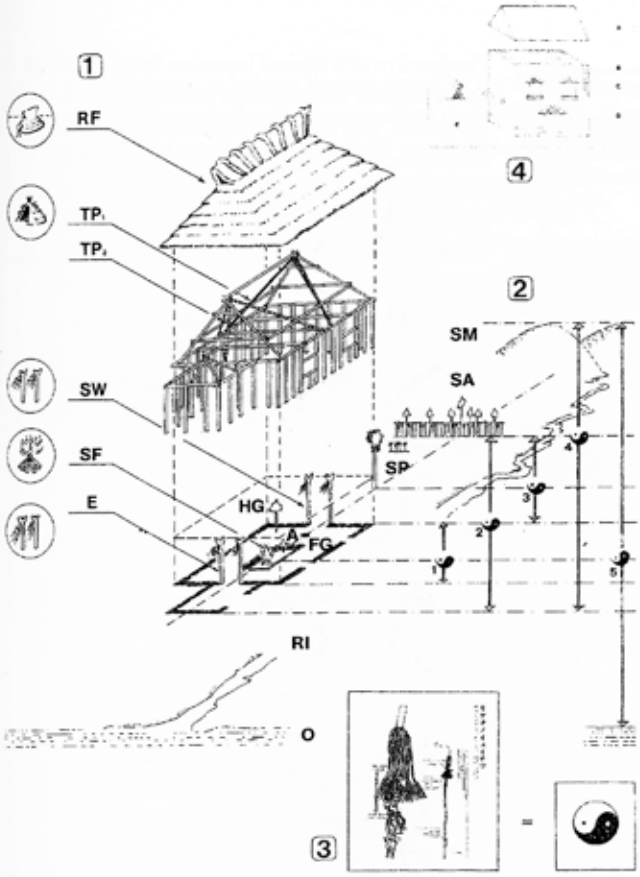
Conventionally traditional huts and houses were considered 'primitive' simple, and hence not worth of studying. This is entirely fallacious, especially, if local cults with toposemantic signs are included. They reveal highly complex systems of appropriation of the environment and creation of local identity. Together with the adaption of needs to local conditions, they provide an incredible degree of autonomy, a value that has been neglected in conventional studies. This illustration shows variations of Ainu huts and house-types



A house of the Ainu, particularly at the occasion of their most important bear festival, as well as the whole valley in regard to its complex condition are both organised harmoniously according to categorically polar principles. The sacred signs of the Ainu tradition (inau) act as models of this philosophy



A study the Ainu house in the context of its construction rites and annual cults focussed in various parts of the house at the agrarian level too, reveals the traditional house defined in highly complex ways by toposemantic architectural elements. Here too, the house is not at all planned according to functional principles. In all its essential aspects it is definitely an expression of the categorically polar organisation of space derived from semantic architecture which appears during specific festivals related to the house.



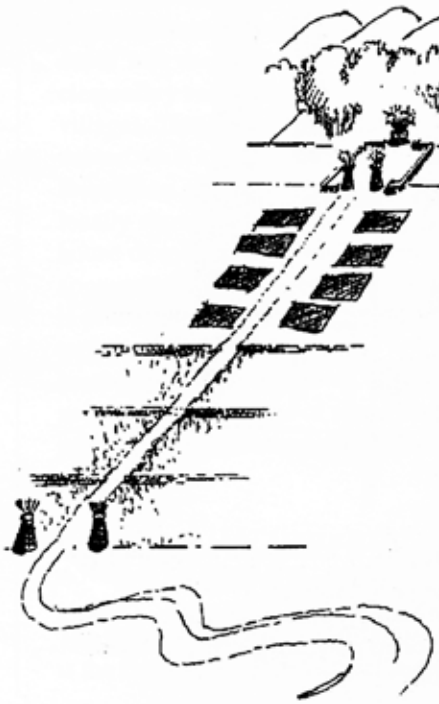
The Ainu house and the harmonious structure of environment in the framework of the Ainu world-view (Egenter 1991)

Here meaning is expressed with the most elementary forms and is produced autonomously by the constructive process, without any preconceived idea of the producer. The expression can be characterised as 'categorical polarity' or 'coincidence of opposites'. In the tradition of the 100 villages researched by the author (1994) it is clearly shown that the primary geometrical form, essentially column or hut type, followed a trend of local differentiation and enters into dialogue with natural forms via the 'coincidence of opposites' imbedded in the same form as a 'general principle'. The convergence of artefact and natural form is created through the categorical polarity of the topo-semantic system, respectively through the 'polar analogy' of both forms. The artificial forms remain dominantly characterised by structural conditions, technique and geometry.

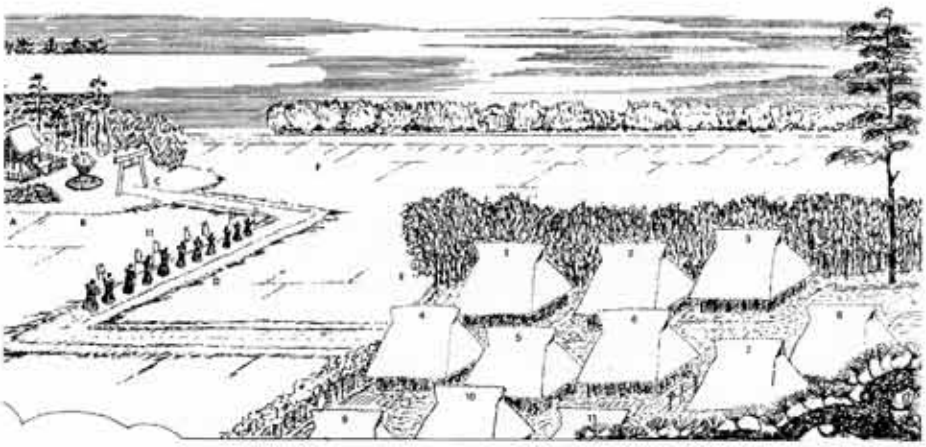
Landscape too seems to be structured according to this principle of polarity. Time can be perceived in polar relations (night/day, sun/moon) and similarly elementary social hierarchy (man/woman, noble/commoner). The dialogue between semantic architecture and natural form can be used for the cultural perception of nature in the form of categorically polar analogies. Very likely polarity, as a cognitive system, has produced an elementary aesthetic revolution which can still be observed in many traditional societies. And, in fact, its structure survives in many aspects of modern perceptions.

DOMESTIC ARCHITECTURE

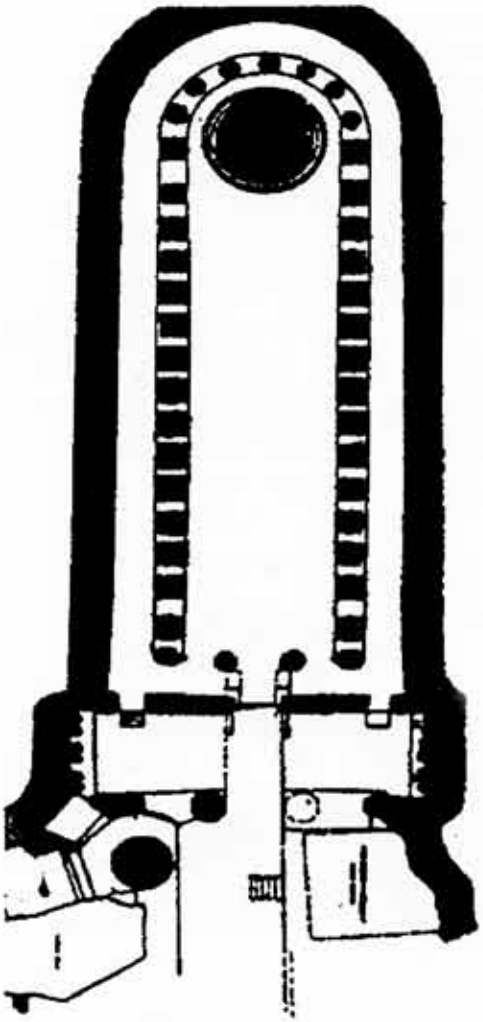
By assuming a primary topo-semantic stratum in the architectural evolution outlined in the previous section, we gain new indicators for the development of domestic architecture. The so called 'shelter theory', that is, the assumption that man invented protective roofs or windbreaks against excessive climatic influences, reveals a functional retroprojection. If huts and houses are interpreted as composite developments, we discover basic architectural schemes such as the 'access place scheme' in which semantic architecture defines the elementary plan with 'place and gate markers' in tandem with other elements derived from semantic architecture. House altars and house gods serve as place markers while sacred door posts as gate markers. Traditional house plans are often extremely conservative inspite of changing materials and flexible outer form of the houses. The ontologically high



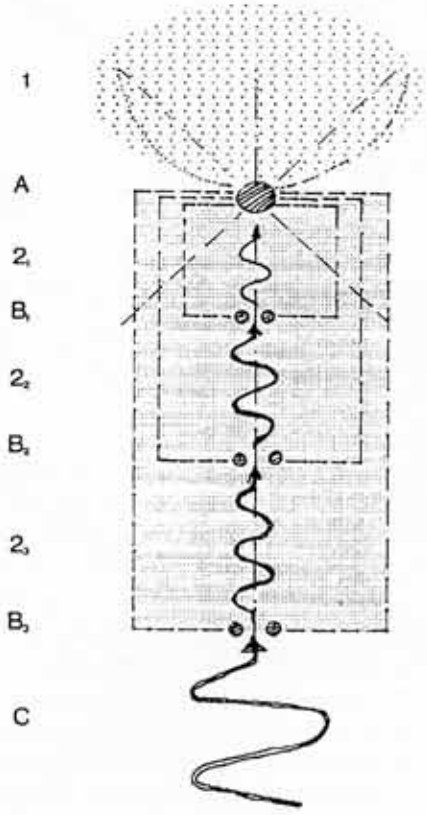
In many cases, the primordial spatial organisation of the village can be seen at such festivals. The access path, that is, the 'mainstreet' of the village forms its main structural element. The shrine and its precursor, the fibrous prototype, acts as a central and border-marker thus defining the territory of the village



Perspective of a typical Japanese farming village at the festival of the village protector deity (ujigami). The fibroconstructive marker (semantic architecture) is built with reed and bamboo in front of the wooden shrine. The cult association of elderly men moves towards the shrine at the edge of the rice fields in the woods. Originally when there was no wooden shrine yet, the fibrous marker remained there for one year until it was destroyed and then renewed. Today it is built in one day and destroyed by fire, usually on the same or the next day. The fibroconstructive type thus represents the precursor of the wooden shrine



This type of defining space is widespread across the globe and highly continuous, particularly in the domain of sacred space. Here an example from India may be added, a Chaitya hall focussed on its place marker with an access defined by gate markers



Gates found in the shrine precinct define a ritual space related to the shrine. Often, the same gates are found at the village entrance secluding it from the outside world and focussing its surfaces on the ontologically highest point, the place marker of the shrine and the temporary sacred sign

ranking demarcations appear fixed by cyclic cults, which were originally focussed on their renewal. The fire in the open hearth reveals as an independent construction, which entered the house or the hut while preserving its own ontological autonomy. Similarly the roof can be derived as independent development of hut-like signs. This program was essentially derived from two traditions studied in depth - various house types of the Ainu and the farmhouses of Japan. Both house traditions and their variation, are not developed according to functional principles. Both correspond to accumulations of relatively independent elements derived from a pre-domestic topo-semantic layer, which defined living space with cyclically renewed topo-semantic demarcations. This creates a central and important requisite for the research of houses - related cults must be included into research.

SEDENTARY ARCHITECTURE

In the following we will shortly discuss an important insight of the approach - the evolution of territorial control and sedentary life. The Mesolithic era witnessed the evolution of a cultural dimension, which can be understood from its developed form, but cannot be reconstructed archaeologically with its factual conditions. Here too the ethno-pre-historical method shows a new potential to better understand the phenomenon of the increasing capacity for territorial control and, finally, of permanent sedentarity from its institutional conditions.

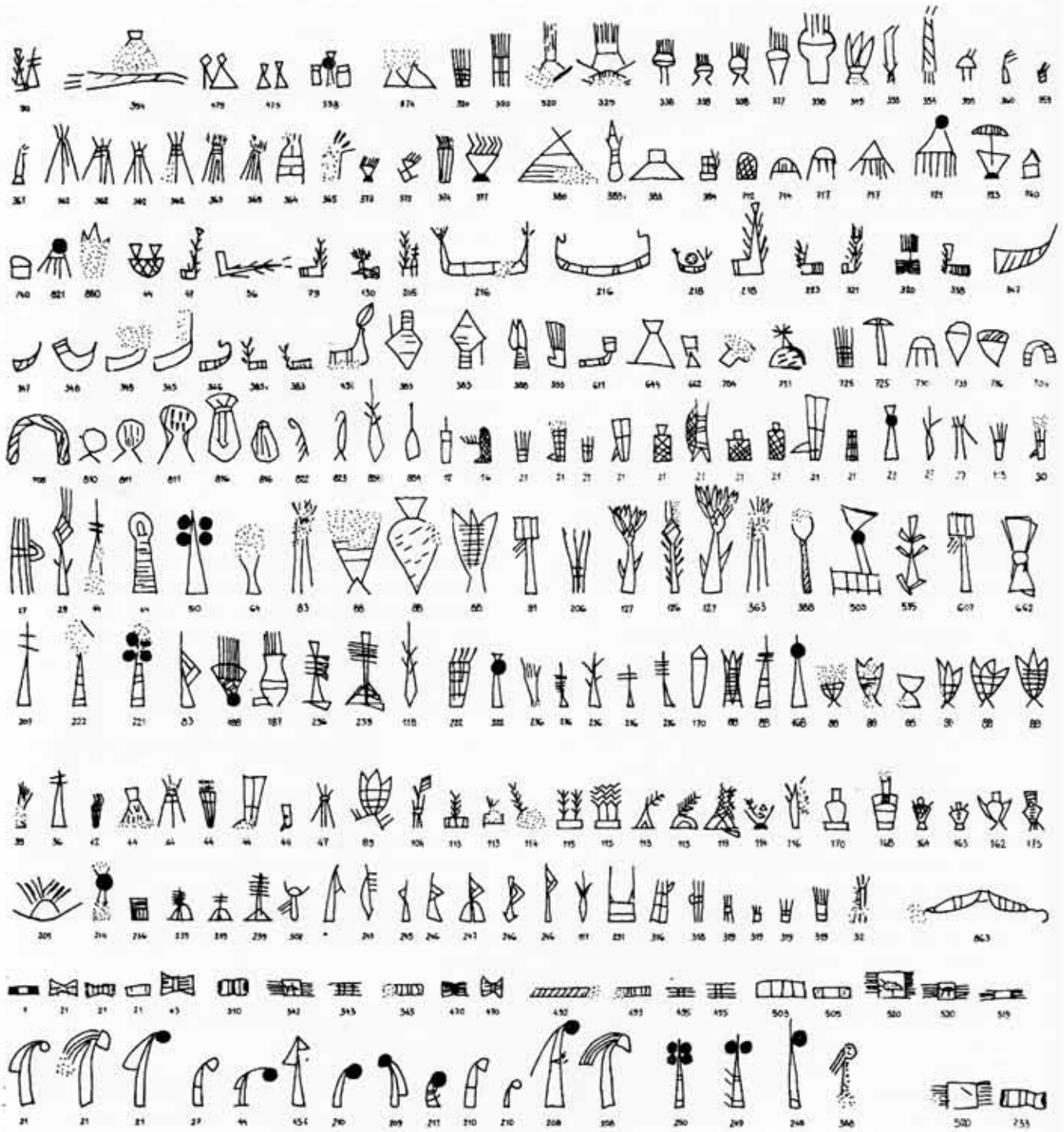
The Mesolithic is characterised by increasingly sedentary communities and by the capacity to collect a broad spectrum of food. While, the conditions of the new level are not clear, comparison with the ethnological situation clearly shows the importance of topo-semantic systems. In the case of the Ainu it is evident, that broad spectrum food gathering is controlled by a fibroconstructive topo-semantic system. In the framework of a categorically polar system the topo-semantic signs relate the antithetic categories of inside and outside. The fibroconstructive signs form the threshold points of gift exchange between man and wilderness. Rooted in the intimate space of dwelling, they extend into wider zones of hunting and collecting within the valley that constitutes the home range of the Ainu. A complex system of categorical polarity also controls time, social role and communal cooperation. In short, the comparison with the ethnological situation gives us very clear ideas about the structural conditions and ontological principles according to which extended territorial control systems could have evolved.

The Neolithic is characterised by permanent agrarian settlements and domestication. More or less permanent occupation of a territory became important with pastoralism and agriculture. However, the question of how settlements were institutionally organised remains open. Architectural anthropology assumes that topo-semantic demarcation systems were already present already in the Mesolithic period and became dominant in Neolithic times. They proved highly efficient in the protection of sedentary life and consequently, produced high ontological values among local populations. The terms 'nuclear border' and 'settlement core complex' are crucial in this regard. Nuclear border demarcations were set up in the middle of settlements. The fibrous demarcation remains within the controlled zone of the settlement. The categorically polar structure of 'semantic architecture' is projected spatially towards the outside, producing village plans with complementary surfaces, functional and non-functional domains. First, this must have been effective within regional settlement systems. It also developed a system of ontological values which further protected the settlement. Polarity had become an established ontological value related to the signs. They were used as models of harmonious organisation of space, time and social organisation. This also implied a primary type of aesthetics, which provided value to the settlement as a whole. The cyclic renewal of the same fibroconstructive demarcations introduced temporal depth into the settlement's consciousness. Further, an elementary social hierarchy developed within agrarian villages. Through cyclic cultic renewal the demarcation system remained related to the foundation of the settlement, an aspect which is locally shown in the founder house line. The founder house develops hegemonic claims. Its representant appears with dominant functions in renewal cults. He is priest and chief or ruler of the settlement. Thus, the topo-semantic system had the function of a traditional local constitution. Semantic architecture can be taken as a scriptless archive of settlement history which was probably a basic institution of Neolithic village cultures.

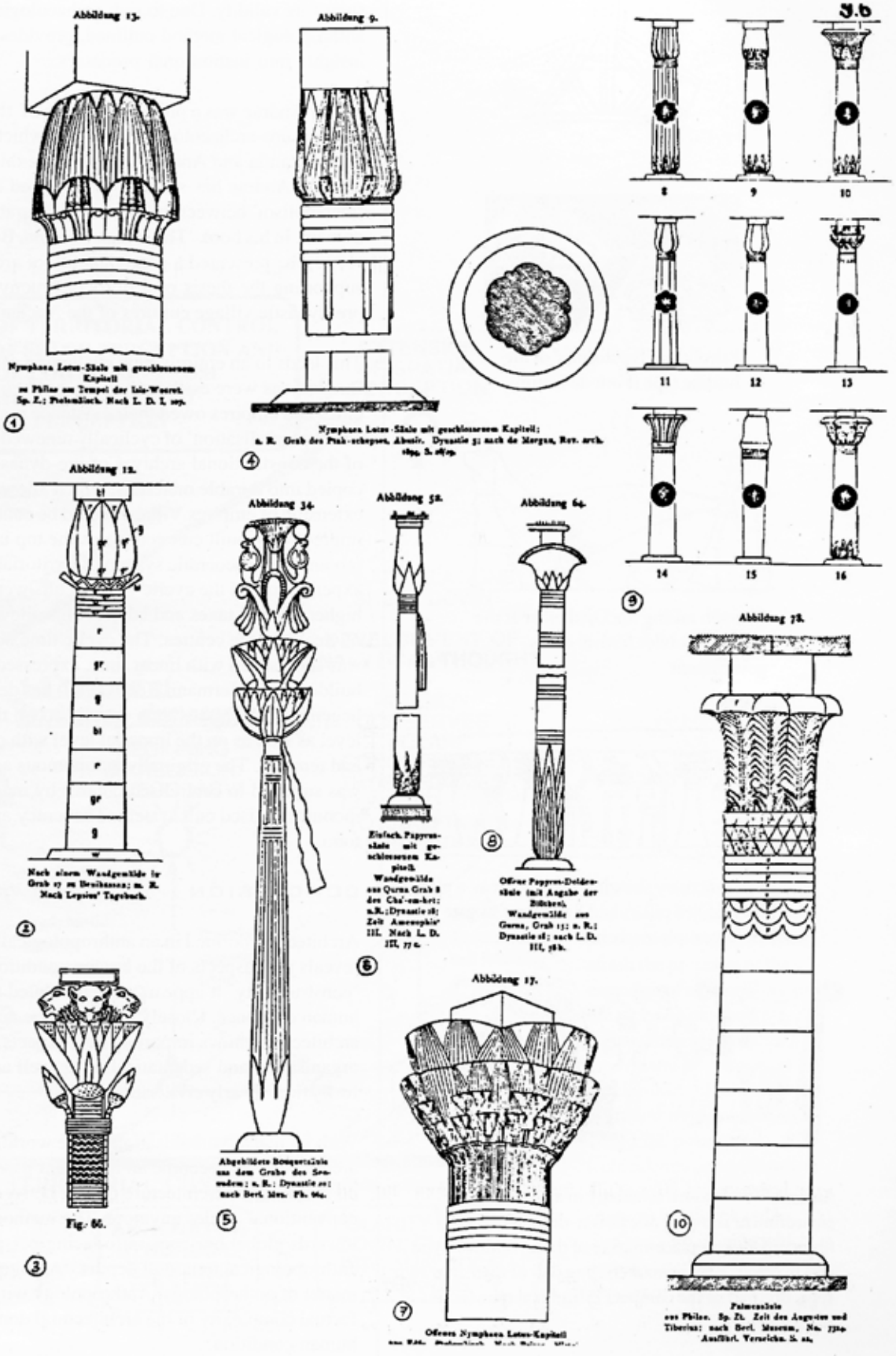
URBAN AND IMPERIAL ARCHITECTURE

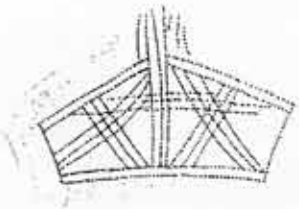
The formation of early civilisations in the Bronze Age is the field where architectural anthropology clearly

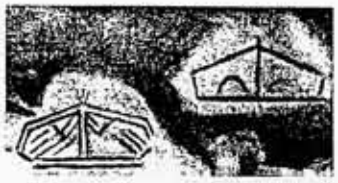
Earliest Sumerian script from Uruk found on clay plates. Evidently the prototypes are fibroconstructive signs. The farmer's territorial markers are registered by central temples for taxing (Egenter 1980)



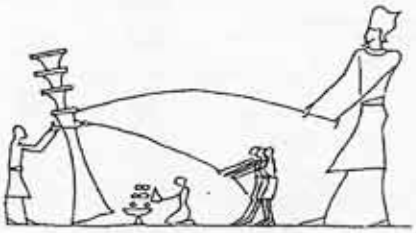
Various types of columns used in temples of Ancient Egypt. Though this monumentalised types are hewn in stone, their primary fibroconstructive condition clearly expressed in their texture. The temple architecture of Ancient Egypt is thus not a new invention of ingenious designers (Spiro Kostof), but the monumentalisation of the fibroconstructive architecture of predynastic agrarian villages



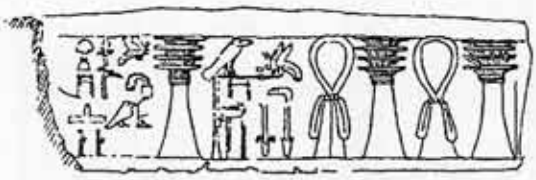




Paleolithic 'Tectiformes' of the hutlike type (Font de Gaume)



Pharaoh raising the Djed pillar at the 30-years' jubilee festival of his government



Egyptian sanctuary showing Djed pillar as a place marker and Djed pillars and 'Isis-knots' as gate markers (access-place scheme)

Ancient Near Eastern sanctuary in a cattle-breeder environment showing one flower-decorated fibroconstructive place-marker of the cylindrical type and two pairs of gate markers, one pair of the Ishtar sign type, one pair of the compact cylindrical type (access-place scheme)

shows its validity. Due to rich archaeological sources, the anthropological method outlined, provides considerable new insights into institutional processes.

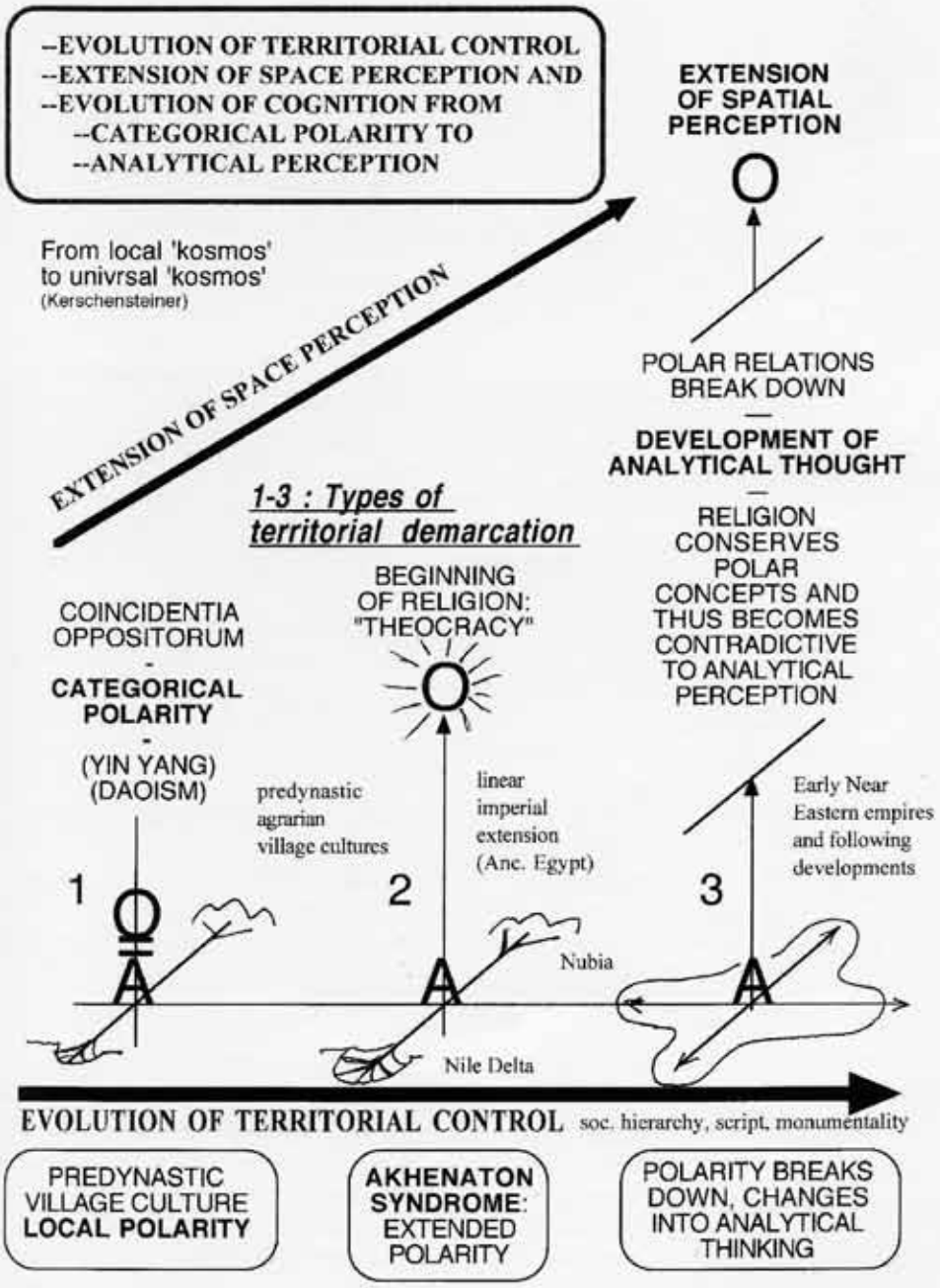
Walter Andrae was a prominent figure of the German architecturo-archaeological research, which was active in Mesopotamia and Ancient Egypt in the thirties of the last century. Andrae has strongly emphasised this aspect of 'metabolism' between ephemeral and durable materials in this domain. In his book 'The Ionian Column, Built Form or Symbol?' (1933), he presented a great quantity of archaeological sources supporting the thesis of a fibroconstructive substrata among pre-dynastic village cultures of the Ancient Near East and Egypt.

This leads to an entirely new evaluation of early civilisation. Innovations were essentially of technological character. The first cities and empires owed their existence mainly to the 'monumentalisation' of cyclically renewed fibrous 'documents' of the constitutional archives of pre-dynastic villages. They were copied into durable materials, which allowed the spatial extension of empires. Villages could be controlled from impressively built cult centres as the top institution of a monumental theocratic system of territorial control. The material expenditures of the cyclic village cults were centralised on the higher level as taxes and labour. This allowed the accumulation of wealth in the centres. The cyclic time concept of the villages was superseded with linear time, expressed by 'eternal' buildings. As Hermann Kees (1980) has described clearly, hegemonic processes then developed on the regional district-level as well as on the imperial level with corresponding cults and temples. The originally autonomous agricultural settlement was subdued to centralised control by means of the monumentalised cult system. Theocracy appeared as a political form.

CONCLUSION

Architecture defined in an anthropologically wider framework reveals new aspects of the human condition. Based primarily on 'constructivity' it appears closely related to the subhuman and human existence. Closely related to the anthropology of habitat, architecture shows important new aspects in regard to territorial organisation and sedentarisation as well as in view of the formation of early civilisations.

With increasing urbanisation of the world, rationalised architecture has become an important part of the modern human condition. But, architecture cannot be reconceived in its conventional circles anymore. The methods have to be extended towards global horizons introducing perspectives of anthropological temporal depths. 'Architectural theory' is a matter of anthropology. Anthropology will have to clarify the factual complexity of the architectural domain in regard to the human condition.



Working with Bollnow's evolution of human space perception we can understand afresh the processes of the extension of territorial control, the function of toposemantic demarcation as structural models and its impacts on the development of human cognition from concepts of categorical polarity (coincidentia oppositorum, or YinYang etc.) to analytical concepts in science and its conflicts with religion which remains essentially harmonious or polar in its expressions

Methods & Approaches

Malaji's Hill: Divine Sanction, Community Action

BHOJU RAM GUJAR AND ANN GRODZINS GOLD

ABSTRACT

Within the populous Mina community of Rajasthan, members of the lineage (gotra) called Mautis are devoted to the hero-god Malaji. One Malaji shrine is located just outside the town of Jahazpur on top of a densely wooded hill. The Mautis Mina community residing in twelve villages surrounding this area has organised a committee to keep the temple in good repair and to protect the forested hillside from herders in search of fodder and from the wood-hungry population of Jahazpur, a growing urban centre. Stories of wood thieves miraculously punished circulate, but so does a two-man, twenty-four-hour patrol which administers fines. Our paper traces the legend of Malaji as well as the history of the temple committee. We consider how institutionalised community action works together with cautionary tales of divine sanctions to protect this bounded sacred site.

BACKGROUND

In the winter months of 2003 we embarked on a project focused on regional shrines in Ajmer and Bhilwara districts, and the narrative traditions which flourish around them and the trees. During these months we visited and recorded both origin stories and miracle stories at some twenty deities' shrines. About three-quarters of these shrines were surrounded by small wooded areas – oases in a severely deforested landscape. In this part of Rajasthan, such bounded wooded spaces attached to temples are called *bani* (derived from the Sanskrit *van*, i.e. woods). There exist a plethora of terms for wooded areas associated with

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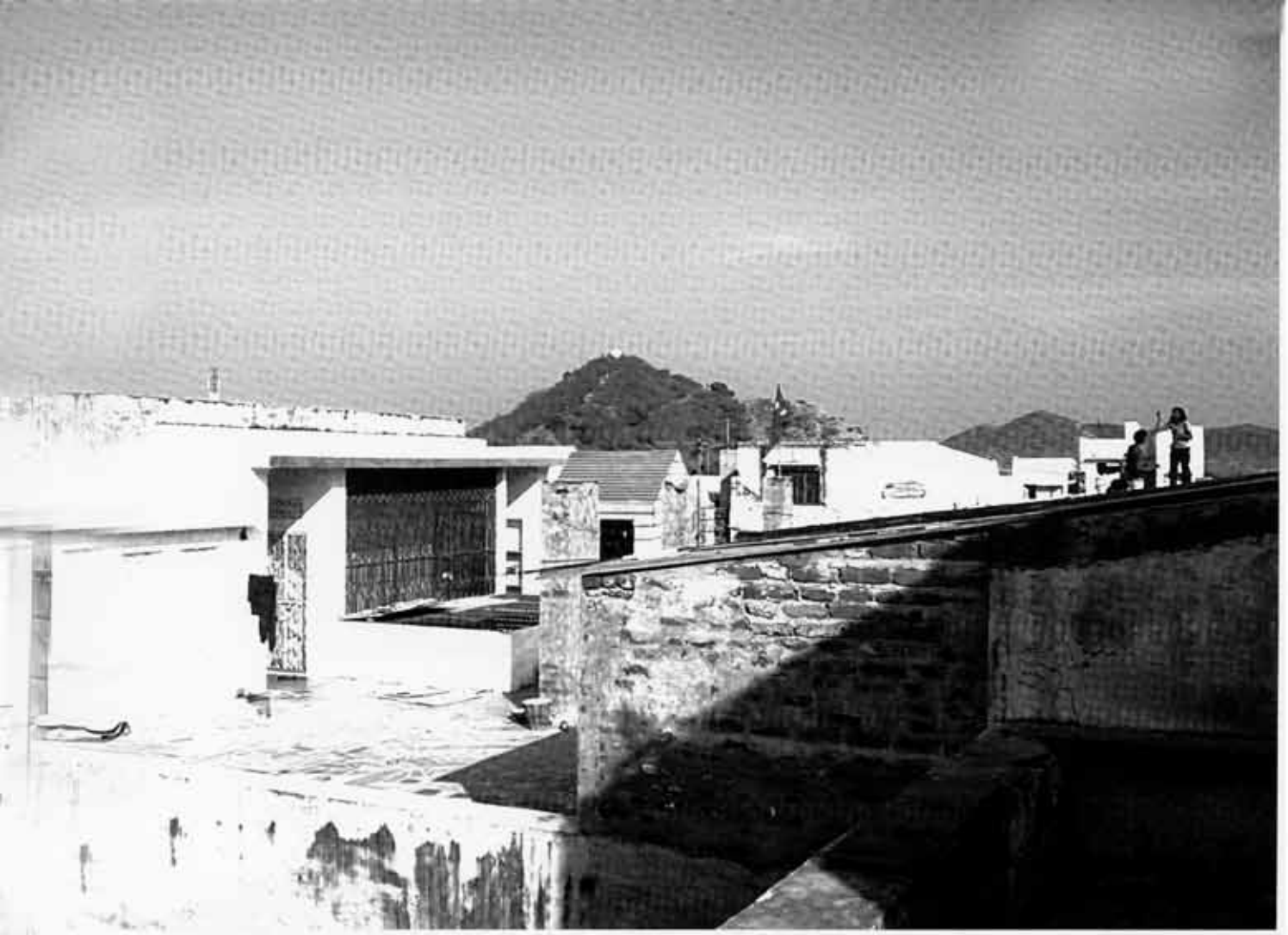


Malaji's temple and hill as viewed from the roofs of Jahazpur

shrines in the diverse linguistic regions of India, including *oran,* the term in other parts of Rajasthan. However, in our research area people consistently used *bani*.

As we planned our routes for a fieldwork project investigating the intersection of healing, natural beauty, and origin myths and miracle tales concerning shrines with groves, we would ask about a particular site, "does it have *bani*?" or "does it have good *bani*?" in order to learn whether or not there were enduring religiously protected trees in its environs. And at many shrines dedicated to regional goddesses or hero-gods we found these small groves still intact. Only one, the smallest and least significant, showed signs of severe deterioration due to excessive lopping. This was more extraordinary in that the context for our research was the driest winter ever in Rajasthan; the words for drought and famine were on everyone's lips; a fodder shortage was causing great hardship and loss in communities dependent on livestock for cash income, nutrition, fuel and agricultural labor. Hence the temptation to gather fodder despite all obstacles was extremely strong. Nonetheless, almost all the *bani* we visited had remained untouched.

During these preliminary excursions we learnt that complicated, flexible, and interesting transformations may be tracked when examining the surprising resiliency of many (if not all) groves in central Rajasthan. We gathered in multiple spots straightforward accounts of frightening miraculous punishments at many locations; persons purloining wood are struck blind, struck dead, or have their houses inexplicably collapse on top of them. However, at other wooded temple grounds different forms of protection have entered the picture, coexisting and perpetuating no particular dissonance with underlying religious perspectives. For the past twenty years, on the edge of the rapidly growing town of Jahazpur, the Mautis Mina community has protected their hero-god Malaji's sacred hill from wood thieves. Tree-protection on Malaji's hill is no longer left to miraculous intervention; rather, a well organised committee of devotees musters guards to patrol the terrain twenty-four hours a day and administer fines to violators. Considerable debate,

both academic and political, swirls around the efficacy of sacred groves in preserving biodiversity or exemplifying community-based ecological wisdom.[1] While trusting that our observations may contribute some substance to the discussion, we shall refrain by and large from engaging these contentious issues.We focus solely on Malalji's temple, its protected hillside and the local institutions that maintain these. While Malaji's efficacy in tree-protection is what first compelled our attention, we are convinced that it is necessary to view it as an integral part of a larger religious complex to understand and approach such efficacy. Studies of sacred groves too often ignore the many other aspects of religious life among which healthy trees have their literal and symbolic roots.[2]

Jahazpur's Malaji, located atop a hill called Chavariya, is tended and attended by a particular lineage of the Mina community, the Mautis Minas, and its origins are part of their history and legend.[3] Interestingly to us, this legend intersects with the Gujar epic of Devnarayan. Some regional shrines to Devnarayan also feature protected woods. Although shrines may be associated with certain castes or even lineages within caste communities as is the case with Malaji, pilgrims from diverse backgrounds freely come to worship and request boons. Yet, until Bhoju Ram Gujar's life as a headmaster brought him to Jahazpur, he knew nothing of Malaji or of Malaji's relationship with Devnarayan.

Much of our paper is based on Gujar's independent research. Gold has visited Malaji twice. In 2002, on a brief visit, Gujar first called this unique place to her attention. In 2003, Gold and Gujar photographed the shrine and hillside, and together interviewed one key figure in the shrine's management. At present, Gujar lives in Jahazpur six out of seven days a week and has conducted considerable additional research. Last rainy season, from 8 August 2005 to 14 August 2005, he and his wife participated in a foot pilgrimage with Mina devotees of Malaji.

We begin with some fragments of Malaji's legendary life history. We then turn to the Mautis Mina community and their particular ritual practices and

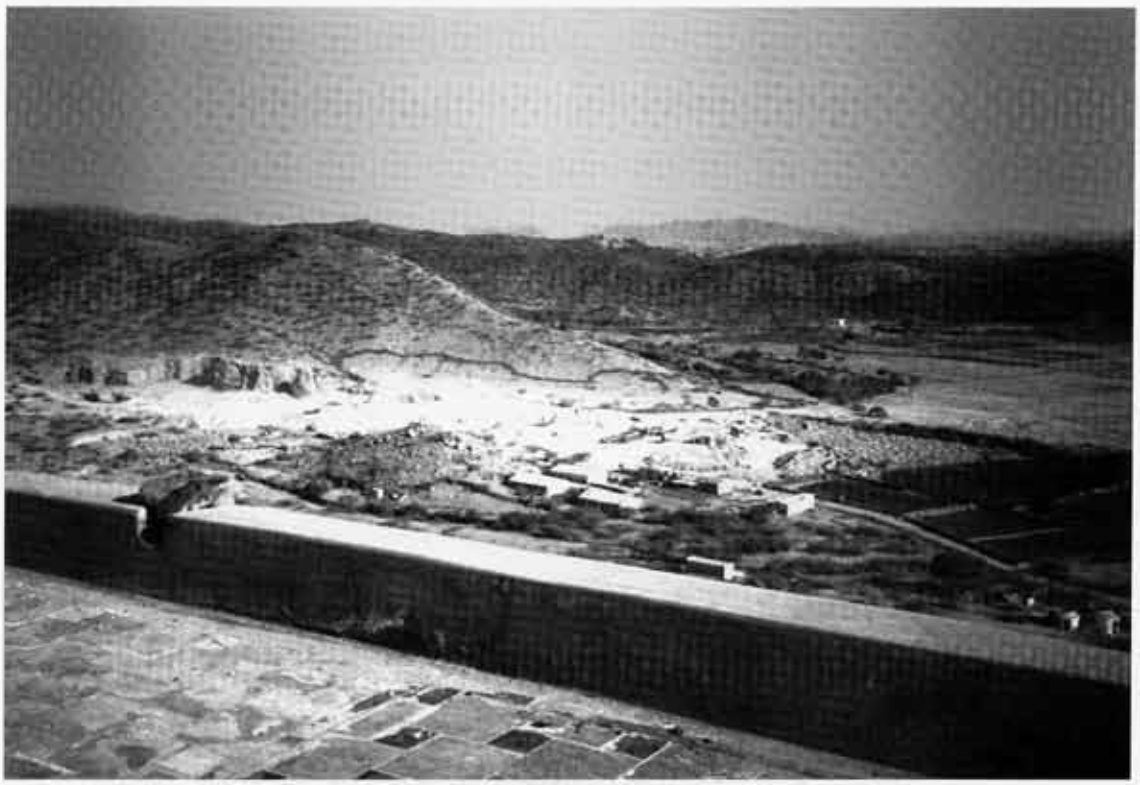
Malaji and Devnarayan

prohibitions. We focus on their effective efforts to sustain rules in Malaji's honor, among which tree-protection is numbered. In concluding we suggest that the religious complex around Malaji draws its vitality and efficacy from a conjunction of narrative, ritual and collective action.

THE LEGEND OF MALAJI

According to Mina traditions, Malaji was born in the tenth century of the Vikram era, in the month of Shravan. His father's name was Satu and his mother's name was Jagmal De.His ancestors had been rulers of the Pawar lineage in the region of Ujjain-Dhar in Madhya Pradesh.[4] In the Pawar lineage there had been a childless renouncer king named Rohit who practiced asceticism in the Aravali mountains, in the forest near Tatgarh. It was at the sacred place enshrining Rohit Pawar's renouncer's campfire (*dhuni*) where Jagmal De gave birth to Malaji. Today there is a huge temple here. Malaji himself had a renouncer guru named Than Rawalji, who bestowed miraculous powers on him. Malaji's legend describes him as a contemporary of the Gujar hero-god, Lord Devnarayan accepted by Gujars as an avatar of Vishnu. According to Mina sources, Devnarayan's and Malaji's epic, intersect when the two heroes are children.[5] One day Devnarayan's mother Sadu Mata and Malaji's mother Jagmal De were both bathing at the same time in Pushkar Lake, Rajasthan's foremost pilgrimage site. While dressing after having bathed, the two women accidentally put on one another's blouses. Because of this incident they became "blouse-sisters." Thus, their sons, Devnarayan and Malaji, were cousin-brothers. Moreover, since that time, Gujars and Minas are understood to be related as maternal cousins. Malaji stayed with Devnarayan throughout his life; he took care of Nilagar (also called Lilaghar), Devnarayan's fabulous stallion. It is said that Malaji once took Nilagar to a pond for watering. Here, despite Devnarayan's instruction to the contrary, Malaji mounted Nilagar, and the horse took off with the speed of the wind and flew away with him. However, because of the power given to Malaji by his guru, the horse alighted back on earth without any mishap. Devnarayan was impressed by this incident, notably testifying to Malaji's valour if not his obedience, and wished always to keep Malaji by his side.

Thus, Malaji remained in the company of Devnarayan and performed many miraculous deeds. And even today, wherever there exists a temple to Malaji, there also exists an icon of Devnarayan in its designated place.



View of arid landscape from Malaji's temple, winter 2003

Malaji was married at the age of 22 to the daughter of the Bhati king of Jaisalmer. The wedding took place on the 9th day of the bright half of the month of Ashadh. In the year 1001, at the age of 32, Malaji ascended bodily to heaven because of his penance and the miraculous powers he had acquired. Even after that event, he used to come regularly to visit his wife. One day Malaji's mother became suspicious. She wondered to whom the widowed queen was talking, after her husband's death. To defend her character from evil gossip, Malaji's queen told the entire truth to her mother-in-law Jagmal De. That night Malaji arrived to visit his wife as usual. But because his mother stood just outside, he could not leave through the door. He left in his subtle body through the rear window, and never came back again.[6]

In the fragments assembled here some familiar folklore motifs are apparent: a body not subject to ordinary death; a divine marriage lasting beyond one partner's ascent to heaven. The familiar and potentially disastrous rivalry between a suspicious mother-in-law and a passionate daughter-in-law is also evident.[7] Most important to this panel are two elements in Malaji's narrative: his miraculous powers and the importance of sacred places. The latter include the hill where he was born (which was already a powerful place due to the renouncer Rohit's ascetic practices); and Pushkar lake where the two mothers of the gods become fictive sisters by happenstance or fate. Locality appears to have great significance in Malaji's tale as well as in Devnarayan's. Both regional epics render Rajasthan's geography storied and sacred, and inspire pilgrimage.

Unlike the legend of Devnarayan, which is associated with painted scroll recitations, Malaji's legend has no tradition of epic recitation or elaborate visual art. Rather it is recalled by his devotees through song, storytelling, and ongoing rituals and festivals. Turning to the Mautis Mina community and their ritual practices, we will see several ways that a community of devotees involve themselves in their chosen deity's biography, so that moments in Malaji's life history are regularly recreated through ritualised performative traditions.

THE MAUTIS MINAS: MALAJI'S DEVOTEES

The population of Mautis Minas extends throughout the whole region of Hadoti and is especially dense in areas of Ajmer and Bhilwara districts. In each village

Close up of *dhokara* trees

where Mautis Minas are the dominant community there is a temple dedicated to Malaji, usually set on a hilltop or at least on somewhat elevated ground. These temples contain icons of Malaji as a rider on horseback as well as associated figures from his legend, including Lord Devnarayan. Malaji's hills, along with the areas immediately surrounding them are kept as *bani* or protected forests. Sometimes these temple lands have been designated as under government management, whether it is the Revenue Department or the Forest Department. However, even in these cases, it is members of the Mautis community who actually undertake the protection of grounds dedicated to their chosen deity.

The Malaji shrine which we have studied is not unique; it is one among several protected temple groves established and maintained by the Mautis Minas. Our research, however, centered on Chavariya hill, located on the outskirts of the swelling and modernising town of Jahazpur. The view from Malaji

Ram Svarup Mina in front of Malaji's shrine

of Chavariya hill reveals a stark contrast between his tree-filled dominion and the normal landscape. Tree-protection is not separated from many other aspects of Malaji's legend and worship.

At present, there are nearly 1,800 Mautis Mina families living in an area known as Barapal – the Twelve Villages — in the vicinity of Jahazpur. The Mautis Minas from the Twelve Villages effectively constructed the current temple.The Mautis Mina community residing in these twelve villages maintain some special traditions.Many of these raise income for the shrine's maintenance and festivals as well as protect the natural environment.

During his interviews with Mina devotees, Gujar learned about a number of prohibitions in effect on Malaji's hill. These go well beyond simple tree-protection.In the deity's forested areas it is prohibited to imbibe alcohol, to eat meat, or to hunt birds and animals. A story is told about a battle waged between the Mautis Minas and the Parihar Minas over the issue of boar hunting. The Parihar Minas had about 2000-2500 men with them, while the Mautis Minas had only 400-450. When the battle began the Mautis Minas prayed to Malaji and then went to the battlefield. It is said that Malaji invisibly helped them attain victory in this battle. Since that day, even the Parihar community believes in Malaji and refrains from hunting wild boar and eating its meat. Many histories of the princely states portray mortal Rajasthani rulers who vehemently protect wildlife in their dominions (Gold with Gujar 1997; Mayaram 1997). Here Malaji, a deity of royal lineage, does the same.

People also fast on the days of Malaji's birth and his wedding. The wedding anniversary is particularly marked by elaborate customs. For members of the Mautis Mina community the whole month of Ashadh is celebrated with great joy but also with austerities. For the entire month preceding the wedding anniversary, devotees of Malaji may vow to sleep on the ground and observe celibacy. During the month of Ashadh, women sing auspicious wedding songs in every Mautis household and these women receive in turn the festive foods offered to Malaji as *prasad* – including fried foods made of corn, maize, black chick peas and wheat. Throughout this month, an undying lamp fueled with clarified butter is kept burning in Malaji's temples.

On the ninth day of the bright half of Ashadh, which is Malaji's actual wedding anniversary, fairs are organised at all of his shrines and temples. On this day Mina farmers do not perform any agricultural work but carry out rituals after cooking festive foods at home. Only after performing Malaji's worship do his devotees break their fasts. Moreover, in Jaisalmer where Malaji was married, even in present times a traditional wooden marriage emblem (*tauran*) is put up over the main gateway to the town. At nightfall, this carved emblem is broken in the same manner as the groom would traditionally break the *tauran* on entering his bride's house.

The Mautis Minas of the Twelve Villages observe other practices of restraint and celebration which serve to praise and honor Malaji, as well as to imbue members of their community with a distinctive identity. Some of these practices — many of which Minas share with other Rajasthani farming communities — also reveal their reverence and care for elements of the natural world. For example, the trees called Salra and Pipal are worshipped, and there are prohibitions preventing their cutting and burning wood. The trees on Chavariya hill, however, are preponderantly *dhokara* or *dhok* (*anogeissus pendula*) – a species that had dominated all the hills

Malaji's temple viewed through dense *bani*

of this region through the first half of the 20th century, before radical deforestation (Gold and Gujar 2002).

In general, Malaji's devotees consider it meritorious to protect the forests they view as sheltered by their chosen deity as well as the birds and animals that live in them. While sowing and harvesting the crops, 10kg of the planted crop is brought to the temple or granary of Malaji. This grain is donated to the priest, who then scatters it for the pigeons to eat. Believing service to living beings to be the greatest virtue, the Mautis Minas' selfless service to Malaji translates into a protection of the natural environment.

COMMITTEES AND MIRACLES

On July 16, 1986, a committee was formed on behalf of the Mautis Mina Twelve Villages in order to oversee the development and construction of Malaji's shrine on Chavariya hill. In 2003, we spoke extensively with Ram Swarup Mina, who had played a key role in organising the protection committee. He explained that they decided to form a committee about twenty years ago because the woods were getting depleted due to Jahazpur's increasing population and economic development. He told me, "We were afraid that Malaji's beauty might be destroyed, so we thought we should protect it from all four sides." Known as the "Mangat Temple Development Committee," this governing body has 21 members, who change every three years.

The Mautis Minas of the Twelve Villages observe several prescriptions concerning precise donations to Malaji on important life cycle occasions. These provide a good source of revenue managed by the committee on behalf of the temple and the protected woodlands.

The rituals and accompanying donations are as follows:

1 Marriage: In every village, whether it be the wedding of a boy or a girl, the family deposits 101 rupees in the treasury of Malaji.[8] If someone donates more of his own free will, it is used for construction work.

Malaji close up

2 Turban-tying: When the head of the household dies in a Mautis family, whoever succeeds him, has to perform a ritual donning the family turban. On this occasion, Rs. 501 are deposited in Malaji's treasury.
3 Tonsure: When the first child is born into a family, its tonsure ceremony is performed at Malaji's temple.

The committee also supervises temple construction work. When the temple requires maintenance, the committee charges each family of the Twelve Villages a sum of Rs. 101 initially. In addition, each family contributes an additional Rs. 150 per year for the following three years. Those members of the Mautis Mina community who are in Government service have to donate an entire month's pay. Thus, sufficient funds are gathered for temple development and other construction work.

At present, each household among the 1,800 Mautis Mina families in the Twelve Village area around Jahazpur takes turns in sending one person to patrol and protect the forest belonging to Malaji. Every day of the year, two volunteer guards make their rounds, and the managing committee keeps track of whether or not a designated person arrives for his turn at protecting Malaji's forest. If someone who has been assigned a date does not show up for it, the community fines him Rs.101 rupees. In this way the forests are protected. Moreover, the guards also undertake some tree-planting work.
We do not know what government records show about the land on Chavariya hill. However, according to Ram Swarup, the shrine's land was "half with the forest department and half with us." He added that forest officers "show it off" to visitors and inspectors, claiming, "look we protect this forest from the city!" But Ram Swarup asserted, "actually they do nothing.....they do nothing!"

The following rules and penalties have been set by the committee to prevent the disruption of Malaji's forested territory:
1. If goats, sheep, cows, water-buffalo etc. are found in the forest, their owner is fined Rs. 11.
2. If someone is caught stealing leaves or cutting wood from the forest, he is fined Rs. 121.
3. If someone harms the forest and cannot be identified, then the community prays to Malaji, and Malaji punishes him. There are many miraculous stories related to this. It is evident that because of the fear of Malaji's reprisal, no one harms the forests.

(Note the order in which these rules are listed, with miracles appearing as a kind of a last resort.)

Ram Swarup told us, "As many Minas as are in the twelve villages, they all accept this Malaji." As per his estimate, all but one or two per cent were of the Mautis lineage.These relatively small and homogeneous villages have united to protect their sacred landscape against encroachments by anonymous townfolks. In adopting such a "rational" and systematic mode of shrine protection, they have not shed their religious orientations.

Gujar recorded a story about a named individual, Radhakishan, from the town of Jahazpur, who Malaji had punished.After cutting wood on the sly, this man's whole household suffered: one of his daughters-in-law caught on fire in their house at night, and the wood thief himself and his son, became mentally deranged.Stories of miraculous punishments may reinforce the rules, but the Mautis Minas hardly rely on divine intervention. In 2003, when we were interviewing Ram Swarup, Gold told him she had heard that the Goddess of a nearby shrine, Sundarpura

Mataji, gave terrible punishments to those who harmed trees in her *bani*. He immediately responded by narrating the story of a man who tried to steal a piece of wood from Malaji, but the god caused him to became so confused, so "turned around," that instead of sneaking away he walked right into the hands of the patrol!

As we have seen, Gujar's more prolonged interactions with Mautis Minas of Jahazpur did record tales of unmediated miraculous punishments from Malaji's shrine. Nonetheless, it seems significant that when asked for a miracle story, Ram Swarup, a founding member of the managing committee, chose to describe one that ultimately involved the guard system.

COMMUNITY IDENTITY, RELIGIOUS INSTITUTIONS, PROTECTED LANDSCAPES

Kalam's extensive study of Karnataka's sacred groves, called *devarakadus*, proposes that there are two kinds: "those where encroachments . . . have taken place, and those where there is almost no encroachment." Kalam imputes a straightforward materialistic causality to this: the former are "close to human habitations" and the latter are "far from human settlements." Thus, Kalam concludes, it is only around these more isolated groves that "aspects of awe, mystery, wrath of the deities/gods/goddesses, legends of punishments, etc. are woven, and survive to this day" (1998: 42-43). Jahazpur's Malaji offers one direct contradiction to this generalisation.

Urban proximity can certainly threaten and damage a deity's protected greenery. However, Malaji's story reveals that the workings of rural peoples' religious minds are far from helpless in such circumstances, nor do they necessarily surrender to economic priorities. What is striking about the Malaji model of sacred grove management is that it unites ongoing claims of a deity's miraculous power with a thoroughly systematic and rationalised mode of landscape protection.What motivates Malaji's devotees to donate their scarce time and resources to the collective project of sustaining their hillside's greenery? We believe this has something to do with the ongoing potency of their deity's life narrative celebrating his miraculous and valorous deeds, the ways these deeds are fully embedded in Rajasthan's regional geography; and the strength of the Mautis Mina community's adherence to Malaji's divine order as it permeates both everyday and festival experiences.¶

Notes

[1] See for example Jeffery, (ed.) (1998), Nanda (2003),pp248; Ramakrishnan, Saxena, and Chandrashekara, ed.(1998)

[2] For a valuable exception see Freeman (1999), for two helpful recent explorations of sacred groves in India including surveys and case studies see Centre for Science and Environment (2003), Roy Burman (2003).

[3] Fragmentary regional oral histories posit the Minas as the original settlers and rulers who predated the Rajputs in this region; Minas are formerly tribal peoples who have settled and taken to agriculture and enjoy considerable success in military and police professions (Gold and Gujar 2002, pp.59-64). see also Singh (1990 [1894], pp. 51-56) for a colonial view of Minas.

[4] This is the same royal lineage (*kul*) as that of the renouncer-king Bharthari of Nath epic lore (Gold 1992, pp. 78).

[5] For Devnarayan see Malik (2004).

[6] In rural Rajasthan the windows have no glass; they are barred but let in light and air. Because of this incident, even today there exists a tradition in the Mautis Mina community that there should be no windows in the rear or side walls of their houses.

[7] See Gold 1992, pp. 100-104 for another Pavar ruler, the father of King Bharthari, whose demise is caused by a similarly suspicious woman of a senior generation – in this case, not his mother but mother-in-law.

[8] All but one of the amounts designated by the temple committee, whether donations or fines, include the extra one that traditionally connootes auspicious ongoing abundance rather than closure.

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Medicinal Plants of Himachal Pradesh - A Natural Heritage

VIPAN GULERIA

ABSTRACT

This paper discusses the unique medicinal plant wealth of Himachal Pradesh and the role of research and development for its conservation and sustainable use for livelihood generation. It builds on the work conducted by institutions such as the University of Horticulture, Solan through its outreach programmes in research, documentation and development of healthy plant material for cultivation across the country. It also outlines the need for protection of natural habitat of endangered species exclusive to this part of the world. It emphasises the implementation of stronger legislation and policy on trade and marketing of medicinal plants and herbs at the national level.

INTRODUCTION

The medicinal and aromatic properties of various species of plants are of great significance to humankind and their true value is difficult to assess and document with our current limited knowledge and fragmented understanding about them.

Nevertheless, in the recent past their importance has been recognised throughout the world with a renewed fervour. India has a particularly rich and diverse heritage of medicinal and aromatic plants. Ancient literature such as the *Rig Vedâ*, *Charak Samhita* and *Susruta Samhita* include a detailed analysis of their phonological, morphological and medicinal properties. Another crucial factor is that almost 70-80 percent of raw materials are collected from forests, that too largely from the hilly regions

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IMPORTANT MEDICINAL SPECIES OF THE REGION

- *Withania somnifera* – Cluster Winter Cherry or Ashwagandha
- *Acacia catechu* – Catechu Tree (V. Khair)
- *Terminalia chebula* – The Chebuli or Black Myrobalan (Haritak)
- *Madhuca indica* - Mahua
- *Celastrus paniculatus* -
- *Centella asiatica* – Indian Penny Wort (V. Brahmi)
- *Terminalia arjuna* – Arjuna (Arjun)
- *Terminalia bellirica* – Belliric Myrobalan (Bahera) Bedda Nut tree
- *Emblica officinalis* – Indian gooseberry (Amla)
- *Cassia fistula* – Pudding Pipe tree (Amaltus)
- *Acacia nilotica* – Kikar, Babul
- *Cassia abscus* - Chaksu
- *Mucuna pruriens* – Kiwanch, Kaunch, Goncha, Atnagupta, Cowhage
- *Justicia adhatoda* – Vasa, Adusa, Vasaka, Basuti, Banshte, Bashti
- *Halarrhena antidysenterica* – Kurchi, Kura, Tiptaka, Indrajan
- *Ocimum sanctum* – Holi Basil (Tulsi)
- *Spilanthus acmella* – Akarkara, Akalkada, Pokarmul
- *Aegle marmelose* – Bael Fruit Tree (Bael)
- *Santalum album* – Sandal Wood or Sandal Tree
- *Mallotus phillipinensis* – Kamela, Sinduri, Rohini
- *Pueraria tuberose* – Sural, Saral, Tirra, Bankumra

- *Asparagus officinalis* – Garden Asparagus (V. Shoot Modi)
- *Asparagus racemosus* – (V. Bhutni, Satawar)
- *Asparagus spp.* –
- *Viola odorata*
- *Spondias pinnata*

having maximum forest cover as well as diversity of flora. Himachal Pradesh, a State in North India, is blessed with good climate and also with high quality medicinal plants. In many of the state's high and medium altitude virgin forest areas, trees have been protected. Variability in plant wealth is strongly linked with variation in temperature and height. Himachal Pradesh has four types of climatic regions:

- low hill (Shiwalik range)
- mid hill
- high hill wet
- high hill dry regions.

Several types of medicinal plants grow in all these

Aloe vera: A Medicinal Plant grown in Waste Land Areas

different regions. Himachal Pradesh is home to nearly 1,200 medicinal plant species out of which 18 per cent are trees, 21 per cent shrubs and 53 per cent are herbaceous in nature.

The low hilly region of Himachal, which is the part of Shiwalik Himalayas and Dhauladhar ranges is home to the *dashmool* group of drugs.

The area beyond 2,700 m above mean sea level (msl) is a dry temperate region. Most of this zone is above tree line (nearly 3,700 m above msl.) and is the natural habitat of some valuable and rare medicinal herbs, which are found only in the brief summer season of the year.

THE IMPORTANT MEDICINAL PLANTS IN THE TEMPERATE ZONE

- *Berberis aristata* – Indian Berberry (V. Kasmol)
- *Valeriana jatamansi* – Indian Valerian, Mushkbala, Sugandhbala
- *Taxus wallichiana* – Thuno, Thuner, Birmi, Himalayan Yew, Thangi, Thoon
- *Morchella esculenta* – Guchi, Honey combed mushroom
- *Berberis lysine* – Kashmal, Daruhalldi
- *Dioscorea deltoida* – Singli-Mingli, Kins, Ganj
- *Thalictrum foliolosum* – Meadow Rue (V. Mamri, Mamiro)
- *Angelica glauca* – Long Wort (V. Gandrayan)
- *Heracleum candicans* – Padara, Patrala
- *Podophylum hexandrum* – Bankakari, Giriparpat
- *Thymus serpyllum* – Wild Thyme
- *Polygonum aviculare* – Nismoli, Bannalia, Hunter's Tea, Knotgrass
- *Selinum tenuifolium*
- *Polygontum verticillatum*

Ashwgandha: A Potential Genseng of Lower Himalayas

Safed Musli: A Potential High Value Medicinal Plant of Commercial Value

IMPORTANT HERBS IDENTIFIED SO FAR IN THE REGION

- *Aconitum heterophyllum* – Indian Atees (V. Atis)
- *A. violaceum* – (V. Dudhy) Maura, Dudh Atis
- *Ephedra gerardiana* – Asmania, Budagur, Somlata, Soma, Chhedang
- *Rhododendndron anthopogon* – (V. Simrish, Nachni)
- *Dactylorhiza hatagirea* – (V. Hathajari)
- *Picrorrhiza Karooa* – (V. Katuki, Karui)
- *Jurinea dolomiaea* - Dhoop, Jari-dhoop
- *Saussurea lappa* – Costus (V. Kwe, Kurch)
- *Achillea millefolium* - Milfoil or Common Yarrow
- *Valeriana pyrolaefolia*
- *Polygonum macrophyllum*

THREATENED AND ENDANGERED MEDICINAL PLANTS IN HIMACHAL PRADESH

Unscientific exploitation and overuse of medicinal plants around the world have resulted in the depletion of natural plant wealth. Nearly 20 species of medicinal and aromatic plants are endangered or threatened in the State.

Heavy exploitation occurs in the regions at an altitude of 2,000 to 3,000 metres. The high altitude areas are also rich in plant life that are rare in the country. Hence, maximum exploitation of medicinal plants takes place in these areas. In Himachal, nearly eighty plant species of this zone are endangered. The most important genera of the endangered species occupy the regions having altitude 4,000metres above (msl) sea level.

STRATEGIES FOR DOMESTICATION AND CULTIVATION

According to some estimates, the world's medicinal plants' market is about US$ 62 billion; India exports medicinal plant material to the tune of Rs 300 to 500 crores only, which is lesser than the Chinese share in the international market. However, nomadic people in their natural habitat collect many medicinal plants found on the Himalayan range in Himachal Pradesh. Generally, the people uproot the whole plant without caring for their propagation related technicalities. Fruits and leaves from the trees such as *harar, behra and tejpatra* are ruthlessly removed from the trees, thus affecting their propagation. Unscientific and mindless exploitation of important medicinal plants have affected their availability in their natural habitat as well as in the market. Cultivation of these important plants through scientific methods will ease pressure on natural habitats but also offer an option for diversification in the prevalent agriculture system. Through scientific cultivation, genuine, fresh and good quality raw material will be made available to the pharmacies. At present, the reliability of many ayurvedic medicines has come under scrutiny.

Cultivation of improved varieties and clones at a distance from their natural surroundings will ensure a steady availability of the desired quantity and quality of the products for use in the pharmaceutical industry. Developing strains and clones/varieties, will give the plant material a certain level of active ingredient in them. The availability of good quality raw materials in the market will help check spurious substitutes and adulteration. By cultivating genuine planting stock, using proper nutrient doses for plant growth, spacing and disease management, will definitely improve the quality and reliability of products.

ROLE OF ACTIVE INGREDIENTS

It is important to evaluate the chemical part of the plant body, which is called the active ingredient, at different growth stages of plant life in order to arrive at an adequate harvesting season. Improved methods such as vegetative propagation techniques viz. budding, grafting and air laying hybridisation of land races, induction of mutation, selection and testing of different land races etc. can be used to evolve the high yielding strains of medicinal plants. Some such promising strains of *harar, baheda, ritha* and *aonla* have been developed through vegetative propagation methods. The new strains of these species are giving

IMPORTANT SPECIES THREATENED DUE TO UNREGULATED EXPLOITATION AND UNORGANISED TRADE PRACTICES

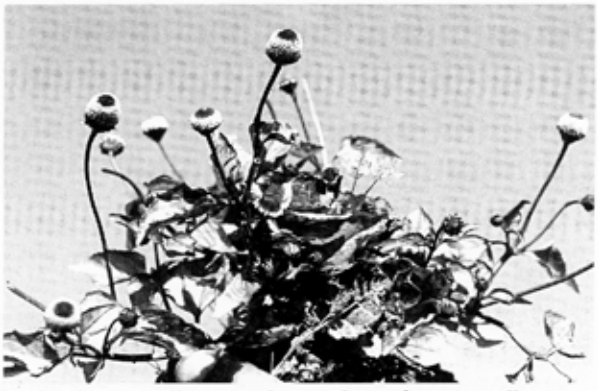
- *Aconitum hetrophyllum* – Ateez or (V. Atiz)
- *Aconitum violaceum* – (V. Dudhy) Maura, Dudh Atis
- *Aconitum atrox* – V. Meetha
- *Aconitum balfourv* – V. Mitha Bish, Teeha
- *Aconitum chasmanthus* – V. Mohri
- *Arnebia benthamii* – (V. Laljari)
- *Cinnamomum tamala* – Indian Cassia (V. Tejpata)
- *Costus speciosus* – Arabian Costus
- *Ephedra gerardiana* – Asmama, Budagur, Somlata, Soma, Chhedang
- *Gloriosa superba* – Glory Flower (V. Kalihari)
- *Gentiana kurroo* – Indian Gentian
- *Malaxiz Cylindrostachya* – Bog Orchid
- *Podophyllum haxandrum* – Bankakari, Giriparpat
- *Betula utilis* – (V. Bhuj), Bhajpatra, Birch
- *Swertia chirayita* – Chirayata, Swertia Ciliata Cherella (V. Kala Chirota)
- *Rauvolifia serpentine* – Sarpgandha, Chandrika
- *Rheum australe* - Rhubarb
- *Valariana jatamansi* – Tagar, Sugandhbala, Mushkbala,Indian Valerian
- *Aconitum spp.*
- *Malaxiz Wallichii*
- *Habenaria spp*
- *Malaxiz spp*
- *Malaxiz Muscifera*
- *Inula racemosa*
- *Selinum vaginatum*

better returns to the farmers and a sustained availability of quality material to the industry.

CONSERVATION AND SUSTAINABLE EXPLOITATION

Many important species have disappeared in the past and many more are on the verge of extinction. The demand for plant products is increasing at the rate of 10 per cent in the domestic as well as international market. The conservation cum cultivation of elite germplasm is the only option to ensure an adequate and sustainable supply of these species to the industry. Efforts have been mobilised at national level by engaging NGO's, individuals and different departments and ministries in the government organisations. The headquarters of the National Medicinal Plant Board (NMPB) are located in New Delhi. This Board works under the Union Ministry for Health and Family Welfare, Government of India. Its major function is to coordinate work on medicinal plants and their cultivation in different ecological regions. In order to link all the stakeholders in this cycle viz. growers, collectors, traders, manufacturers, exporters and others, nearly 25 state level medicinal plant boards have been set up under the leadership of the NMPB to increase awareness about cultivation, harvesting, processing, packing and research at the regional level. For conservation of the natural medicinal wealth of India, a 'biosphere reserve'[1] needs to be established. A biosphere reserve is the best possible way to conserve the genetic diversity in its natural habitat. Apart from this, the selection of superior races and the production of a sufficient quantity of seeds and planting material for further cultivation are major areas that require attention and continuous work.

Documentation of plants and their use at the local level is required for prevention of the exploitation and for their sustainable use. As many species are nearing extinction, mass propagation at private and government land is now essential. New initiatives such as the establishment of Herbal Gardens at the regional level are also an important method to conserve as well as promote the cultivation of medicinal plants. It is imperative to produce trained manpower which can identify medicinal species and provide information regarding cultivation of medicinal plants. It is also crucial that the trainees be well equipped to carry out research at regional and local levels.The research mandate of medicinal plants needs to be shared with universities engaged in forestry, horticulture and agricultural work, so that the work on detailed taxonomy as well as cultivation processing



Spilanthus acmella: A Medicine Plant of Lower Hills

A medicinal herb at Potter's Hill

and extension is carried out by experts. Development of organised marketing system is equally essential at the regional as well as national level. At present, middlemen exploit the producers and industries. People cultivate medicinal plants but are unable to sell, as proper marketing infrastructure is not available. Similarly, industries also do not find certified material as per the ayurvedic pharmacopoeia of medicine. Lack of proper marketing of certified material forces the pharmaceutical industry to depend upon brokers/middlemen for a regular supply of the raw materials. Market intervention by the authorities will provide a platform for the farmers and consumers and improve India's international ranking in this regard.¶

Notes and References

[1] The programme of Biosphere Reserve was initiated under the 'Man & Biosphere' (MAB) programme by UNESCO in 1971. The purpose of the formation of the biosphere reserve is to conserve in situ all forms of life, along with its support system, in its totality, so that it could serve as a referral system for monitoring and evaluating changes in natural ecosystems. The first biosphere reserve of the world was established in 1979, since then the network of biosphere reserves has increased to 425 in 95 countries across the world (MAB, 2003). Presently, there are 13 existing biosphere reserves in India.

Amarnath Yatra Trail : Identification of Problems and Recommendations

R.L. BAWA

ABSTRACT

The Holy Cave Shrine of Amarnath is situated at an altitude of about 4114 metre above sea level amidst a long stretch of Kashmir's mountainous countryside. Believed to be the abode of Lord Shiva, it is the holiest of the Hindu pilgrimage sites. Devotees visit the shrine after going through days of arduous journey either on foot or on pony backs for a darshan (vision) of Lord Shiva.

Till 1984, the Holy Cave was approachable only through a traditional track from Chandanwari about 14 kms from Pahalgam. Recently the Indian army which partly controls and also maintains the Srinagar-Leh road opened a new route from Baltal point about 6 kms from Sonamarg.

Unfortunately, pilgrims face numerous difficulties while traversing on these routes to the Holy Cave of Amarnath. This article is an extract from a comprehensive proposal for the development of the Amarnath trail. It examines the feasibility of the traditional route to the shrine, the physical constraints, the level of services provided on permanent or temporary basis and the hazards and difficulties experienced by the pilgrims trekking on this route. It also makes recommendations for improving this route to the site of the Holy Cave that is of great religious significance. The need to take urgent action to cater for the increasing number of pilgrims is emphasised.

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HISTORICAL AND RELIGIOUS SIGNIFICANCE

The story of Amarnath Yatra is said to be much older than its recorded history. In his article in *Tribune* of 24th June, 2001, K. L. Noatay has stated that "According to one belief, Maharishi Bhrigu was the first person to have sighted the cave and the Shivalingam therein and he identified this as the place where Lord Shiva had recited the secret of Amaratva to Goddess Parvati. He had detailed his disciple Takshat with a stick to guard the Shivalingam and propitiate the deity. This happened on the full moon day in the month of Shravan, corresponding to the period of July-August". Noatay also states "Legend further has it that from 1008 to 1048 BC, King Nar,who was a great devotee of Lord Shiva, visited the Holy Shrine on Rakshabandhan every year. That is how the tradition of the annual Amarnath Yatra originated".

Apparently, the existence of the Holy Cave was forgotten for a few decades and it is believed that in the recent times, the Holy Amarnath cave was rediscovered by a shepherd named Akbar Buta Malick, a resident of a village near Aismaqam in Kashmir valley. He was grazing his herd near the Holy Cave when a *sadhu* gave him a sack of coals. When Mallick emptied the sack, pieces of pure gold tumbled out. He went back to the cave to thank the *sadhu,* but he was no longer there. This incident took place on a full moon day during Shravana. The rediscovery revived and strengthened the tradition of Amaranth Yatra. The Kashmiri Muslims too believe that a visit to the Holy Shrine brings prosperity. In view of the cave's rediscovery by a Muslim, the Amarnath Yatra assumed a secular character and the offerings and earnings of the shrine are shared among the descendants of Malick, Pandits and other locals managing the shrine. The three lingams (of Shiva, his consort Parvati and their son Ganesa with Shiva's being the main and the tallest) are giant stalactites, formed by water dripping through the perforations in the limestone roof of the cave, and are believed to wax and wane with the lunar cycle, reaching their peak by the full moon day in the month of August each year.

THE ROUTE

The Holy Cave is located about 141 kms from Srinagar - the present origin of the journey of "Chharri Mubarak". The traditional route takes pilgrims via Pahalgam, Chandanwari, Sheshnag, Panchtarni and Sangam Point where the newly developed route from Sonamarg-Baltal meets. Out of the total distance of 141 kms, 96 kms upto Pahalgam, is a metalled highway and 16 kms further, upto Chandanwari, is also motorable. The remaining part of the traditional route covers a total length of 32 kms which comprises of a two to three metres steep mule track that is quite steep with level patches in between.

The Holy Cave is also approachable from Srinagar via Kangan, Gund, and Sonamarg. The total distance between Srinagar and the Holy Cave as per this route is about 109 kms. The first 94 kms of the distance on the Srinagar-Zozila-Kargil-Leh Highway which is being maintained by the Border Road Organisation is a smooth and well-metalled road. From Baltal to Bararimarg located at a distance of about five kms is motorable. The remaining ten kms distance is a two to three metre wide mule track with a very steep ascent and descent. Certain stretches of mule tracks are so difficult that no load on their backs can be carried.

The maximum number of pilgrims undertake the *Yatra* to reach the Holy Cave on the specific day of Saravan Purnima, the trail route officially remains open during the months of June, July, August and September. For the rest of the year the entire area becomes inaccessible, covered with three to five metres of snow.

PRESENT CONDITION

With a starting point at Chandanwari and two night halt points at Sheshnag and Panchtarni, the traditional route is about 35 kms long. After Srinagar, Pahalgam is the main entry point where arrangements are available for registration of ponies, accommodation, etc. for pilgrims enroute to the Holy Cave and back. Similar facilities for booking of night accommodation, hiring of ponies etc. are also available at Chandanwari,

Chandanwari to Pishu Top - Steep Climb

which is the first night halt point at a motorable distance of about 14 kms from Pahalgam. The second and third night halts are at Sheshnag and Panchtarni, both at a distance of about 14 kms from each other. The last lap of the journey from Panchtarni to the Holy Cave is about 71 kms. The entire stretch of the trail can be conveniently covered in three days and three nights. Small clusters of shops also spring up at few convenient locations enroute, in between various night halt points. These temporary structures come up as per the need of the pilgrims and lack propoer planning.

Chandanwari, located at Latitude 34.5° and Longitude 75.27° and having an elevation of 9,500 feet, is the first camping ground called Tanin. This area is located at the confluence of the Zojipal and Lidar streams. It lies about 13 kms north-east of Pahalgam, on the road leading towards the Holy Cave. It is a triangular shaped grassy plain of considerable extent.
The *yatra* route starting from Chandanwari is quite pleasant. However, while the route is exhilarating along the Lidar river, it is immediately followed by an arduous steep climb to the Pishu Ghati through a zigzag trail about two km long. Between Sheeshnag and Panchtarni, the pilgrims have to cross the lofty Mahagunas Pass at the height of about 5,000 metres. Another steep ascent has to be negotiated before reaching the Sangam point which is located at a distance of about four kms from the Holy Cave.

The recently opened alternate route from Baltal to the Holy Cave is much shorter and can be covered both ways in about ten hours time. The route, though is more difficult because of the narrow and dusty paths, steep slopes and comparatively under-developed enroute facilities. Some facilities have become available but these cease to exist a few days after the day of "Saravan Purnima". During the "Saravan Purnima" day of 1989, which fell on 20th August that year, as per the count made by the Pahalgam Project Organisation, about 40,000 pilgrims used the traditional trail, that is from Pahalgam side and about 60,000 pilgrims used the Baltal side trail. It is envisaged that in order to save time more pilgrims would use the shorter route in future. Improved facilities on this route will attract more pilgrims.

The feasibility of making the shorter route less hazardous is now being debated in certain quarters. It is feared that Baltal route may become more popular thus reducing the use of the traditional route. However, it can be estimated that the number of pilgrims even on the traditional route would increase in the coming years though the percentage to the total combined number of pilgrims on two routes may decrease from the present 40:60 ratio. With the increasing interest in trekking amongst young Indians, the traditional route is likely to become more popular. In order to cope with the ever increasing rush on the *yatra* days, it is advisable to popularise both the routes by providing adequate facilities during the *yatra* period and reasonably less during the remaining period when the routes are officially open.

PROBLEMS ENCOUNTERED AND RECOMMENDATIONS

Pahalgam - Chandanwari Segment:

Pahalgam is the first entry point to the Amarnath Yatra Trail. It is located about 96 kms east of Srinagar. This resort town comes alive during the *yatra* period, when thousands of pilgrims and tourists perforce spend some of the journey time or even the night at Pahalgam enroute to the Holy Cave primarily for the following reasons:

- The Gauri Shankar Temple at Pahalgam is the starting point of the *yatra* where "Charri Mubarak" is placed on an altar a day before the start of the *yatra* procession
- The pilgrims if they so desire, can register themselves with the concerned authorities and organisations for obtaining shelter enroute and to hire ponies at Chandanwari
- A number of permanent tourist infrastructure facilities are available at Pahalgam

This 14 kms long stretch of Pahalgam-Chandanwari motorable road passes through a magnificent countryside (*pucca* road has not yet been completed except at the zig points). This unfinished surface makes it very dusty during the dry season - an unpleasant introduction to a *yatra* which later takes the pilgrims through beautiful snow covered mountain ranges that end at the awe-inspiring Holy Cave.

In order to maintain the maximum peace and tranquility in the resort town of Pahalgam and to retain its present character, every effort should be made to reduce the pressure of pilgrims at Pahalgam by relocating more facilities required by them to Chandanwari- the first starting point of the *yatra* trail. The Pahalgam-Chandanwari road should be tar finished to make it dust free.

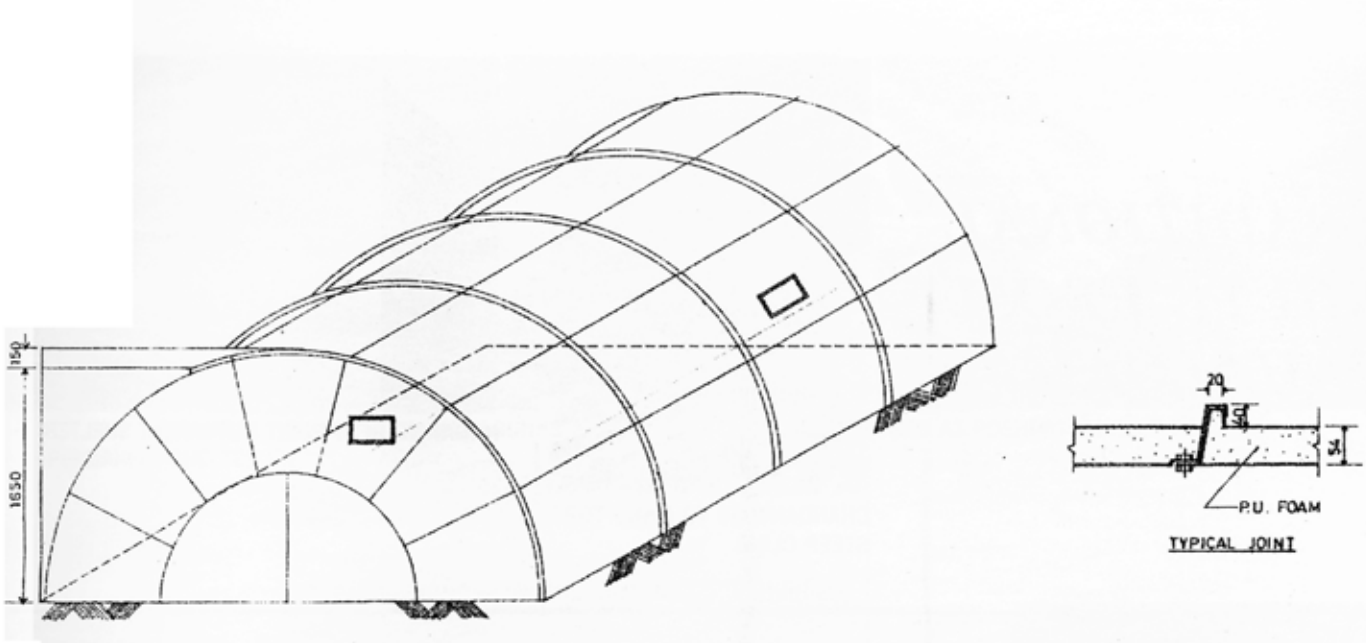
Trail to Zojipal

Chandanwari - Sheshnag Segment:

This part of the trail is about eight miles or 12.87 kms long with a height difference of about 823 metres. The trail can be further divided into smaller segments as under:

- *Chandanwari:* It is the first night halt and starting point from where the *yatra* to the Holy Cave begins either on foot or on pony-back. During the *yatra* season it is transformed into a township with tented accommodation. Though the tents are pitched in an organised manner in the open area around the existing rest houses, a large number of shops in temporary structures are put up on both sides of the *yatra* track in a haphazard manner. The regular individual shop owners and travel agents, leave behind the wooden frames of their shops for use in the following year. This spoils the scenic beauty
- *Chandanwari to Pishu Top Trail:* This part of the trail is about 3.2 kms long only. After trekking along the Lidar river up a short distance with gentle slope, there is a sudden steep rise up to Pishu Top. The entire climb is through a series of zigged tracks that have steps with high risers at places. The ponies find it difficult to negotiate these high steps particularly while descending on the return journey
- *Pishu Top:* It is a traditional rest place at an altitude of about 3,505 metres and is located at a distance of about 3.2 kms from Chandanwari. It has a large flat land where three permanent shelters already exist. During the *yatra* season, a number of shops, built with improvised temporary materials are put up by individuals in an unorganised manner
- *Zozipal to Nagakoti:* Zozipal is a traditional rest place at a distance of 4.8 kms from Pishu Top at a height of about 3,353 metres above sea level. There are three shelters at this point and a number of temporary shops come up during *yatra* season Moving further up to Nagakoti, the track becomes very narrow for the pilgrims and a separate bypass track of 1.5 kms is provided for the ponies. At Nagakoti located about 1.6 kms from Zojipal - the terrain is undulating with no available leveled land, hence no permanent facilities exist at this stop

A plane table survey of Chandanwari night halt point is needed to prepare a development plan for a camping site at Chandanwari. Additionally, one permanent Yatri Niwas (rest house) with a provision mainly for dormitories along with toilet facilities should be made with rooms/beds available on a rental basis. Adequate number of shelters either in tents or in reusable, pre-fabricated building material should be provided. In total, the shelter arrangements should cater to a capacity of about 50,000 persons considering the future requirements. To economise on space, the possibility of designing double storeyed structures with foldable ladders could also be explored. Prefabricated structures can be used for providing



ISOMETRIC VIEW

Proposed fibre glass hut shelter

office spaces, health check up units and banking facilities. The temporary masonry structures that are built for *sadhus* every year should also be replaced by prefabricated units. There is also an urgent need to widen the track between Zojipal and Nagarkoti.

Sheshnag - Panchtarni Segment:

Sheshnag, with its location at Latitude 34.5° and Longitude 75.33° at an elevation of 3,719 metres is the second night halt point in the *yatra* trail. Sheshnag is about a mile long and a half mile broad; and is connected with a small lake called the Zamti Nag, which is fed by an enormous glacier under three remarkable peaks. It is from this lake that the peculiar colouring matter of the Lidar river seems to be derived. A glacier stream, called Gratinpura, flows into the north-east corner of Sheshnag, and the road to Amarnath leads to this stream.

This lake is held in great reverence, and is annually visited by the pilgrims on their way to Amarnath Cave, who perform their ablutions in its sacred waters. It is covered with ice till June. The grassy valley affords ample space for camping. Sheshnag also has great potential for attracting tourists as this place possesses a beautiful natural environment. Before entering Sheshnag, the "Charri Mubarak" is taken straight to the lake where it is dipped in the lake water and then installed for the night on the altar specially built for this purpose.

Wavbal Top: Because the area is exposed to high winds, it is called "high wind hill". It is a traditional rest point located at a height of about 3,810 metres at a distance of about 4.8 kms from Sheshnag. Three single-storeyed shelters exist for the use of pilgrims at this spot. However, more such shelter space would be needed in the future.

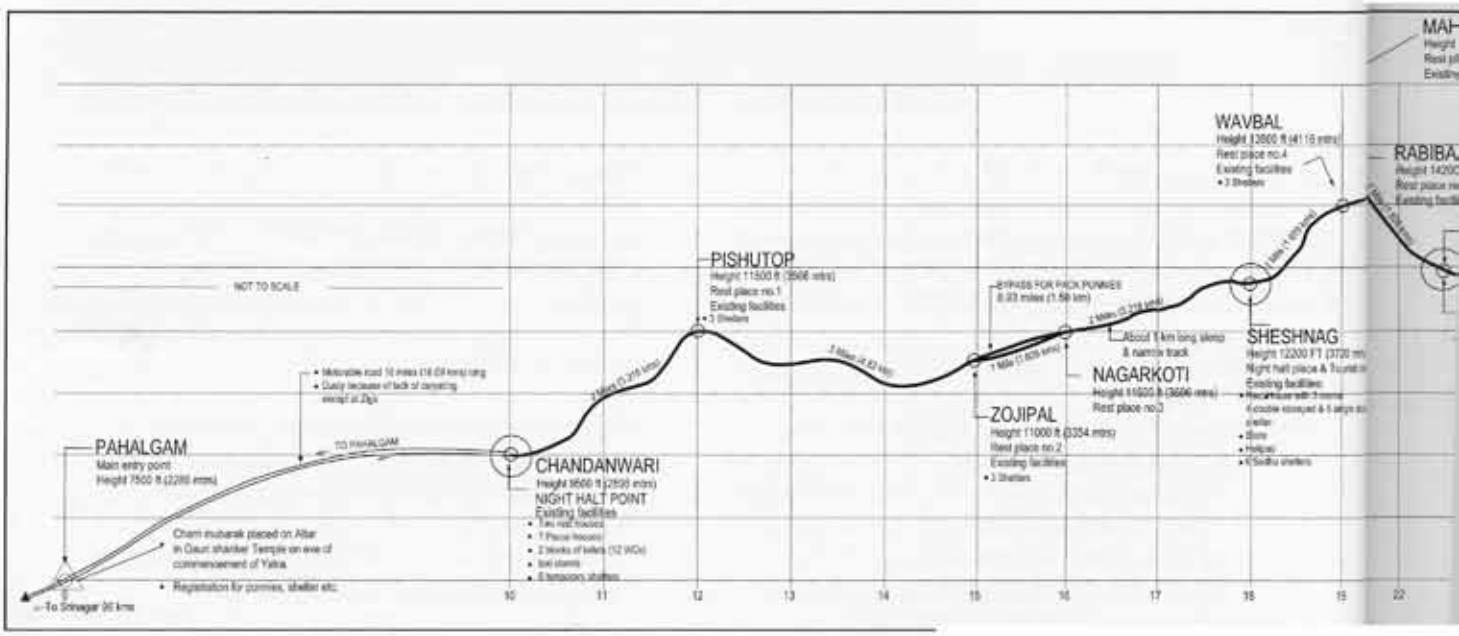
Mahagunas Pass: At a height of 4,511 metres above sea level, it is the highest point in the entire *yatra* trail. It is located at a distance of about 3.2 kms from Wavbal. The height affects the pilgrims and causes breathlessness and exhaustion due to lack of oxygen. Even the ponies are affected by the height.
The Mahagunas Pass requires special consideration for providing the minimum physical needs of a pilgrim. Since it is extremely difficult for any structure to remain intact under the load of about five metres thick snow and to withstand the high velocity of the blizzard, a permanent shelter has not been built as yet on this hilltop. One does find the remains of twisted iron angles which must have been used at one point of time to provide a semi-permanent structure.

Rabi Bal: This is a traditional rest point located at a distance of about 0.805 kms. Its height is not recorded but it is fairly high and must be properly developed for providing facilities as an alternative to the Mahagunas Pass. At present, no facilities exist on this point. The next rest point is Poshpathri at a distance of about 0.804 km from Rabi Bal.

TRADITIONAL ROUTE FROM PAHALGAM

CHANDANWARI TO PISHU TOP STEEP CLIMB

NAGAKOTI REST POINT PERMANENT SHELTER



CHANDANWARI NIGHT HALT POINT

PERMANENT SHELTERS ZOJIPAL REST POINT

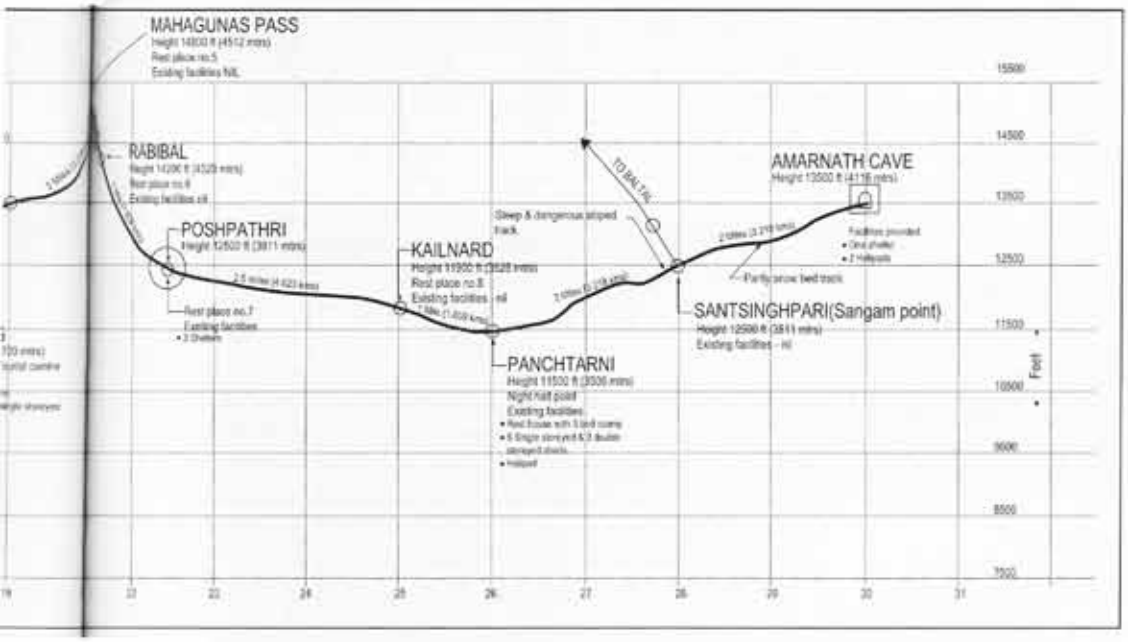
SHESHNAG NIGHT HALT POINT

River originated from sheshnag lake proposed construction of Bund to Raise Water

WAVBAL
PERMANENT SHELTER

TRAIL FROM MAHAGUNAS PASS

SHED AT POSHPATHRI REST POINT

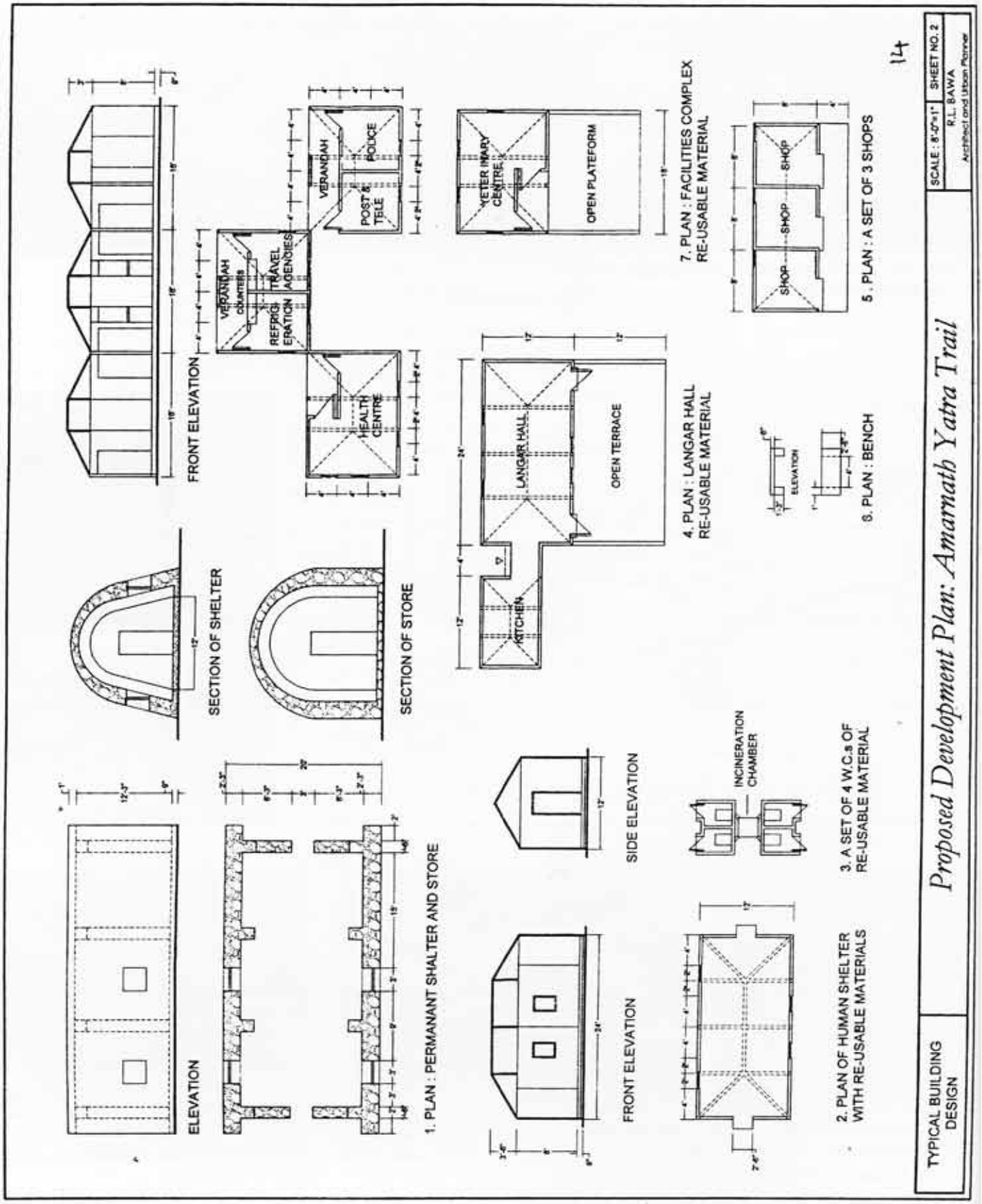


AMARNATH : STEPS TO HOLY CAVE

PROPOSED ALTERNATIVE TRACK FROM
RABI BAL TO POSHPATHRI

KAILNAD TRACK FROM PANCHTARNI

PANCHTARNI NIGHT HALT POINT
EXISTING PERMANENT SHELTERS


Proposed Development Plan: Amarnath Yatra Trail
TYPICAL BUILDING DESIGN
SCALE : 8'-0"=1"
SHEET NO. 2
R.L. BAWA
Architect and Urban Planner
14
FRONT ELEVATION
SECTION OF SHELTER
SECTION OF STORE
VERANDAH
POST & TELE
POLICE
VERANDAH COUNTERS
REFRIGERATION
TRAVEL AGENCIES
HEALTH CENTRE
YETER INARY CENTRE
OPEN PLATEFORM
LANGAR HALL
OPEN TERRACE
KITCHEN
SHOP
SHOP
SHOP
ELEVATION
7. PLAN : FACILITIES COMPLEX RE-USABLE MATERIAL
4. PLAN : LANGAR HALL RE-USABLE MATERIAL
5. PLAN : A SET OF 3 SHOPS
6. PLAN : BENCH
1. PLAN : PERMANANT SHALTER AND STORE
ELEVATION
SIDE ELEVATION
FRONT ELEVATION
INCINERATION CHAMBER
3. A SET OF 4 W.C.s OF RE-USABLE MATERIAL
2. PLAN OF HUMAN SHELTER WITH RE-USABLE MATERIALS

Poshpathri: It is a traditional rest point which is located at a distance of about 2.5 kms from Mahagunas Pass and at a height of about 3,810 metres. The site is an isolated plateau and hence is safe from the hazards of avalanche. At present, there are three shelters and a number of shops are put up nearby during the *yatra* season.

Yatra Trail from Poshpathri to Kailnad: The present trail between Poshpathri to Kailnad crosses a number of shallow streams of water courses where the water trickles down constantly. The track thus remains wet all the time, making it slippery and unmaintainable. Due to the peculiar formation of the hill, with a large component of mud at the surface, the track becomes more slippery and dangerous for trekkers. The possibility of an alternate route, which is less vulnerable to such hazards could be explored.

Kailnad: There are two alternate rest points identified in this area. The first is the traditional rest point where one could see the remnants of a few shops which might have been set up during the last *yatra* season. The other point, which the team preferred, is the area around an existing wooden bridge constructed on the *yatra* route across the stream passing through the valley. The latter point is more picturesque and has easier accessibility to water.

A detailed plane-table-cum-contour survey of the entire Sheshnag area, including the bank of the lake, should be undertaken first. On the basis of the same, a Development Plan should be prepared by incorporating the following requirements:

- One Yatri Niwas or tourist hotel with a provision for about 20 bedrooms with adequate toilet facilities, dining hall, kitchen etc
- Platforms for tented or pre-fabricated, reusable structures for providing shelter to about 50,000 pilgrims
- Platforms for adequate toilet facilities
- Five additional permanent shelters
- One temporary Medical Centre; one temporary Veterinary Centre
- Two permanent shelters for ponies
- Platform for 50 shops
- Space for *langar* and permanent storage space

Panchtarni - Holy Cave Segment:

This is the last segment of the *yatra* trail which culminates at the Holy Cave, making the completion of the traditional "Charri Mubarak" procession on the day of "Sravan Purnima" and the fulfilment of the journey of immense faith and conviction of the multitude of devotees who brave a very difficult route to reach the soul satisfying destination.

Panchtarni: This is the third night halt point in the *yatra* trail. It is located at a distance of about 13 kms from Sheshnag and about 6.5 kms from Poshpathri. The site is located at a height of about 3,505.20 metres above sea level. It is a valley with large flat land where five streams meet. These streams drain the valley near the Amarnath Cave. They rise in the Koun Nag (Lat. 34.8° and Long. 75.32°), and in the glaciers lying between the Lidar and Sind valleys. As explained in the Gazetteer of 1890, "these streams are at first fordable, and flow in separate channels through a grassy valley between the snowy mountains; but, near the foot of Amarnath Cave, they concentrate into

Sheshnag night halt: P.P.O. rest house and the lake

an impetuous and impossible torrent, which forces its way through a narrow defile communicating with the Sind Valley, and being joined by a tributary from the South-West, it effects a junction with the head-waters of the Sind river at Baltal, at the eastern extremity of the valley. Throughout its course through this gorge, the torrents generally roofed with snow, a passage between the Lidar and Sind valleys is easily affected; but late in the season, when snowy bridge has in place melted, it is a matter of great difficulty to reach Baltal from the Panchtarni valley. People, who visit the cave, usually camp in the valley."

The Panchtarni area is surrounded by hills and the eastern part of the flat land being much larger in width is being used for providing facilities for the pilgrims. It is said that about 40,000 to 50,000 pilgrims stayed in Panchtarni during the eve of "Saravan Purnima" on 19th August, 1989. A *pucca* rest house with an alpine


Mahagunas resting point: Ht. 4,511 mts

type of hut structure, got wiped out during one winter season and left no trace of its existence other than the plinth. During another winter season, the avalanche pierced through a double storeyed permanent shelter.

Santsingpari (Upper Sangam Point): This is the last rest point before reaching the Holy Cave. It is located at a distance of about 3.21 kms, eight kms from Panchtarni and at a height of about 3,810 metres. This place is also called the "Upper Sangam Point" where *yatra* route from Saltal point meets the *yatra* route from Chandanwari. A lot of confusion is created at this point where pilgrims and ponies coming both from the Chandanwari and Saltal side *yatra* routes join together. About one lakh pilgrims descended on this place on 20th August, 1989 while trekking to Amarnath Holy Cave. As this rest point is narrow in area and is located at a high altitude, there is not enough space to accommodate such a large populace. There are no permanent facilities at this rest point.

Final Yatra Trail from Santsingpari to Holy Cave: Part of this trail is perennially covered with snow and


Track from Panchtarni to Kailnad

most of the path is not properly defined. This route carrys the largest number of pilgrims and ponies at one point of time particularly on the "Saravan Purnima" day and hence, this requires special consideration.

Holy Cave of Amarnath and the Surrounding Area:

Immediately after the pilgrims leave Santsingpari rest point, the Holy Cave becomes visible to them at a distance of about two kms. The sight of the Holy Cave brings the joy of likely fulfillment of the cherished goal. The hope of reaching the soul-satisfying destination rejuvenates the pilgrims and makes them quicken the pace of entry to the Holy Cave and bow in reverence before the icy idols of Lord Shiva, Parvati and Ganesha. The difficulty in walking at the glacier point can perhaps be overcome by using corrugated steel plates on top of the snow bed.

At present pilgrims coming from Saltal Yatra Point have to first descend to the lower Sangam Point of the three valleys and ascend again to meet the traditional route at the main Sangam Point. Not only the descending/ascending is a big strain on the pilgrims coming from Saltal Point but the combination of about 60,000 pilgrims in stages originating from this point with 40,000 pilgrims in stages using the traditional route, creates a lot of chaos thereby putting enormous strain on the management. The number of pilgrims is likely to increase in the years to come creating further problems both for the pilgrims and the management.

Reaching the Holy Cave:

The Holy Cave is located slightly on one side of the valley near the end at a height of perhaps about 90 metres from the track level. The Amravati stream flows down from the left side of the Holy Cave. The pilgrims are expected to take a bath in the icy waters of the stream before they enter the Holy Cave. The bathing place is neither properly developed nor is there any privacy. There are no separate, arrangements for bathing for males and females. The whole area is fouled with human excreta leaving hardly any place for reaching the banks of the Amravati stream, whose water is to be used for the purification of the body before entering the Holy Cave for having *darshan* of the Lord Shiva.

After the Saravan Purnima Yatra, the area gets littered all over with cans, wrappers, rubbish and filth particularly at the mouth of the Holy Cave and also

near the bathing place. There is a provision for one permanent shelter and two helipads near the Holy Cave. The temporary structures for shops, toilets and tented accommodation for pilgrims are put up in a very haphazard manner which not only makes the movement of pilgrims difficult but also spoils the natural aesthetics of area.

To reach the Holy Cave, one has to climb more than 200 steps which makes most of the *Yatris* breathless. The construction of long stretch of continuous steps in the initial stages in straight flight and later within the Cave portion in zigs both for ascending and descending purposes, creates the impression of confusion, unplanned development and ugliness near the Holy Cave around the three Lingams.

A plane-table-cum-contour survey of the Panchtarni Night Halt Point area should be undertaken immediately and a Development Plan be prepared making provision for permanent shelters (the old tradition of constructing temporary *sadhu* type shelters should be discarded), and health facilities etc.

Where the track from Satsingpari to Holy Cave does not pass over the snow bed, separate tracks should be developed, one for pedestrians and one for the ponies In case of the track on the snow bed, it may be difficult to maintain separate defined routes because of the melting of snow during hot weather. However, wider corrugated steel sheets should be spread over the snow bed track. This may facilitate the quicker and safe movement of the trekkers.

It is absolutely essential that the planning of the entire area available outside the Cave lying between the two existing Helipads and the development of the area within the Holy Cave, should be done in an integrated manner. The Development Plan should make provision for the following requirements:

- Proper and adequate bathing facilities separately for males and females, a set of changing rooms and urinals
- A long stretch of the bank of the stream should be kept clean and small patches of level land be developed at short distances for bathers to sit and relax by providing benches for their use
- A proper foot-path be developed connecting the main footpath system of the Holy Cave and the bathing area
- A large area between the bathing place and the Holy Cave should be left open and properly demarcated so as to provide free movement of a large number of pilgrims gathered on "Saravan Purnima" day
- Adequate right-of-way should be left for the Yatra tracks for easy and proper movement
- The track for pedestrian pilgrims should terminate near the tented accommodation or near the permanent shelters
- The track meant for ponies should have a separate terminal point
- There should be a complete segregation between the residential area and the shopping area. Plinths for about 1,000 tents, or pre-fabricated, reusable units should be provided
- At least four additional permanent shelters should be made for stranded pilgrims

Sangam Point : Merging of two trails

CONCLUSION

Though the routes to the Holy Cave of Amarnath require urgent development, the task itself is very daunting. The entire Amaranth Yatra Trail both from Chandanwari and Baltal points remain covered with

Track to Holy Cave from Sangam Rest Point

Amarnath: steps inside holy cave

Sangam point: merging of two trails

thick snow ranging from three metres to five metres deep depending upon the height of the area, during the major part of the year generally spreading between mid-October to mid-June. The area thus remains inaccessible during this period thus limiting the activity period. The heavy snowfall and the glaciers affect the tracks and various structures get damaged every year. These have to be repaired to make them usable after the snow melts thus limited time frame is coupled with the problem of unwilling skilled labour that refuses to work at this remote and difficult terrain. Besides the very high cost of construction, particularly comprising of traditional heavy weight materials, most of the structures are unable to withstand the destructive effects of snow. Hence, except for few permanent structures put up for providing shelters for human beings during the extreme inclement weather, the Development Agencies, both public and private, generally resort to use of temporary structures during *yatra* season. Even the selection of the material for shelters needs to be judicious with the possibility of reuse with every season. Despite these challenges, a comprehensive development plan for the routes to Amarnath and its subsequent implementation will benefit thousands of pilgrims visiting the Holy Cave every year.¶

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Building with Local Resource

JIGNA DESAI AND SANJAY CHICKERMANE

ABSTRACT

As designers and builders, one of the major challenges we face today is to to maintain a balance between the progressive technologies and the sustainability of the same in regions where the existing building traditions are fairly evolved and ingrained into the system. Considering this perspective, we have attempted to understand mud as a readily available resource, the evolution of the material with the introduction of various technological interfaces and the possibilities of developing an architectural language as in the case study of Hunnarshala in Bhuj, Kutch. Sustainability in this context means a self sufficiency with regard to maintenance, support and evolution.

BACKGROUND

The act of building has been going on for centuries. Through trial and error every region has evolved a system of building, which seems to be in tune with the issues pertinent to that place relating to the resources available (building materials, energy conservation, human resource etc.) and the specific needs of the people it serves. The resulting architecture (termed as traditional, vernacular or regional) is a response to the understanding of nature and its forces, available material and technology, lifestyle and culture. As it passes through generations of improvisation on the basis of experience, it becomes a part of an evolution in harmony with the changes in traditions related to other aspects of life. Most of the rural areas around the world are still part of the same continuity in tradition.

In the recent past, however, there has arisen a phenomenon of interventions by formal organisations that have a totally different process

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of building, actively participating in providing building infrastructure in the rural areas. The reason sited for this kind of intervention is the need for permanence and the technological backwardness of the existing methods.The building method introduced in this case is an approach of standardisation in terms of design and introduction of technology that is fairly alien to the users. Not only does this kind of intervention signify a break in the evolution of the existing techniques, it make the users dependent upon an external system and economy and is unfeasible in terms of the sustainability of the built environment over a long period of time.

CASE STUDY OF HUNNARSHAALA

The primary reason for selecting the works of this institute as a case study is that it promotes a technology that takes forward local building methods with a progressive attitude. It does not idealise the past to the extent of trying to recreate replicas of existing techniques, but builds upon the existing skill levels of the people in an attempt to create a merger between these skills and the alternatives provided by technology. The outcome is therefore a refreshingly new outlook to building, where the choices make sense because they are heavily built upon what the local people, for whom the building activity is being undertaken can do. Simultaneously, the inherent problems of the materials used in their traditional form are selectively weeded out. For example, while lime plaster is preserved, the use of unstabilised rammed earth is discarded and replaced by cement as a stabiliser.

EARTH AS A RESOURCE

Apparently mere mud, stabilised compressed earth is quite different structurally and functionally. Mechanically compressed earth, of which rammed earth is a subset, is a fairly old building material. It has been used in various parts of the world, not only as a material for cheap houses but for public monumental buildings for example, the Great Wall of China is made from rammed earth.

The transition, from using earth in its natural form, to stabilised earth signifies a tremendous journey, which has its basis in a constant drive to create a better material for building which is also inexpensive enough to gain mass popularity. Each step in this transition has signified a major improvement over the material used previously.

COB CONSTRUCTION

The use of organic matter such as straw and natural fibres to reinforce and hold a mud matrix together was probably one of the first examples of fibre composites known to the world. Clay like lumps of soil, sand and straw are constructed as smooth forms. The most appropriate architectural expressions have sloping walls (for structural stability), arches and wall niches. A plaster of lime and sand could be used to windproof the exterior from wind damage. Cob houses are suitable for the desert or very cold climates[1]. These are inexpensive to build, but the material has some inherent problems like its unpredictable strength, its lack of durability, its need of constant maintenance etc. The idea of compacting this material to create a denser, more closely knit material was conceived as a means of improving its properties.

RAMMED EARTH

This compaction was achieved by making formwork of wooden planks within which the loose earth was placed and rammed manually. This early form of rammed earth, while improving the strength and marginally enhancing the durability of the earlier form, still retained the inherent flaws of being unpredictable in its nature. In addition, the "reinforcement" being organic in nature, decomposed thus reducing the durability of the material in certain climatic regions. In the 20th century, the understanding of the chemistry and actions of cement and other binders made it possible to use these materials along with earth to give the material a more predictable and durable form. The earth now used for the walls is a screened engineered soil with around 3 per cent cement[2]. This mixture is compacted in form and can be used to build solid earth walls that are 18 to 24 inches thick.

ADOBE

With the advent of the philosophy of specialisation and mass production, the technology of moulding earth into blocks which were used as building modules called Adobe was initiated in the 18th century. Stabilisation by using a binder is, however, a far more recent phenomenon. Construction methods and the composition of the adobe will vary according to climate and local customs. An asphalt emulsion is occasionally added to help waterproof the adobe bricks[3]. A mixture of Portland cement (7 to 8 per cent) and lime may also be added, but these materials will add to the cost[4].

Rammed earth circular structures,
Source: Hunnarshaala

The use of this material as either stabilised rammed earth or stabilised earth blocks is validated by studies which show that

- They have a relatively low environmental impact in most contexts, because they use the naturally abundant materials in their relatively natural state
- Since the material used is a local resource secondary sources like transportation etc. do not come into play
- They increase local employment and encourage local institutions to administer the building process
- This material compares very favourably in cost, strength and other properties with the rival material it replaces

These advantages make it a very viable building material or system. There, however, exist some problems in their indiscriminate use as well.

- Earth, intrinsically, is a very individualistic material and since the earth itself shows a tremendous amount of change in its composition, the material and its stabilising process needs to be very thoroughly monitored. Some soils are notoriously difficult to stabilise, and the awareness of these problems is essential before use
- At the onset of the technology, cement stabilising was claimed to be a very stable process and the product made was claimed to be almost infinitely durable. These claims have not lived up to their images, the primary reason probably being the lack of complete awareness of the stabilising procedure by its exponents
- Since it is still not a mainstream technology, the infrastructure needed (machines for making blocks, formworks for making rammed earth, etc.) is not largely available. For large scale sites, this is not a big problem, as the capital investments for acquiring these generates little escalation to the product cost, but it could be prohibitive in small sites
- Detailed and competent soil analysis is an ongoing procedure, and it would affect the project in the same way as the above situation
- Due to a higher compaction and an increased density, the material shows poorer thermal behaviour than unstabilised, non-compacted earth

REASONS FOR SELECTING THIS TECHNOLOGY

In addition to the above parameters, there were other ruling reasons for Hunnarshaala to choose stabilised earth as an alternative technology for the mass rehabilitation rebuilding it undertook post the earthquake in Kutch, 2001.

- Bad performance of concrete in the region. This was mainly due to the rural people not identifying with the material and not having the requisite skills of working with it
- Since the rural people are essentially comfortable with soil and understand it very well, they have an inherent feel and a better structural understanding of the material
- Since a substantial number of units had to be built, infrastructure was a very affordable system to invest in, because the design was standardised and modular in nature

GIDC Housing, Kutch, Source: Hunnarshaala

KUTCHI BHUNGA

Environmental Comparison of Building Materials

Environmental Comparison of Building Materials

Sr. No.	Particulars	Kiln Fired	Country Bricks Fired Bricks	Stabilized Compressed Earth Blocks	Rammed Earth	Concrete Blocks	Sand-Stone Blocks	U.C.R
1	Size & Volume	22.7 x 10.4 x 7.2 = 1.7 lit	21.4 x 10 x 6.2 = 1.32 lit	24.8 x 24.8 x 9.8 = 6.02 lit	Cast in situ	19 x 19 x 39 = 14 lit	20 x 15 x 40 = 12 lit	Random
2	Weight of Brick	3.6 kg = 2100 kg/m³	2.4 kg = 1700 kg/m³	11.5 kg = 1950 kg/m³	Density = 1950 kg/m³	25 kg = 2080 kg/m³	28.5 kg = 2376 kg/m³	Random
3	Stabilization	Fire	Fire	Cement 8 %	Cement 8 %	10 % Cement	Not Required	Not Required
4	Units per m³	588	682	165	-	83	83	-
5	Pollution Emission (CO_2) in Kg / c m²	39	126	16	16	Data not available	Data not available	Data not available
6	Energy Consumption (wall)	539 Mj/m²	1657 Mj/m²	110 Mj/m²	110 Mj/m²	Data not available	Data not available	Data not available
7	Dry Crushing Strength	40–120 kg / c m²	30-40 kg / c m²	60 + kg / c m²	60 + kg / c m²	50-60 kg / c m²		60 + kg / c m²
8	Water Absorption	9–20 %	10–20 %	9–11 %	8–10 %	11-15 %	Data not available	Data not available

Source: Hunnarshaala

- One of the goals of the organisation was to promote local entrepreneurs. The relatively low cost of the infrastructure allowed local people to take up the responsibility of providing the products

PROCEDURES FOLLOWED TO ENSURE AND FACILITATE THE APPLICATION OF THE TECHNOLOGY

After the decision for using the technology was made, the next step was to validate and justify it, scientifically, legally and functionally. The following steps were taken to do this:

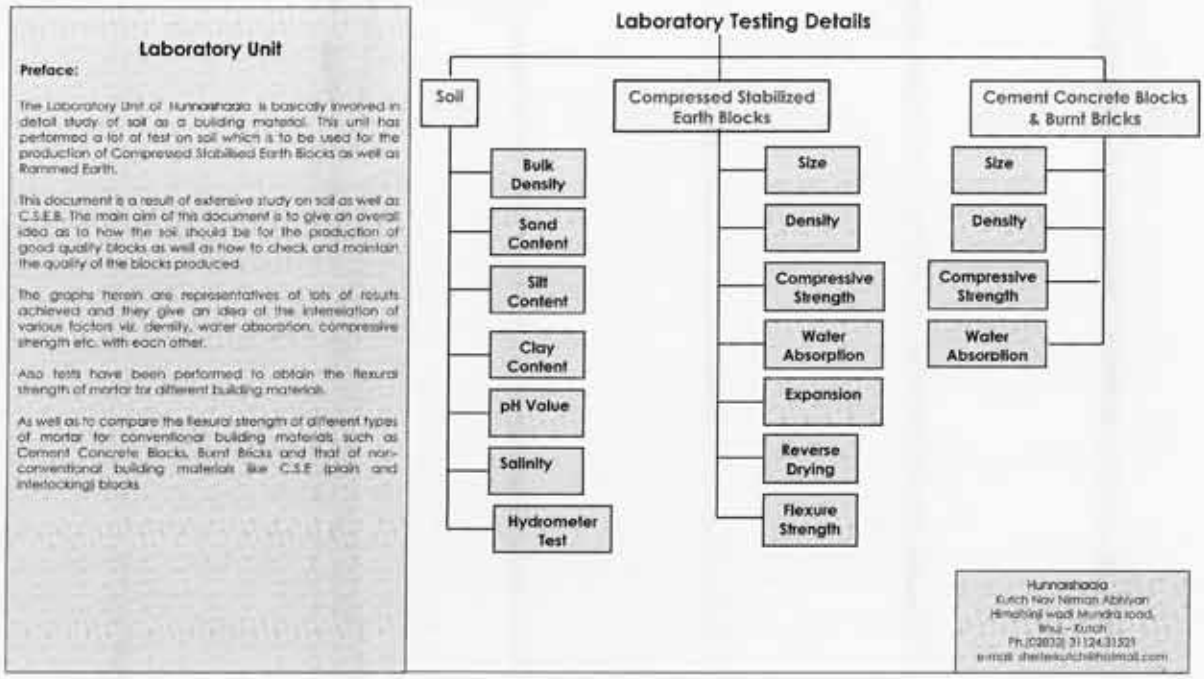
- Extended and intensive workshops and training programmes were taken, first for the set of people in Hunnarshaala who were going to be involved in the dissemination of the knowledge, and then for the artisans and craftsmen who were going to implement the system
- A soil analysis laboratory was set up, and the goal of the laboratory, in addition to testing specimens, was also working towards simplifying and standardising the testing process
- Talks were initiated with leading engineers and educators to get a technical verification of the process

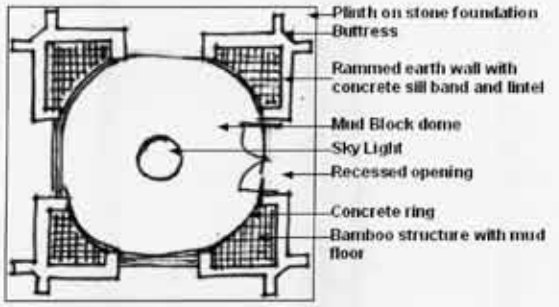
THE LANGUAGE OF THE MATERIAL AS EXPLORED BY HUNNARSHALA

Like other materials that work either as monolithic structures or as stackable building units, mud too works in the framework of load bearing or framed classification. The choice of the system is generally dependent upon:

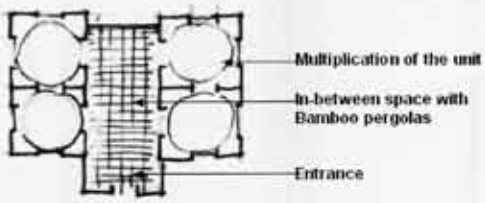
- The type of soil and other material available that are used for strengthening
- Accessible infrastructure (i.e. tools, water etc.)
- Possibility of roofing systems that can be created based on obtainable materials
- Comfort level of the local labour
- Area requirements of the program (i.e. smaller repeatable spaces versus single large space)

Alternatively, the language may also be determined by the degree of formality in the nature of the program The institutional buildings, for example, are built in tune with government guidelines (involving a higher degree of technical intervention) as they are to be handed over to an organisation which is in turn responsible for its future maintenance, whereas methods and techniques used in houses take into account the understanding of the users and the possibility of passing the building activity on to them.





Unit Layout



Layout Pattern

Mangal Mandir Library, Bhujodi,
Source: Photograph: Hunnarshaala, Sketch: Jigna Desai

Hunnarshaala's continuation of the traditional methods is based on an understanding of these as a platform where parameters of material availability, climatic response and basic building skills have been perfectly addressed. Rather than sit around and re-invent the wheel, one can use the wisdom distilled over the centuries and reinterpret it to create contemporary design.¶

Notes and References

[1] www.architecture.about.com : Cob Houses and Earth architecture

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Sustainable Solutions

Blue Green Hyderabad

JYOTSNA BAPAT AND JOEP VERHAGEN

ABSTRACT

There is a growing public awareness and concern about conserving 'commons' in urban built environment. Hyderabad in Andhra Pradesh, is no exception. Therefore building popular support for the Netherlands government's development funding agency's (RNE) 'Green Hyderabad Environment Project' (GHEP-II) was easy. The Hyderabad urban area has a series of tanks, created historically for irrigation purposes. The conservation of 87 out of 169 of these tanks / lakes was the priority of this project. The long-term sustainability of the lakes is a major issue that is linked to complex angles of inclusion and governance. While the development agency worked with international funding and experience, social inclusion became an integral component for long term sustainability of such projects. A Technical Assistance team headed by a sociologist was constituted for ensuring social inclusion.

Hyderabad Urban Development Authority (HUDA) was responsible for the overall project management and co-ordination. The Integrated Lake Management (ILM) was constrained in its work due to multi-stakeholder's participation in its activities. HUDA created and implemented the vision of lake development on the pattern of Hussain Sagar, the largest lake conserved in the city. It also ensured the participation of the local middle class communities surrounding the select lakes. Since the marginal communities who lived around the lake and depended on it for survival were few, the long-term sustainability of these five lakes remains debatable.

The authors of the article Jyotsna Bapat (environmental social scientist) and Joep Verhagen (environmental scientist) are both independent consultants on the evaluation mission for the Green Hyderabad Environment Project funded by Royal Netherlands Embassy.

Greenbelts along roadway margins

BLUE GREEN HYDERABAD

Hyderabad has grown rapidly in the last two decades. During the eighties and nineties, the annual population growth rate was 24.2 per cent and 13.86 per cent respectively. The planners and policy makers, with the support of the elected representatives, envisioned an environmentally safe city of the future. Since the nineties, a series of efforts were made, with bi-lateral and multi lateral financial aid, towards creating an environmentally sound urban settlement. It involved creating a network of underground sewage lines and a plant to treat the sewage. Solid toxic hazardous waste treatment facilities were created to take care of the toxic, hazardous wastes generated by the pharmaceutical and chemical dye industry growing in the Jeedi Metla and other industrial areas. The Integrated Lake Management Project (ILMP) thus takes care of all aspects of the lake's development.

BACKGROUND OF FUNDING

To begin with, the World Bank funded a social forestry project in the state during the eighties. At the same time, it gave funds for the urban area of Hyderabad, that consisted of one Municipal corporation,10 Municipalities and 103 Gram Panchayats. In the early nineties, a water and sanitation project was initiated. This project also focused on the cleaning up of the Hussain Sagar Lake that had reached petrifaction levels. In hind sight this appears to be the starting point for the ILMP. The model provided an environmental engineering solution to the polluted water bodies. The solution contained two steps. The first step was to clean up the water body by putting up a sewage treatment plant on its banks. The second step was to put ringed seawares around the water body to mark its boundary, and isolate it thus stopping further pollution from the human habitation and industry.

GREENING PROCESS

The Green Hyderabad Environment Project (GHEP I) initiated in the mid nineties and funded by the Royal Netherlands Embassy was consistent with the vision of a green Hyderabad urban area pursued by the planners. It was an Urban Forestry project that focused on greening of the city. The vision was to create an environmentally and aesthetically green Hyderabad by creating plantations and supporting them through nursery development. Phase two of the GHEP was an extension of that vision through the formation of ILMP. The conservation efforts had an additional dimension - that of preserving cultural heritage in the form of lakes.

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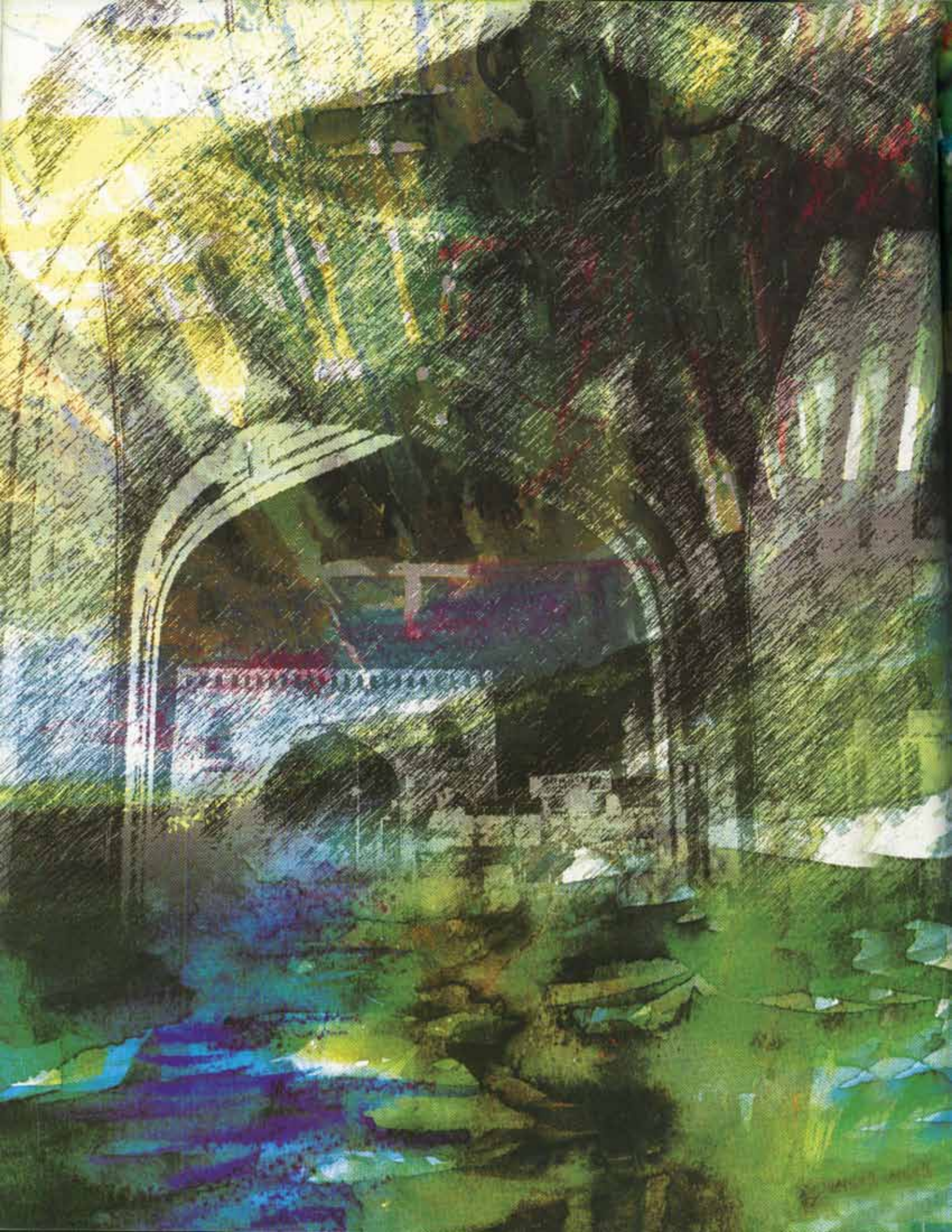

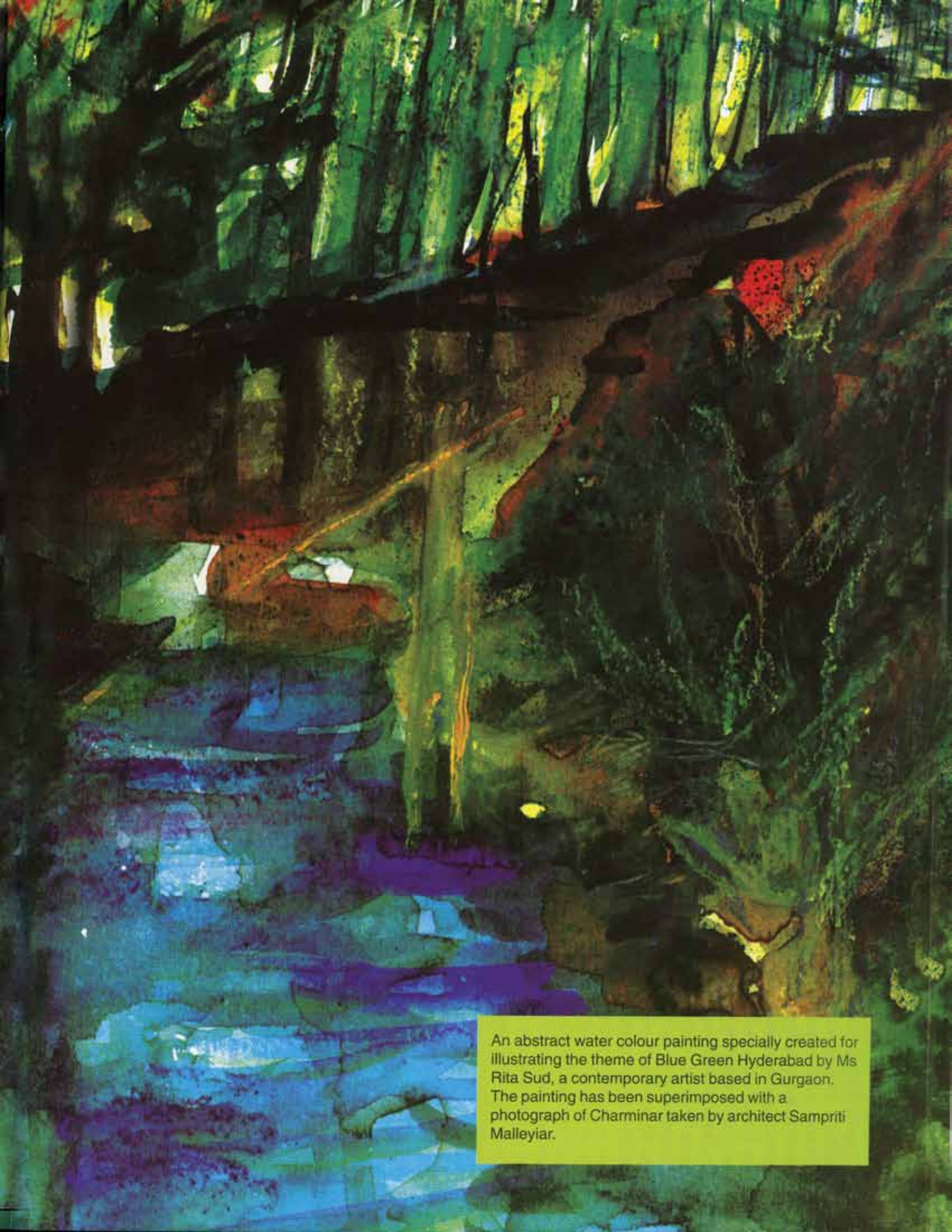

An abstract water colour painting specially created for illustrating the theme of Blue Green Hyderabad by Ms Rita Sud, a contemporary artist based in Gurgaon. The painting has been superimposed with a photograph of Charminar taken by architect Sampriti Malleyiar.

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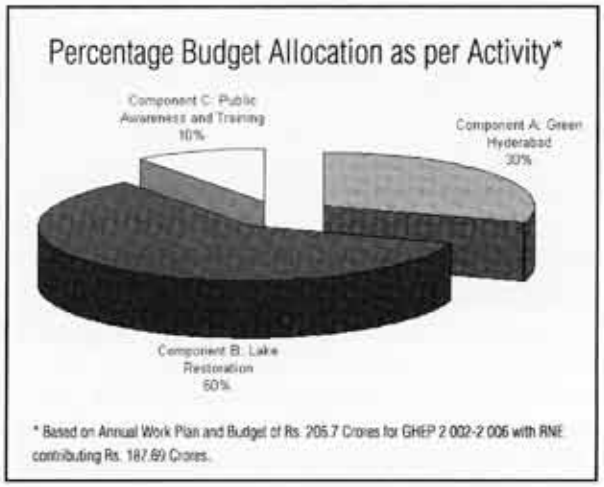
The women were given an opportunity to generate extra income by the concept of 'homestead planting', managing tree nurseries in their home

The decade of the nineties was the time that showed growth in the software industry. The political ambition of creating a 'Cyberabad' was a vision promoted by the then Chief Minister. One of the advantages of globalisation is the greater visibility of development achievements. As more people travel and have access to communication about other cities and countries, people are exposed to new ideas and new images of cities.One of the plus point of this enlightened citizenry is that they raise questions like 'why not us?' Over the last ten years the city has celebrated its 400 years and experienced the IT revolution in the country, the political leadership consciously promoted Hyderabad as a 'global city' that was proud of its local uniqueness. There was a growing consciousness among the residents of Hyderabad about its special history and its exclusive physical environment. The 89 lakes that were notified under the GHEP II project are distinctive and have an exceptional history. They were artificially created irrigation tanks with *Bunds* along the main river basins flowing through the urban development area (marked by the town planning authority HUDA) by the various *Nizams* to irrigate the land in the semi arid region. The boundaries for these lakes combined the government lands and private *pattas*. As the city became more urbanised, private landowners were draining the smaller lakes out by breaking the *Bund*, reclaiming their lands and selling the land for housing and commercial development. Citizens in the city were aware of this trend and wanted to reverse it. GHEP II provided such an opportunity and so a tremendous citizens support existed for this project.

IMPACT ON LAW

As a direct result of this project, the Land Water Tree Act 2002 (Gazette Part IV B, April 2002) that explicitly

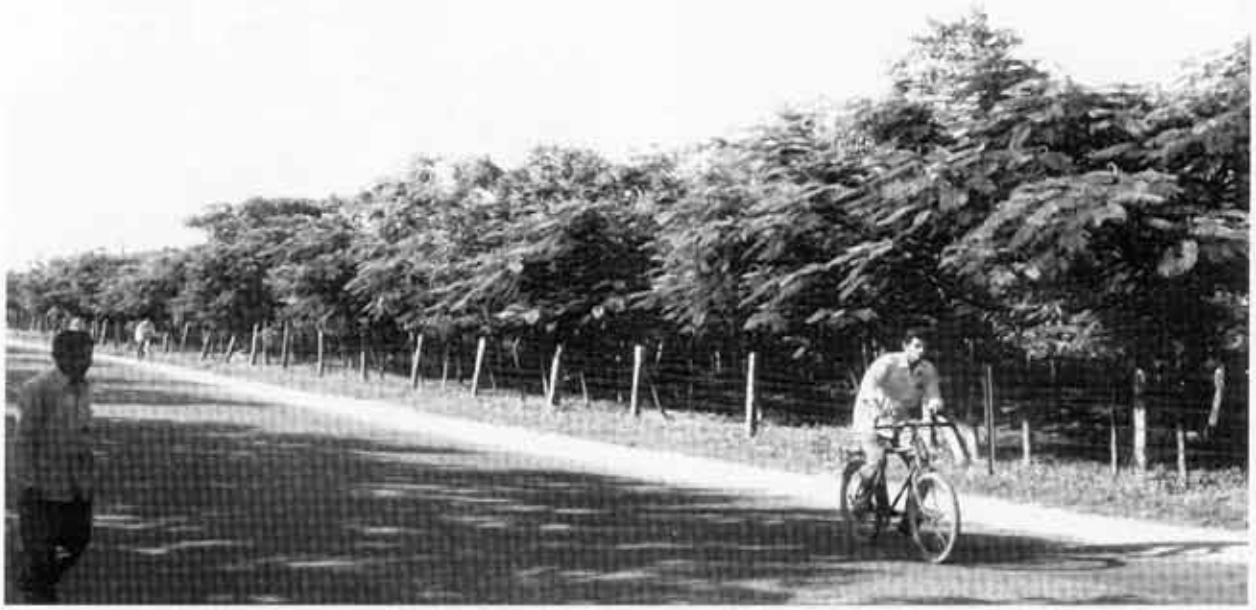


stated the protection of inland water bodies was enacted. This led to the public notification of the 169 lakes through mass media by year 2000 (Public Notification, March 2000)

The vision for conserving these lakes as a common property and natural resource was however never explicitly mentioned in any document. The concept came from the Hussain Sagar restoration project. This was reflected in the budgetary allocation, for the project dealing with five major lakes (Mir Allem, Langar Houz, Saroo Nagar, Safiguda and Nalla Cheru lake) as per the progress report (2003).

MULTIDIMENSIONAL DEVELOPMENT

As the conservation efforts involved multi-stakeholder participation for its success, HUDA was entrusted with the overall project management and co-ordination. HUDA succeeded in creating and implementing the vision of lake development on the pattern of Hussain Sagar, with another international funding for five more large lakes in the urban area.



Under the project 150 hectares of road margins were planted

The project was unique as it succeeded in combining the 'green' and 'blue' dimensions in conserving the public spaces created as a result of the unique agro climatic history of the city, in the face of urban growth. The first phase of the GHEP had provided the competence needed for creating and managing urban greens. This project had undertaken the greening of the urban areas by taking up road side plantations, planting of road islands/dividers and barren waste lands. A series of urban nurseries were created to meet this demand by effectively employing poor women from the neighborhood of the nurseries, and providing them with extra incomes from the fuel and fodder generated by these plantations.

As part of GHEP II additional nurseries were subsequently created by involving poor women from the surrounding areas of the lakes. These urban nurseries, situated on forest lands and revenue lands within the lake, also provided the poor women with supplementary incomes. Such an effort required a multidepartmental collaboration with a 17 member steering committee and 18 member executive committee (Government order of February 2, 2002.) The lands within the lake boundaries were under the revenue department whereas the social forestry department was responsible for the greening components. The planners and engineers from the planning department were needed to build the ring bund and demarcate the border of each of the lakes.

HUDA mobilised a policy instrument to issue a government notification to identify and declare a list of the lakes that were worth conserving. While individual lakes in various other cities like Mumbai and Ahmedabad may have been preserved taken up in the past, this was the first large scale integrated urban lake program at Hyderabad.

The main challenge was to come up with a plan for the lake development that satisfied multiplicity of government agencies involved in the implementation of the project. The revenue lands on which the lakes stood had to be operationally transferred to HUDA, the planners and the politicians supported by the builders' lobby had to agree on the boundaries of the lakes, in order to construct the ring bund. The vision that emerged in ILMP is a techno-economic solution, in spite of the best efforts of the TA consultants to include a public participation approach. As the funding from RNE was based on a cost reimbursable basis, HUDA was conducive to spending the money, as quickly as possible and in more tangible activities such as the engineering options.

The project was externally funded, so the resources could only be used for capital asset creation. The issue of the long-term sustainability of the ILMP was important and had to be resolved at the very onset. The TA consultants had seen a participatory, bottom up approach as an innovative solution for HUDA.

Since it was envisaged as an engineering initiative, it was assumed that a source of revenue for maintaining the assets would have to be provided during later stages - either by the local governance body or by the municipality of the *Gram Panhayat*. It was further stipulated that ultimately an independent source of revenue should be created.

ULTIMATE REALITY: SELF-SUSTAINING APPROACH

The approach to lake conservation was the promotion and implementation of engineering solutions on the pattern of Hussain Sagar Lake. This constituted of a tank bund, a ringed seaware and a (mini) pollution treatment plant to clean up the lake. A garden complex was planned where entry fees could be charged for revenue generation. This process could maintain the greenery of gardens and simultaneously support the running costs of the treatment plant. Five of the 87 lakes identified for the project were developed following this model, these were Langar Houz, Mir Alam, Saroo Nagar all in MCH, Safiguda in Malkajgiri and and Nalla Cheru in Uppal.

COMMON PROPERTY NATURAL RESOURCE (CPNR)

In any efforts to conserve a common property natural resource (CPNR), the crux is the issue of governance. The question is how to ensure the CPNR is able to resist the pressures of economic development and continue to be a common property accessible to all people, especially the marginalised groups that depend on it for their subsistence and livelihood. In the past, seven major states in India have had negative experiences with regard to their minor forests (Jodha, N 1990). Global indications show that without the commitment and accountability of concerned authorities and ownership of the commons by the neighborhood communities, the commons inevitably cease to remain so. Decentralised participatory management of the CPNR was the only way to ensure the long-term sustainability of a CPNR. To make certain that the lakes were conserved in the best way, it was ensured that the lake dependent communities continued to exist and sustain their livelihood from these lakes. The dependents consisted of diverse communities, some of whom fished in the lake waters, others who grew vegetables and fruits in the lake basin when the waters withdrew in summers, the buffalo herders that took the animals to the waters and used the *Paragrass* that grew on the banks for

Urban forestry of HUDA

A Site with logo displayed

feeding their animals and the washer community. The danger with the vision of the lake as a bounded entity with public gardens was that there might be a conflict of interest with the needs of all these communities and precedence might be given to the leisure activities of the urban middle class who might wield greater power.

SENSITIVITY OF RNE : SOCIAL CONCERNS

As a global funding agency, RNE was well aware of these issues. Awareness and international experience had sensitised the development-funding agency to the importance of involved participation by the communities surrounding these lakes and to accept the ownership of these lakes. Therefore, a lot of emphasis was put on decentralised and participatory management of the lakes (*Guidelines* July 2003). To facilitate translating this vision of inclusive community involvement and participation, in the lake conservation project into reality. A Technical Assistance Team of consultants was constituted to guide Hyderabad Urban Development Authority (HUDA) and to make certain that social concerns were not overlooked. The composition of the Technical Assistance Team is an indication of this

phenomenon. Unlike an engineering project where an engineer leads the project team, a sociologist led the TA Team.

UNEXPECTED RESULTS

In spite of many good intentions and proper planning, the ground reality was very different. A chance to experiment with the creation of a sustainable lake involved a creative and comprehensive resource-sharing arrangement where the needs of all stake holders (including those of vulnerable and marginal communities) were to be taken into account. The potential to develop alternate models of lake development, varying as per the differing composition of stakeholders, never emerged.

All the enthusiasm and knowledge of the TA consultants and the vision of RNE, was wasted. The resultant Lake development project was successful in creating techno-economic solutions and that too only for five of the 87 lakes identified for this project. The rest still await further funding. The withdrawal of financial assistance for the project at the end of the third year, i.e. 2004, by the RNE due to Government of India policy did not help matters.

CONCLUSION

The projects were thus a partial success. They created legislation to support similar projects, enrolled the support and participation of local middle class communities and land developers in the area surrounding the select lakes. The completed lakes met their target of providing recreation spots and conserving the natural beauty of the lakes. Although in some cases compensation was given to cattle herders, the involvement and participation of lake dependent users and marginal communities in determining the future development of the lake was minimal. Therefore, the long-term sustainability and the maintenance of the completed lake projects still remains an unresolved issue. The project was more of a learning experience.¶

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Heritage Album - 1

Text & Photographs: Bishakha Shome

Bishakha Shome, Project Director, Land And its People, Ahmedabad. LAIP is an NGO working in the area of Living Heritage which comprises cultural, traditional, professional and the ritualistic modes of expression in a human settlement.

MATA NI PACHEDI, GUJARAT

The term *Mata-ni-Pachedi* came from the Gujarati words, *Mata,* goddess *ni,* belongs to, *Pachedi,* which literally meant behind. In Gujarat, the narrative hangings of epics of *Mata* or *Devi* or *Shakti* were executed and used by the nomadic community of *Waghari.* The *Chitaras* or the painters are a sub sect within the *Waghari* community of semi nomadic tribes. The unique feature of these temple hangings was that instead of being hung behind an icon, four to five of these hangings were used to form a shrine for the goddess. These hangings thus served the dual purpose of depicting the epics of the mother goddess as well as of forming a temporary

1.
The process of colouring a temple hanging by the *Chitaras* using the traditional art of *Kalamkari*

shrine for her. With the ethnographic settlement of the communities, the shrine hangings came to serve the purpose of narrative paintings like other temple hangings of India. Historical evidence dates these almost two centuries prior.

The *Mata-ni-Pachedi* are delicately hand painted, naturally dyed narrative hangings on cloth. The cloth mural consists of a variety of elements painted by the artist with the Mother Goddess occupying a paramount central position. Aspects of daily life, folklore and myths form a matrix of interwoven patterns within the fabric. While the *Chitaras* were the artists who painted the shrine hangings, the *bhuvo* or *bhuva* used to be the priest to perform the rituals and *jagorais* were the singers who interpreted the *Pachedis*.

A *Pachedi* is always a rectangular piece of fabric as opposed to a *Chandarvo* which is a canopy serving in place of a ceiling in the nomadic shrine. The community reverently drew on the fabric and filled in the images by hand. The *Chitaras* merged block printing into their work as a result of their exposure to settled communities. *Pachedi* now is a blend of hand painting and block printing.

Traditionally this work of art always had an architectural rendering of a temple at its centre that also housed the

2.
Different scenes depicting incarnations on the Mata Ni Pachedi

3.
Centrally positioned Mother Goddess

4.
This hanging incorporates birds, animals and human figures portraying their activities.

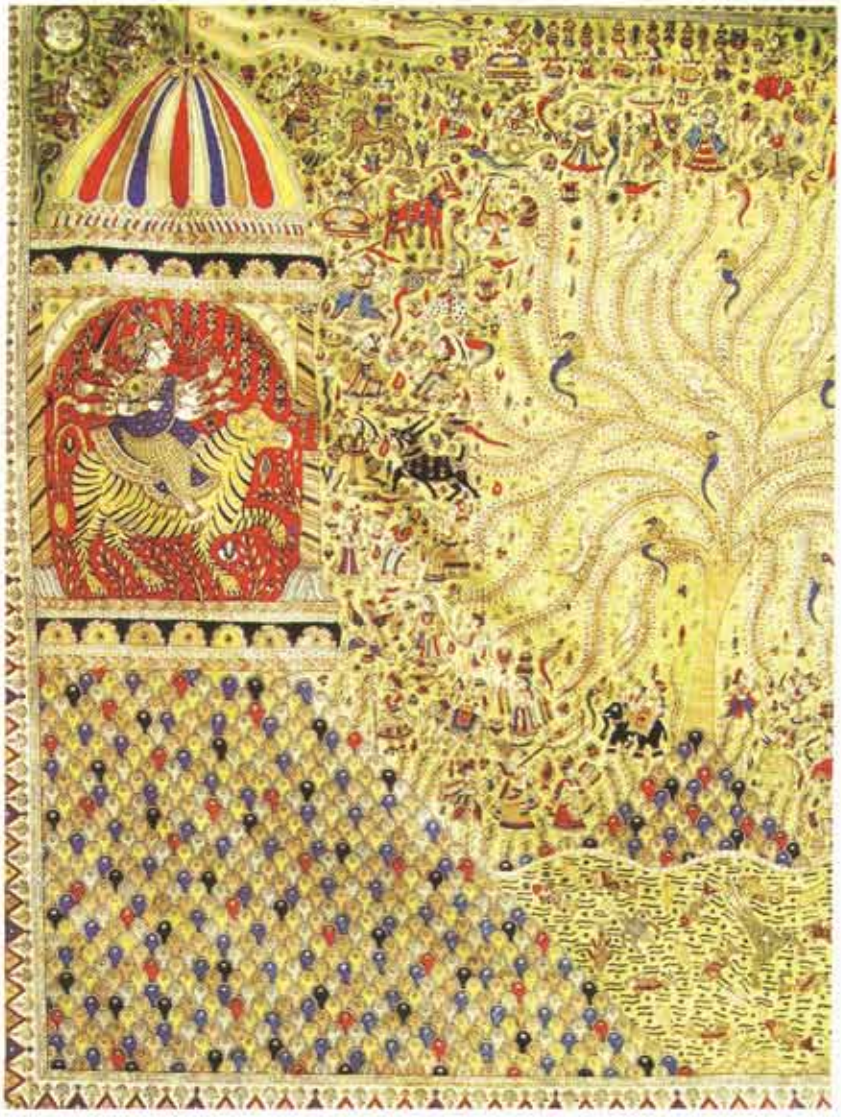
main mother goddess image. Around this were panels of incidents linked to the myth of the central deity as well as scenes from daily life.

Conventionally the rectangular fabric was divided into seven to nine columns evoking the loss of a manuscript format. It also made it easier to interpret and impart the stories within the piece. In the lower caste community, which also was barred from entering a built shrine or possessing their own literary collection, this was an ingenious solution. Incidences illustrated on the columns were stories in themselves - each block a protomyth. While earlier imagery always depicted the goddess in the centre, modern renditions enjoy a larger degree of artistic freedom. The central image and surrounding images may vary in size and position, depending on the artist's personal creative imagination. A *chandarvo* being a ceiling, the painted pattern is a representative of the magic circle, the *garbha*, the ceremonial dance to the goddess, in effects a stylised mirror image. The mother goddess occupies a central position with myths and incidents in circular patterns around the central figure.

Both the *Pachedi* and the *Chandarvo* are always framed with a bold border, divided into a line of single colour and a band of

5.
Samples of *Kalamkari* and block printing portraying historical and religious themes.

6.
Divinity depicted in maroon and black



7.
Chanadarvo serving the purpose of ceiling in a nomadic shrine - background colour of one fabric superimposed with natural colours highlighting elements of nature.

decorative linear patterns. Traditionally maroon and black were the colours used with the surface of the material as the third colour. Black was used as a colour but also as the outer linings of the icons and the motifs. Filling in the motifs was sometimes replaced by linear work and pointillist imagery. Contrasts between positive and negative spaces formed an important balancer to the work. The maroon and black colours were natural dyes sourced from alizarin and oxidised metal. Maroon was associated with the colour of the mother earth or *Gaea* and believed to possess healing powers. The colour black was meant to repel malevolent spirits and intensify spiritual energy. White was considered as the colour for purity and contact with ancestral spirits and deities. Gradually other colours from nature with no particular relgious significancewere added to the colour palette. Pigment dyes that had begun arriving in Gujarat for a fledging textile industry were also used with time. Exposure to a wider palette meant a riot of colour and shade in the *Pachedi*. Other articles such as posters, prints and calendars also affected this work of art.

'Land and its People' (LAIP) has taken an initiative to revive this craft as part of the Chitara Uplift Programme.¶

Heritage Album - 2

Text & Photographs:
Cheena Kanwal

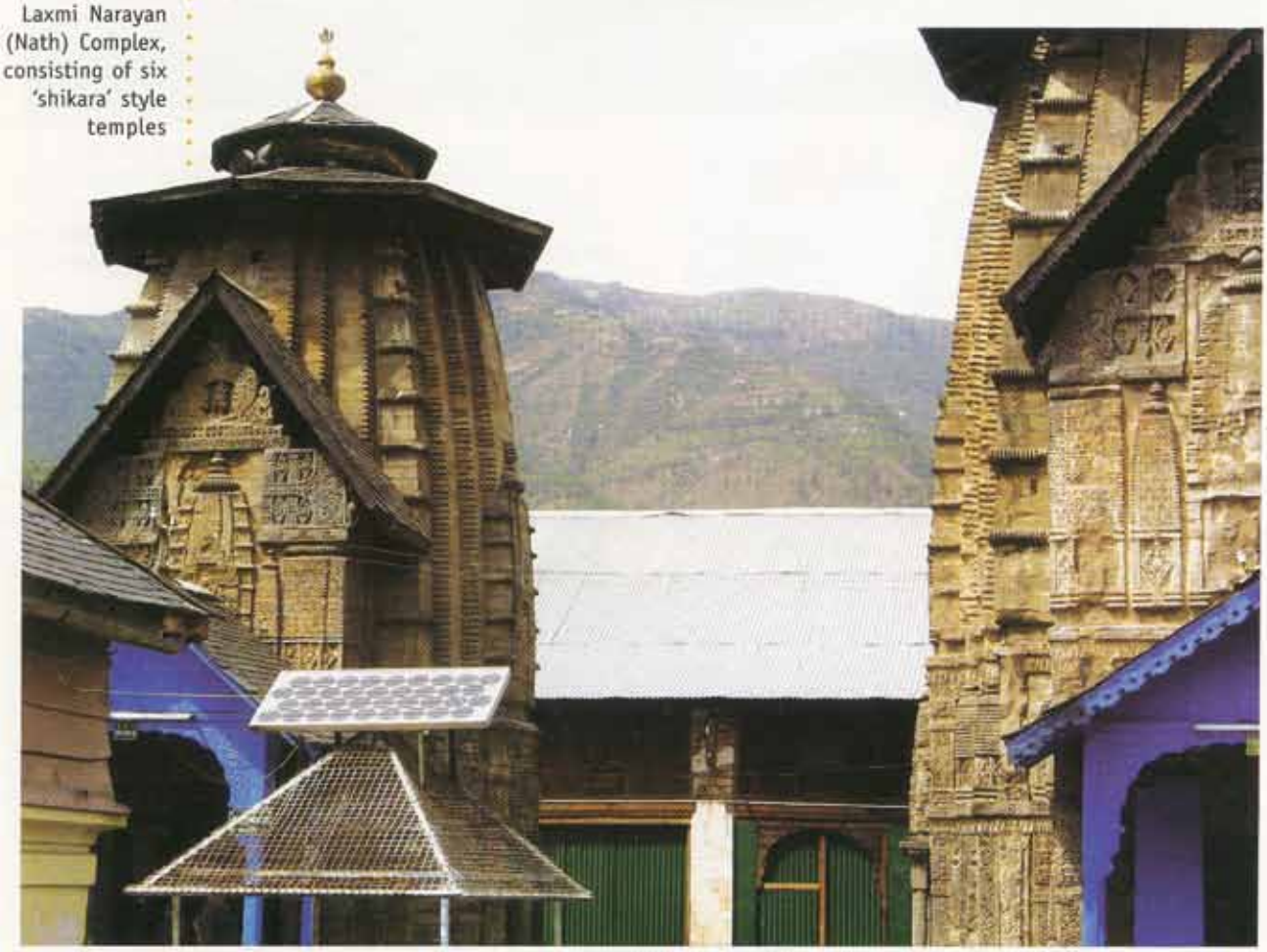
Cheena Kanwal is Vice-President, Dronah, Himachal

CHAMBA - ENCHANTING HERITAGE IN THE HILLS

The mighty mountain rising almost vertically above the town in the east known as Shah Madhar, the expanse of flat land in front of it popularly called Choughan and the river Ravi (Sanskrit name Iravati) flowing at its western edge; must have enchanted its founder to lay it as the capital of the state of Chamba. Legend has it that this area abounded with 'Champa' trees at one time and the name Chamba originated from there. Some Champa trees can still be found in the vicinity.

1. Chamba Choughan, the hub of activities

Source: Department of Languages, Art and Culture



2. Laxmi Narayan (Nath) Complex, consisting of six 'shikara' style temples

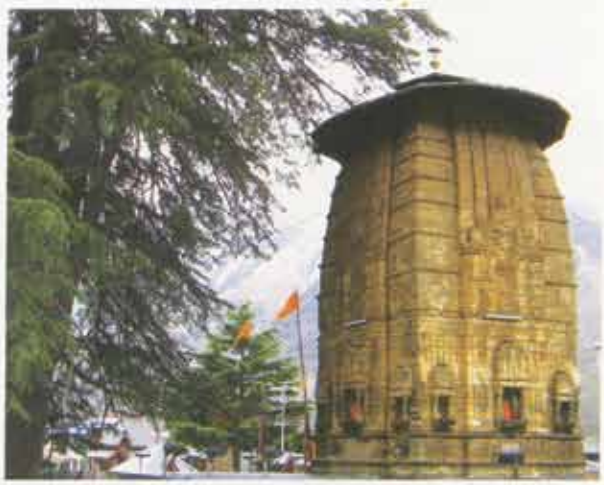
3.
A Village view

Historical records attribute the foundation of the capital Chamba to its ruler Raja Shail Verman in the 10th century. He was a descendant of a Suryavanshi Rajput clan that is said to have migrated from Ayodhya in the 6th century under the leadership of Raja Maru Verman who established the State of Chamba with its capital at nearby village Brahmpur (now Bharmour). Under the subsequent rulers, the state extended from the lower Ravi valley on one side to the Bara Banghal on the other.

Early rulers represented themselves as the custodians of a religious deity and numerous temples devoted to avatars of Vishnu and Shiva as also the local deity Naga and goddess Champavati (the chief protector of the town) became hallmarks of the prevailing style of art and architecture. Raja Shail Verman constructed the famous Laxmi Narayan temple complex and additions were made under subsequent rulers. With the death of Raja Charat Singh in 1844 AD the rule gradually passed into the hands of the British. Major Blair Reid was the first officer who took charge as Superintendent on 1st January 1863. He brought several administrative reforms and created many modern amenities such as the hospital, post office and the school to the town. He was also instrumental in improving the

"NUMEROUS INSCRIPTIONS IN *TAKRI* SCRIPT FOUND ON STONE AND COPPER PLATES BEAR TESTIMONY TO CHAMBA'S PRIDE AND HISTORY"

4.
10th century Mani Mahesh temple at Chaurasi complex Bharmour with an eleven trunk deodar tree as a companion



5.
Local artists performing in Choughan with the expanding town at the back

6.
A Gujar man weaving a woollen wrap on a handloom. The wool is obtained from their own sheep

roads and communication infrastructure, which in turn helped raise the local revenue. Till independence, the British ruled Chamba with the royal family representative as a titular head.

In 1947 after India attained independence, the *Riyasat-e-*Chamba became a part of the Union of India and the town of Chamba was divided into 24 *mohallas* (localities) each having its own historical, cultural and religious background. The local dialects of Chamba are *chambiali, gadi, churahi, pangwali* and *bhatiali* that show a distinct influence of Aryan Sanskrit. Numerous inscriptions in *Takri* script found on stone and copper plates bear testimony to Chamba's pride and history.

The local dance and music have evolved over the generations to combine people of different faith and religions during traditional fairs and festivals and have played a vital role in keeping intact its vast and rich heritage. The artistic expressions in embroidery known as Chamba *Rumal* and the age-old *Pahari* style of painting have found a niche in the world of art across the globe.

7.
Rain protection made of leaves worn during the sowing of paddy in district Chamba

8.
Chamba Rumal is embroidered with a double satin stitch (*dorukha*), both sides look exactly the same. It is usually framed with transparent glass and the rumal can be rotated in the outer frame to display any side. The themes depict activities and embroidery displays movement.

9.
The millennium celebrations under the supervision of the Department of Languages, Art and Culture; and the Department of Tourism organised by the State Government

It is for this reason that the State Government organised the millennium celebrations under the supervision of the Department of Languages, Art and Culture; and the Department of Tourism. The week long festival was an assimilation of dance and music from different states in classical and folk traditions presented by the troupes of the Sangeet Natak Academy and North Zone Cultural Centre, Patiala along with local artists as well as several other performers of national fame. There was a display of local food, art and culture, a special exhibition of photographs in the Bhuri Singh Museum, local sport competitions, release of literature and commemorative postage stamp; and seminars on archaeology, history, art, language, ecology and environment where people participated to discuss and resolve the issues and challenges for preservation of the heritage of Chamba.

The millennium celebrations marked an unbroken link in a chain of events where People came together to rekindle the spirit of conviction and strength in carrying forward their aspirations for the future of Chamba.¶

10.
The First day cover, special postage stamp and postal seal, issued by the Post Office to commemorate the occasion.

Source: Department of Languages, Art and Culture

Reviews

Ministry of Environment and Forests, MOEF was established to monitor the development process in the country; to safeguard the environmental angles in all fields of development. It covers the process of industrialisation, urbanisation etc. In order to achieve its goals, it issues Environment Impact Assessment Notifications from time to time. MOEF,s mandate is to protect critical areas, by vetoing or otherwise amending projects that would entail significant environmental losses. However, in several instances, such clearances have been granted despite extremely poor environment impact assessment. Thus, there is need to strictly enforce environmental assessments to ensure that all projects comply with the legal requirements of MOEF.

Leading environmental NGOs and individuals have issued critiques on these notifications. The Review section presents the views of Dr. Vandana Shiva, founder of Navdanya on MOEF Policy 2004 and Ms Sunita Narayan, Director, Centre for Science and Environment on the recent MOEF Environmental Impact Notification issued in October 2005.

Following are some of the MOEF's important notifications:
ENVIRONMENT IMPACT ASSESSMENT NOTIFICATION S.O.60(E), dated 27/01/1994 (incorporating amendments vide S.O. 356(E) dated 4/5/1994, S.O. 318(E) dated 10/4/1997, S.O. 319 dated 10/4/1997, S.O. 73(E) dated 27/1/2000, S.O. 1119(E) dated 13/12/2000, S.O. 737(E) dated 1/8/2001, S.O. 1148(E) dated 21/11/2001, S.O. 632(E) dated 13/06/2002), S.O. No.319 (E) dated 7th May, 1992.
MANUAL (Issued under Section 4 (1))b) of the Right to Information Act, 2005) DEPARTMENT OF ECOLOGY AND ENVIRONMENT 2005

RESOURCES, RIGHTS AND REGULATORY REFORM

An Evaluation of the National Environmental Policy 2004
By Vandana Shiva

The National Environmental Policy 2004 is clearly a child of economic globalisation, the idea that everything is a commodity, everything is for sale and the market, not society and nature, are the most efficient allocators and distributors of resources. The policy aims at regulatory reform, which will dramatically change people's rights to resources and a safe environment.

OUR BIODIVERSITY HERITAGE & INTELLECTUAL HERITAGE: WHOSE RIGHTS IS THE POLICY PROTECTING?

Biodiversity is the most important means of livelihood in India where 70 per cent people live in biodiversity based economies – fisheries, agriculture, pastoralism and handicrafts.
The section on biodiversity makes no reference to people's biodiversity rights and sustainable livelihoods.

There is no reference to biodiversity based organic farming systems, which increase biological productivity, an observation based on experience in Navdanya over the past two decades. The role of biodiversity in generating sustainable livelihoods is totally absent. Biodiversity and traditional knowledge have been reduced to "raw-material" to be sold for financial gain. There is no consideration of the social, cultural, economic and ecological loss of such 'bio-prospecting'. The environmental policy ought to have suggested strategies for the conservation of biodiversity and strengthening of people's sustainable use of it for health, nutrition and other basic needs. But all that the policy refers to is Intellectual Property Rights (IPR), as it is an implementation of the trade rules of WTO rather than the Convention on Biological Diversity.

'Bio-prospecting', that the policy is promoting was a term created as a response to the problematic relationship between global commercial interests

Case Study

BT COTTON IS KILLING INDIAN FARMERS, NOT INCREASING THEIR INCOMES

[Bt cotton is a transgenic plant that produces an insect-controlling protein, Cry1A(c), a gene that has been derived from the naturally occurring bacterium, Bacillus thuringiensis – Bt. The cotton hybrid containing the Bt gene produces its own toxin against bollworm, the cotton pest.]

Brookes was in India recently and claimed a $ 124 million increase in farm incomes and a 54 per cent increase in yields from Bt cotton. However, every study in India carried out by citizens groups and the government shows that Indian farmers are loosing not just incomes but their lives as well.

Bt cotton was sold with the claim that it would give 15 quintals of yield per acre. However yields have been as low as 20 kgs in one acre. On average yields of Bt cotton are 1.2 quintals per acre in Maharashtra and Andhra Pradesh. Nowhere did the Bt cotton yield cross 4 quintals per acre at the end of the harvest. In Madhya Pradesh, in Badwani, Khargaon, Dhar and Khandwa districts, almost half the 42 farmers visited reported that their crop had failed. Khargaon farmers faced total crop failure. In other districts only one expected a yield of 12.5 quintals, the average yield expected by the others was 4.01 quintals, as compared to the 15 quintals promised by Monsanto-Mahyco. In Karnataka, 15 of the 40 farmers visited in Bellary, Sirippupa and Haveri/ Dharwad districts, expected a total failure of their crops. The average yield expected by the remaining farmers was 3.82 quintals per acre.

In most of the fields visited, the Bt cotton plants were in a stage of maturity with leaves turning red before dropping off. The non-Bt growing on the fringes looked far healthier, taller and greener than Bt plants. According to Dr. Jalapathi Rao, this was probably due to the toxin gene. This means that unlike other hybrid cotton, which yields up to March, Bt cotton farmers will not get any yield after November.

FALSE CLAIM OF HIGHER INCOME

The failure or drastically reduced yield of Bt cotton has devastated Bt cotton farmers, who are now faced with penury. Mr. Mala Rao Krishna Rao Thakre of a village in Maharashtra suffered a major heart attack when he found his 27 acres of Bt cotton completely devastated by disease.

Since 1997, Warangal has seen suicides by thousands of cotton farmers. The region has become famous for distress sales not just of land, but also of body parts such as kidneys. Pushed into deepening debt and penury by Monsanto-Mayco and other genetic engineering multinationals, the introduction of Bt cotton heralds the death of thousands of farmers in Warangal and in various other parts of the country.

Our surveys of earlier planting seasons showed an average yields of 1.2 quintals per acre in Maharashtra and Andhra Pradesh.

A study by the Center for Sustainable Agriculture showed that Bt cotton farmers used seeds that cost Rs. 1600 per acre, while organic farmers used seed costing Rs. 450 per acre, a 355 per cent difference. Bt was sprayed with pesticides like Monocrotuphos, Confidor, Trace, Avarint, Eudosulfab, Acephate, Demethoate, Imidacloprid, Quinalphos, Chlorpyriphos, Cypermethrin, etc. Average sprays were 3.5 times costing Rs. 2632 per acre. Organic farmers used ecological pest control agents like Neem, Trichoderma, Panchakavya etc. at Rs. 382 per acre. This is a difference of Rs. 2250/- or Rs. 7625/- per acre. Pest control in Bt cotton is thus 690% costlier than ecological farming.

High costs of cultivation and low returns have trapped Indian peasants in a debt trap from which they have no other escape but to take their lives. More than 40,000 farmers committed suicide over the past decade in India. However, these are not suicides – it is genocide. More than 90% of the farmers who died in Andhra Pradesh and Vidharbha in the 2005 cotton season had planted Bt cotton.

The Brookes and Barfoot study is not based on primary empirical data but extrapolations from false assumptions and manipulated studies. For the U.S, the lobbyists claim $66.59 per ha of additional benefits for Herbicide Resistant Cotton. Yet 90 Texas cotton farmers have sued Monsanto claiming they suffered widespread crop losses because Monsanto failed to warn them regarding a defect in its genetically engineered cotton. The lawsuit seeks an injunction against what it calls a "longstanding campaign of deception" (*The Hindu Business Line*, February 26, 2006, p.4 "Cotton Farmers Sue Monsanto").

GM CROPS HAVE INCREASED USE OF CHEMICALS

The environmental benefits are also a false claim. Friends of the Earth recently released a report showing that GM crops required an increased use of chemicals. The Indian experience also showed an increase of pesticide use as new pests attacked Bt Cotton and the bollworm evolved a resistance to the Bt gene.

and the biological resources. Bio-prospecting was first defined by Reid et al as "the exploration of biodiversity for commercially valuable genetic resources and bio-chemicals". (Reid W.V. et al, *Biodiversity Prospecting: Using Genetic Resources for Sustainable Development*), World Resources Institute, Washington D.C, 1993.

Bio-prospecting is an inappropriate term and inappropriate process. It is derived from "prospecting" for minerals and fossil fuels. However, living resources are not non-renewable, and unlike fossil fuel, they are not "useless" unless exploited by global commercial interests for global markets. Biodiversity is the basis of living cultures. It is the foundation of the living economies of two third of humanity which depend on biodiversity for livelihoods and needs.

Bio-prospecting is viewed commercially as the exploration of potentially commercially valuable biodiversity and biodiversity related knowledge, assuming that prior to prospecting, the resources lay buried unknown, unused and without value. However, biodiversity and indigenous knowledge are the basis of living economies and living cultures. Biodiversity and cultural diversity mutually conserve and shape each other.

Bio-prospecting is viewed by indigenous communities as an expropriation of their collective and cumulative innovation, which has been utilised, protected and conserved by its traditional value since time immemorial. The very concept of bioprospecting is legally flawed, since it is based on patenting of traditional knowledge. A patent is granted for inventions, which must be novel. Commercialising existing knowledge that is a product of thousands of years of collective innovation by indigenous cultures is not an invention.

The bio-prospecting model can never be a legitimate source of benefit sharing in the case of biodiversity related knowledge because it is based on two exclusions. The first takes place when communities of users / innovators are excluded, when one local group is treated as holding the knowledge exclusively. Secondly, the corporation signing the bio-prospecting contract takes on an IPR on the knowledge transferred from an indigenous community as an unjustified claim to innovation that over time, excludes the donor community, from their rightful share to emerging markets.

Bio-prospecting contracts, which deal with one individual or one community, fail to be equitable because prior informed consent needs to be taken from all communities and members who have contributed to the collective innovation, and who utilise the knowledge to meet their needs.

Bio-prospecting creates impoverishment within donor communities by claiming monopolies on those resources and knowledge that previously enabled communities to meet their health and nutrition, needs, and by then charging royalties for what was originally theirs and which they previously had for free.

Thus, bio-prospecting leads to the enclosure of the biological and intellectual commons through the conversion of usurped biodiversity and biodiversity related knowledge of indigenous communities into commodities protected by IPRs.

HOW BIO-PROSPECTING UNDERMINES ACCESS?

Bio-prospecting is being promoted as the model for relationships between corporations which commercialise indigenous knowledge, and the indigenous communities, which have collectively innovated and evolved that knowledge. It is being presented as an alternative to bio-piracy. However, bio-prospecting is merely a sophisticated form of bio-piracy. It takes the biodiversity and intellectual heritage of indigenous communities and converts it into commodities protected by IPRs.

Collective innovation, evolving over time, and involving many persons is different from individual innovation, localised as it is in time and space. Collective innovation involves many persons who contribute to it over time. It is modified and enhanced with its usage over time and is passed on from generation to generation. In some examples such collective innovation is no longer local e.g. in the case of seeds and in the case of major non-western knowledge traditions such as Ayurvedic and Chinese medicine. In some cases it even crosses national boundaries.

A case of bio-prospecting, which has been cited as a "success" story of benefit sharing by the global community but can equally be viewed as a failure by indigenous community is the case of "*arogya pacha*" or "*Jeevani*", a plant that the Kaui tribe has used for

anti-fatigue and anti-stress. This wonder drug was commercialised through a contract between the Tropical Botanical Garden Research Institute of Trivandrum and a pharmaceutical company. A U.S based company Nutri Science Innovations is using the internet to sell the drug. The estimated market value is US $ 1 billion. The Kaui community only received US $ 12000 (Ref: Vibha Varshney, Tragic Potion, Down to Earth, March 31, 2004)

The biological diversity of India has always been a common resource for millions of our traditional communities, who have utilised, protected, and conserved their biodiversity heritage over centuries. Their collective and cumulative innovation has been the basis of local culture and local economies, which constitute the dominant economies in terms of the livelihoods they provide and the needs they meet. In fact, their traditional knowledge in medicine, agriculture and fisheries is the primary base for meeting their food and health needs. For them, conserving biodiversity means to conserve the integrity of the ecosystem and species, the right to resources and knowledge and the right to the production systems based on biodiversity. Therefore biodiversity is intimately linked to traditional indigenous knowledge systems as well as to people's rights to protect their knowledge and resources.

In the context of privatisation, the mutual exchange among communities has been replaced by contracts for bio-prospecting by corporations who seek to expropriate the invaluable and inalienable heritage of communities often through scientific collection missions and ethno-botanic research. The World Resources Institute has defined 'biodiversity prospecting' as an exploration of commercially valuable genetic and biochemical resources. The metaphor for prospecting is borrowed from the prospecting for 'gold' and 'oil'.

However, unlike gold or oil deposits, the local communities know the uses and value of biodiversity. The metaphor of bio-prospecting thus hides the prior uses, knowledge and rights associated with it. Taking knowledge from indigenous communities through bio-prospecting is only the first step in developing an IPR protected industrial system which must eventually market commodities that have used local knowledge as an input, but are not based on the ethical, epistemological, or ecological structures of that knowledge system. Bioprospecting is the first step towards occupying the dominant system of monocultures and monopolies, and thus accepting the destruction of diversity.

Indigenous knowledge is centered on the co-relation of nature and people. IPR regimes are premised on the denial of the creativity of nature. The ethical and epistemological assumptions and consequences of adopting an IPR regime through bioprospecting contracts needs deeper analysis and reflection.

This is particularly important since biodiversity knowledge in indigenous communities is not individual innovation but collective innovation, not privatised but a shared heritage. Therefore, all members of the community, including past generations have contributed to innovation with many communities utilising the resultant knowledge and sharing the biological resources.

The utilization of biodiversity in the people's economy is guided by a plurality of knowledge systems. Local communities hold the implementation of the properties, characteristics and uses of this biodiversity in different languages and in diverse epistemological frameworks.

In the case of a resource like land which cannot be multiplied, land based commons have clear territorial boundaries for communities who have access to common forests or pastures. Communities have very strict limits on resource use. The exploitation of these commons will only go as far as the subsistence level. They therefore cannot limitlessly increase its exploitation for private gains. Principles and rules of management of the commons set strict upper limits (so as to ensure that no one can exploit too much) and lower limits (so that no individual in the community is excluded from utilising the commons).

The bioprospecting paradigm needs to be examined in the context of equity, specifically its effect on the following:

- The impact on the donor community
- The impact on potential recipient communities
- The impact on bioprospecting corporations

Even though bioprospecting contracts are based on prior informed consent and compensation unlike the case of bio-piracy where no consent is taken, and no compensation given - not all owners/carriers of an

indigenous knowledge tradition are consulted or compensated. Not only does this lead to inequity and injustice, it also has the potential of pitting individual against individual within a community and pitting community against community in a community of communities. For example, an innovation might have been evolved by a group of communities. A bioprospecting contract enables a corporation to take this collective knowledge by writing a contract with community. This contract violates the biodiversity and knowledge rights of all other communities who hold the knowledge and resources in common with community.

This is the reason the bio-prospecting model, which deals with one individual, one community or one interest group, can never be equitable. A commercial interest ought to take the prior informed consent of all communities and all members of each community who have used and contributed to collective innovation in biodiversity related knowledge. The partnership of the state is one mechanism that could potentially safegaurd the interests of all contributing groups. In the case of biodiversity related collective innovation there are many interests involved. Farmers and the seed industry, traditional healers and pharmaceutical corporations, western and non-western scientific traditions, masculine and feminine ways of knowing are the diverse communities of interest that may have to be included in a transaction. As marketing systems and IPR regimes combine to let the corporations monopolise biodiversity and knowledge by making the community dependent on the purchase of proprietary commodities, e.g. farmers who contributed seed having to buy proprietary seed from the seed industry.

HOW BIOPROSPECTING CREATES POVERTY?

Bioprospecting is often presented as a means for making the poor rich. It is often stated that the biodiverse rich regions are financially poor and since bioprospecting is associated with monetary compensation, it can make the biodiversity rich regions financially rich. However, bioprospecting model is a kind that takes away the last resources, both natural and intellectual, from the poor. It is, therefore, in reality a model that creates extreme poverty for the community as a whole, even when it might bring money to a few individuals in the community.

The poverty creating impact of bio-piracy and bio-prospecting can only be perceived if one recognises that there is a difference between the material economy and the financial economy. If people have rich biodiversity and intellectual wealth, they can meet their needs for health care and nutrition through their own resources and knowledge. If on the other hand, the rights to both resources and knowledge have been transferred from the community to IPR holders, the members of community end up paying royalties for what was originally theirs. They, therefore, become materially poor.

Some communities are local users and others are non-local users. Suppose a community engages in a bioprospecting contract with a corporation and the corporation takes on IPR on the products of a medicinal plant:

- As a first impact, all other communities no longer have access to the seed or medicine, which they have long used and are therefore poorer in nutrition and health terms.
- A second impact is that they become poorer in financial terms since they have to buy the seeds, agro-chemicals or medicines, which they derived freely from local plant biodiversity.

As in the case of biodiversity gains commercial value globally e.g. medicinal plants, it is exploited. This leads to:

- Diversion of the biological resource from meeting local needs to feed non-local greed. This generates scarcity, thus leading to price increases.
- In the case of over-exploitation it can lead to extinction.
- The local scarcity combined with IPRs on derived commodities eventually take the resource and its products beyond the access of the donor communities (e.g. neem)
- The providing communities loose their rightful share to emerging markets.
- Other poor communities (whose traditions permit them to rely on free exchange or low cost seed), which received the knowledge freely are also made dependent on the commercial interest.

The bioprospecting perspective reflects the commoditisation and privatisation paradigm, which only protects the rights of those who appropriate people's common resource and turn them into commodities.

BIOTECHNOLOGY AND BIOSAFETY : WILL REGULATORY REFORM LEAD TO DEREGULATION?

The policy refers biotechnology in Section 5.1.3 (iii) on "Living Modified Organisms (LMO's). These should more accurately be referred to as genetically modified engineered organisms (GMO's). The policy states that a review of regulatory processes will be undertaken based on current scientific knowledge. However, in the context of biotechnology, what poses as "scientific knowledge" is often pseudo science.

While biotech crops fail farmers, and destroy biodiversity, the "global" studies of biotech lobbyists continue to cook up benefits to farmers and the environment. A recent example of such pseudo-science is a report by Graham Brookes and Peter Barfoot of PG Economies Limited, U.K entitled "GM Crops: The Global Economic and Environmental Impact – The First Nine Years 1996-2004". The report falsely claims environmental benefits of reduced chemical use and reduced greenhouse gas emissions. It also falsely claims benefits to farmers amounting to $27 billion.

DEREGULATING BIOTECHNOLOGY

The new biotechnology development strategy of the government has already indicated that regulatory reform will go in the direction of deregulation.

At a time when the negative experience of genetically engineered crops should lead to a strengthening of biosafety regulation, the strategy is calling for a total deregulation of biotechnology. The deregulation is proposed through two processes:

1. The multi-tier biosafety clearance under the current rules, in which the Ministry of Environment has final authority for clearances, is to be replaced by a single window clearance under the Department of Biotechnology. A new National Biotechnology Authority is proposed for agricultural products and GMOs, pharmaceuticals and drugs, transgenic food and feed and transgenic animal/ aquaculture. This is a marginalisation of environmental risk assessment.
2. The case-by-case approach in risk assessment is to be replaced by a reinvention of the discredited principle of substantial equivalence. The strategy states: "It is recommended that an event that has already undergone extensive biosafety tests should not be treated as a new event if it is in a changed background containing the tested and biosafety evaluated "event"."

What are being referred to as an event are transgenic traits. The assumption that a gene will behave in the same manner independent of context, environment and the organism it is introduced to, is scientifically flawed. Natural Bt is not the same as Bt. Cotton, and Bt. in cotton has different implications for health and environmental safety than Bt. in mustard or potato.

This is a strategy to avoid risk assessment and hence a strategy for the deregulation of the biotechnology industry in India essentially allows the outsourcing of genetic pollution and health risks to India's ecosystem and the Indian public.

A FUTURE OF GENETICALLY ENGINEERED PLANTS, ANIMALS AND HUMANS

The strategy proposes the genetic engineering of rice, wheat, maize, sorghum, pigeon pea, chick pea, moong bean, ground nut, mustard, soy bean, cotton, sugarcane, potato, tomato, cole crop, banana, papaya, and citrus. In other words, the entire food basket is to be genetically engineered, untested genetically engineered foods are to be promoted for consumption by Indians.

In addition, the strategy also proposes genetically engineered animals especially buffalo, cattle, sheep and goat. Genetically engineered fish are also a priority, with a focus on carps, tiger shrimp and fresh water prawns. And the strategy also aims at promoting human genetic engineering with the promise that : "We will be able to repair some of the damage caused by aging, organ by organ. The application of nanotechnology in bioengineering together with biotechnology offers a great new range of advanced biomaterials with enhanced functionality; and intertwined with tissue engineering, it has the potential to provide true organ replacement technology of the coming decade."

The new biotechnology strategy is rushing headlong to include new technology areas for which independent risk assessment needs to be evolved. As Vicki Colvin, Director of the Centre for Biological and Environmental Nanotechology, Prince University observes:

- In a field with more than 12,000 citations a year, we were stunned to discover no prior research in developing nanomaterial risk assessment models and no toxicology studies devoted to synthetic nanomaterials. (Quoted in *The Big Down: From Genome to Atom*, ETC group, Jan 2003)
- Under a single window clearance, no new assessments for nanotech will be evolved. The technology will thus evolve in a regulatory vacuum
- The health and environmental risks need to be assessed before the technology is developed. Instead, the new Biotechnology Strategy is planning to introduce nanotechnology below the regulatory radar.

TRIBALS, TIGERS AND TREES; WE NEED TO PROTECT ALL

The section on forests is one of the few sections in the Environmental Policy whose recommendations I would support. It addresses the recognition of tribal rights and the reversal of forest degradation and destruction.

Until recently we identified ourselves as an *Aranya Sanskriti,* literally a Forest Civilisation. According to Rabindranath Tagore, the distinctiveness of Indian culture consists of it having defined life in the forest as the highest form of cultural evolution. In *Tapovan*, he writes:

Contemporary western civilisation is built of brick and wood. It is rooted in the city. But Indian civilisation has been distinctive in locating its source of regeneration, material and intellect, in the forest, not the city. India's best ideas have come where man was in communion with trees and rivers and lakes, away from the crowds. The peace of the forest has helped the intellectual evolution of man. The culture of the forest has fuelled the culture of Indian society. The culture that has arisen from the forest has been influenced by the diverse processes of renewal of life, which are always at play in the forest, varying from species to species, from season to season, in sight and sound and smell. The unifying principle of life in diversity, of democratic pluralism, thus became the principle of Indian civilisation.

Today we have a problem protecting our core life support systems and our identity because we have sacrificed the unifying principle of life in diversity and democratic pluralism for the reductionist mutually excluding categories of western thought which prelude coexistence. The tiger is pitted against the tribal; the tribal is pitted against the trees. Mutuality and relationships are being replaced with antagonism, polarisation, exclusion; threatening all - the tribal, the tiger, and the forest biodiversity.

This polarisation and conflict between the protection of human and non-human species in our forests has been evident in two fierce debates that the nation has been preoccupied with in recent months – the debate around the disappearance of the tiger, and the debate around the scheduled tribes (Recognition of Forest Rights Bill, 2005). There used to be 40,000 tigers in our forests a century ago. Today, they are less than 3,000. In Sariska, the tiger has disappeared. Tribals are being displaced from their forest homes to make way for dams, mines, highways.

At a time when conservationists and tribal rights activists should be joining hands to create a unified force against predation by mining corporations, poachers, timber and land mafias, they spend more time undermining each other than their common adversary – the forces that profit from forest destruction, species extinction and displacement and eviction of *adivasis* (the original inhabitants of this land).

The protection of indigenous people in India has taken the form of the Bill for the Recognition of Tribal Rights. Many conservationists have felt that the Bill threatens forests, largely due to the misconception that the Bill is granting new rights for the occupation of new forest lands. However, no new land is to be allotted, and conservation is intimately linked to forest rights of tribals. The Bill is not granting new rights to forest dwelling tribes – it is merely recognizing their rights. As the Bill states, it is a correction of the historical injustice of ignoring the rights of original inhabitants. The Bill was necessary because "the forest rights on ancestral lands and their habitat were not adequately recognised in the consolidation of state forests during the colonial period as well as in independent India resulting in historical injustice to the forest dwelling scheduled tribes who are integral to the very survival and sustainability of the forest ecosystems".

The bill is not just a tribal rights bill – it is also a forest conservation bill. The rights of indigenous people rests on their ecological responsibility. "The recognised rights of the forest dwelling

scheduled tribes include the responsibilities and authority for sustainable use, conservation of biodiversity and maintenance of ecological balance and thereby strengthening the conservation regime of the forests while ensuring livelihood and food security of the forest dwelling scheduled tribes".

Another misconception is that recognising forest rights of tribals will dismantle existing forest management and wildlife protection laws. This is a product of the either/or thinking, which leads to the polarized perception that either tribals can have rights, or the state institution can have powers; either we can have local governance or national regulation. In matters as vital as the survival of our forests and forest people we need both empowered communities and empowered regulatory and protection systems of the state. Article 15 of the proposed law clearly states "Save as otherwise provided in this Act, the provisions of this Act shall be in addition to and not in derogation of the provisions of any other law for the time being in force". We need strong national laws for conservation to deal with the mining and timber and land mafias. It needs both the people and the government to work in partnership.

Prof. B.D. Sharma, who served as Commissioner Scheduled Castes and Scheduled Tribes (1986-88) and is also a member of the Technical Support Group for the Tribal Rights Law, has clearly articulated an action plan for securing both, tribal rights and forest ecosystems:

- Preparation of a hamlet-wise list of land under occupation of the people in the hamlet which may be authenticated by the occupants of the lands and also by officials of the Forest and the Revenue Departments in an open meeting;
- An agreement between the village community and the concerned departments to the effect that (a) while the people on their part will undertake to prevent any further extension of cultivation in the forest and, in case they are not able to do so, to give information about the offenders to an official designated for that purpose and (b) the Government Departments on their part may undertake (i) not to institute any cases in respect of land included in the list mentioned above and (ii) withdraw old cases pending in the courts at different stages in respect of these land;
- Working out a mutually agreed action plan with coequal objectives of restoration of ecological balance and provide a viable economic base for the concerned people.

The Maldharis in Gir co-habit the forest with the Gir Lion. Small scale, biodiverse ecological farming that does not use chemicals and heavy machinery or ecological pastoralism can be as perennial as the forest. As Sir Albert Howard wrote in the Agricultural Testament "In the agriculture of Asia we find ourselves confronted with a system of peasant farming which, in essential, soon became stabilised. What is happening today in the small fields of India and China took place many centuries ago. The agricultural practices of the orient have passed the supreme test; they are almost as permanent as those of the primeval forest, of the prairie, or of the ocean".

These principles of perennial production can be integrated into diversified, multifunctional forest management, which conserves diverse species and protects both forests and livelihoods of forest peoples. After all, this co-existence is not being invented in 2005. It is as ancient as human evolution on this planet. We could, if we care, ensure that all other life forms are protected and continue their evolutionary journey in peace and harmony. If we fail because our narrow aims blind us to our larger duties, we will destroy our very life support systems, and destroy the lives and cultures of indigenous communities who have the knowledge that humanity needs to make a transition to sustainable living on an extremely fragile planet in extremely fragile times.¶

Reviews

GOOD GROWTH NEEDS BETTER REGULATION

By Ms. Sunita Narain

It is said everyone from the concerned authorities, is involved with the process of environmental clearances: the process takes too much time, it is cumbersome and impedes the breakneck speed of progress. In the middle of October 2005, the Union Ministry of Environment and Forests (MOEF) has made public its reworked proposals for environmental impact assessment and clearances.

If this process is not rigorous or reliable it is bound to impinge on growth. The people who are affected by a bad industrial project- because it pollutes their water or land or displaces them without compensation - will protest. They will go to court. The democratic framework of the country will assist them to get justice. The protest will hold up the project. If a project leads to environmental damage, destroys forest ecosystems, biodiversity gene pools; environmentalists will protest. Again, a project will be embroiled in controversy and get delayed. An abused process will lead to abused outcomes: in the interest of none.

In other words, this regulation and its implementation is critical not because it will streamline project clearances but because it will build a process of development that is less contested and more inclusive.

MOEF has accepted this to an extent in its revised proposals. The current notification, unlike the earlier draft, does not weaken the provisions for public consultations by making the project proponent responsible for holding the public consultation. It also requires the proceedings of the public meeting, "held to ascertain the views of the local persons who have a plausible material stake in the environmental impact of the project", to be filmed. The provision should help, if done well, to expose sham hearings and violence against people who attend the public hearing and face the wrath of industry goons and obdurate administrations.

The notification also pushes for more transparency, ensuring the environmental impact assessment, once revised to take into account people's concerns, is made public. This will help people judge if their involvement led to any change in the project design and how. The notification also asks for compliance reports to be submitted by the project developers and to make this document public. This will allow people to ensure changes done to take into account their concerns and the mode of implementation.

But some flaws emasculate the notification. Two stages are crucial in this regulation. One concerns the integrity of the information, which assesses the environmental impact of the project. This information is supplied by industry, which awards this work to a consultant. The fact is that industry has worked overtime to abuse this crucial stage. So, it is well understood that the consultant is hired not to assess the project but to get it 'cleared'. The result is that few will respect the environmental impact assessment document.

To be fair, perhaps little can be done at this stage. After all, the onus here lies with the industry, which cries itself hoarse about its high transaction costs (read corruption) not to subvert the process. But what can be done is to ensure that the information supplied is comprehensive, well structured and that its analysis is made public. This has been attempted to an extent. What can be done is to further ensure that badly conducted and false assessments are penalised: that the project proponent/consultant is publicly named and shamed. The second crucial stage concerns public consultation. This is really the make-or-break stage in any regulatory process. Unfortunately, it is here that we fatally err. The current notification does not go far enough to improve the process of public consultation so that it is fair, ensures involvement and takes into account the views of people, not as a matter of chance but as mandatory provisions. It is not enough to hear people. It is vital to ensure they are heard.

Let it be clear, Indian industry cannot find shortcuts to democracy. People have to be reassured that their concerns have been taken on board. They have to be convinced that the industry and government can

answer their questions: that their survival and their environment will not be jeopardised.

It must be established that that this is not an academic quest for them. The process of impoverishment in India is exacerbated by environmental degradation. In fact, poverty and environmental destruction are two sides of the same coin. This is because, in India, people live of the environment. Their very survival is at stake if the environment, the land or the water is contaminated or their forests or water bodies are destroyed. Bad environmental management is not an option because it will not lead to progress, but also have a negative effect. The process must be strengthened and turned into an audit. It must be done not to 'clear' a project, but to substantially review and revise it so that affected people and concerned citizens know the project is for the benefit of all, and not for the selfish needs of some.

It is here the notification needs reworking. It must get rid of its categorisation of people as those who can ask questions, who cannot. It must welcome scrutiny. It must also support knowledge-based criticism; by funding open research on the projects, by opening schools that teach people the science of environmental impact assessment. It must push the concerns of people as its concerns. Ultimately, the regulatory process cannot be about lynching democracy. It must become the lynchpin of democracy and development because the process of decision making, if flawed, will not be good either for development or for democracy.¶

Book Review

Silent Sentinels – Traditional Architecture of Coorg
Concept and Foreword : Brinda Somaya, Text : Poonam Verma Mascarenhas (Research Coordinators: Kuppanda G. Premnath & Dyan Belliappa N.N.), Published by: The HECAR Foundation (27 A.K. Naik Marg, Opp. New Excelsior Cinema), Mumbai 400 001, 2005, pp. 141, plus illustrations. Price Rs. 1200.00, ISBN 81-7525-679-6

The latter half of the 20th century has seen rapid change and transformation in many areas of life – including architecture. While this has been fostered and dictated by a range of causes, one of the consequences of this transformation and 'modernisation' is the still extant threat to the Indian Sub-Continent's architectural and natural heritage, and the destruction of numerous older buildings and monuments. While many organisations and individuals have launched and/or supported heritage conservation, preservation, documentation, and restoration/ sensitive re-use efforts, a lot more still remains to be done towards sensitising the general public, as a whole, towards the on-going destruction of our architectural legacy.

Against this backdrop of the very real spectre of the destruction of buildings of sociocultural and architectural significance in almost every part of the country, '*Silent Sentinels – Traditional Architecture of Coorg*' is a valuable record that seeks to document the built heritage, and its associated cultural aspects of the Coorg people and their land.

Chapter One, entitled 'Kodagu and Kodavas' effectively sets the stage for the latter two chapters of the book. This chapter provides an illustrated overview of the main historical, social and cultural features characterizing the approximately 4,102 sq km mountainous cum part-forest and part-plantations area of Kodagu – or Coorg, as it is better known to many Indians.

The second chapter of the book looks at the traditional architecture of Coorg through focusing, in particular, on the *Ainemane* (or the ancestral house of an *okka*), the 'Independent House', and regional temple architecture. Of these, the 'independent house' is, as the book notes, a relatively recent phenomenon, dating back to around the beginning of the 19th century AD. It seems that these 'independent houses' evolved as an outcome of the subdivision of *okka* property. These were initially built around the original family *ainemane* or ancestral house, but over time, these were constructed on other family landholdings too. There are descriptions about other aspects of vernacular and religious architecture too such as traditions for erecting ancestral homes, folk-songs that describe contemporaneous architectural forms, and information about other ancillary built and natural forms that were of relevance in Kodava architecture.

The Architects' Perspective', takes the reader through inter-connected issues like traditional concepts in architectural forms, local buildings skills, the usage of space and natural surroundings, and the challenges presented by the contemporary world. The book discusses various threats to the world of traditional Kodava architecture, with its possibly Utopian way of existence; the role of modern tourism vis-à-vis culture and built and natural heritage; and the urgency to document and discuss socio-cultural- architectural-historical traditions, in order to understand and appreciate the values encoded therein.

The final sections of the book include two appendices. The first of these is a useful compendium of 'Broad guidelines for maintaining old buildings'; while the second is short vignette, illustrated by a photograph, that brings to life, in a few crisp paragraphs, the architectural history of a courtyard house. Three sets of detailed glossaries help the reader navigate the non-English words – many from the Kodava dialect, and the Indian and general architectural terms, respectively, which have been used in the book. This is particularly useful if works like this are to be accessible to non-specialist readers.

'*Silent Sentinels*' is amply and extremely beautifully illustrated with photographs, architectural plans and line drawings, reproductions of old prints, lithos/ woodcuts, old and new maps, and sketches and water-colours. These provide readers with context to the location and locale, environment and glimpses of bygone life of the region. The need for such books is apparent, as is the hope that extracts from this – and similar works be made available for ordinary citizens, particularly for students in cheaper paperback versions.¶

Events & Conferences

BALWOIS 2006
Date: 23 - 26 May 2006 Location: Ohrid, Macedonia
The main objective of BALWOIS 2006 is to establish links between scientists, experts and decision makers working in the field of water resources management and preservation at international and Balkan levels.
Organised by: Institute de Recherché pour le Development
Contact: Mr. Marc Morell
Website: http://www.balwois.net

Geo-Environment & Landscape Evolution 2006 - Second International Conference on Geological Environment and Landscape
Date: 6 - 8 June 2006 Location: Rhodes, Greece
This conference aims to study the role of geosciences in environmental management. The geosciences understanding of natural systems and their process is of fundamental relevance for the proper use of land.
Contact: Katie Banham
Website: http://www.wessex.ac.uk / conferences/2006/geoenv06/ index.html

Bangalore Bio 2006
Date: 7 - 9 June 2006 Location: Bangalore, Karnataka, India
Bangalore Bio is the biggest biotechnology show in India and is organised by the Government of Karnataka. The rapidly growing international participation has transformed this event into one of the major destinations in the international biotech circuit
Organised by: Dept. of IT, Biotechnology and Science & Technology, Govt. of India
Contact: Mahinder Singh
Website: http://www.bangalorebio.in

Eco-Architecture 2006
Date: 14 - 16 June 2006 Location: New Forest, UK
The aim of the conference is to provide a forum for discussing the many relevant aspects of Eco-Architecture.
Contact: Charlotte Bartlett
E-mail: rgreen@wessex.ac.uk
Website: www.wessex.ac.uk/ conferences/2006/eco-arch06/index/ html

Consciousness, Self-Consciousness and Cultural Identity
Date: 27 - 30 July 2006 Location: Calcutta, India
The program will include plenary addresses, volunteered papers, invited papers and panel discussions. Registered participants who are members of professional associations are encouraged to submit proposals for meetings of their associations.
Organised by: Society for Indian Philosophy and Religion
Contact: Dr. Chandana Chakrabarti
E-mail: chakraba@elon.edu samajh gayio

Culture Matters: Understanding Development from Perspectives of Marginal Communities
Date: 13 - 15 October 2006 Location: New Delhi, India
The conference seeks to capitalise upon a growing interest in issues such as how does culture matter to marginal communities and how culture enables the process of self-empowerment among marginal communities. Self-empowerment is considered
Organised by: Deshkal Society, India with the support of Indira Gandhi National Centre for Arts (IGNCA), New Delhi; Sanskriti Pratisthan, New Delhi; Bhasa Research
Contact: Arvind Mishra
Website: http:// www.deshkalindia.com

SAHC'2006 - V International Conference on Structural Analysis of Historical Constructions
Date: 6 - 8 November 2006 Location: New Delhi, India
The main aim of the conference is to promote an exchange of knowledge, information and views among researchers and experts in the field of preservation, protection and restoration of historical constructions, including monuments and urban compounds. A second aim is to discuss case studies in emblematic historical constructions at international level, stressing the diversity and cultural context.
Organised by: Paulo B. Lourenço (Univ. Minho, Portugal); Claudio Modena (Univ. Padova, Italy); Pere Roca (UPC, Spain); Shailesh Kr. Agrawal (CBRI, India)
Contact: Paulo Lourenço
Website: http://www.sahc2006.org

ENTECH India 2006
Date: 16 - 18 November 2006
Location: Mumbai, Maharashtra, India. South Asia's premier exhibition and conference on renewable energy and environmental technologies.
Organised by: TERI (The Energy and Resources Institute)
Contact: Vineet Handa
Website: http://www.entechindia.com

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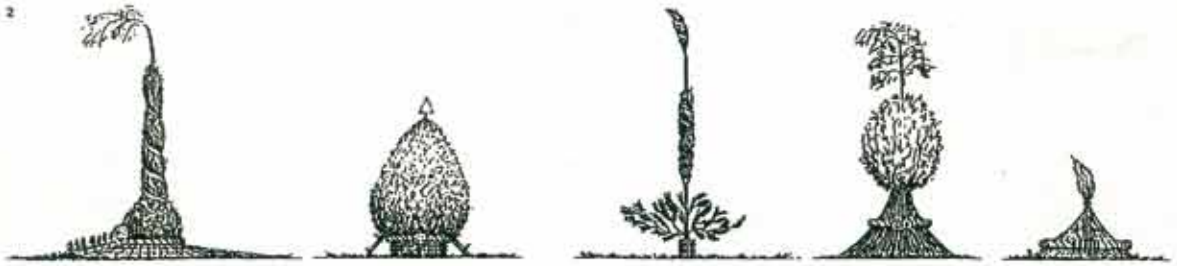

DRONAH is an all encompassing, interdisciplinary organisation that involves highly motivated professionals from various disciplines. We share a vision for a better quality of life for present and future generations - without foregoing the links from the past. In this pursuit, it is our aim to actively promote conservation and traditional practices in lieu of modern technology for sustainable development. We recognise the need for knowledge sharing and mutual interaction for this purpose. The idea of the organisation is to understand and document the complex matrix of our environment including traditions, art and architecture and people. The organsation aims for conservation and development in Built, Heritage, Ecology and Environment, Community Participation, Arts, Crafts and Education.

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