TENTS

The issues raised by the topic of MIMAR 4 concern those people who traditionally take their shelter with them wherever they go, adapting to climate and uncertain circumstances, and those permanent structures whose formal architectural qualities or some aspect of their very process of creation (economising of time or materials) has been inspired by more ephemeral constructions.

After the cave-dwelling, the tent of animal skins and later of man-made fabrics such as wool and cotton, is perhaps the oldest container for human habitation. Tents, as one type of shelter for mobile groups of people, continue to be a perrenial form of dwelling for millions in the developing world. Be it the tent of the Bedouin nomad or the principal shelter, for only five days, for Haj Pilgrims to Mecca (see: Bodo Rasch, "Tent Cities, Al Haj" IL-29, Stuttgart, 1980), these structures are important contemporary means for housing large numbers of domestic living units rapidly, inexpensive and easily transportable over long distances.

Lightweight structures offer advantages that fall into two major categories: 1. adaptability to diverse and changeable climatic conditions, providing suitable thermal insulation and 2. ease in erecting, dismantling and transporting by persons accustomed to moving their dwelling place frequently over land. It should go without saying that such structures are not 'temporary' in the modern sense that they are discardable, but rather that their setting is not permanent. This is the case of nomads, but it is also the case of refugees in many many parts of the world today, from Nouakchott, Mauritania to the cities of Somalia, from Peshawar, Pakistan to South-East Asia.

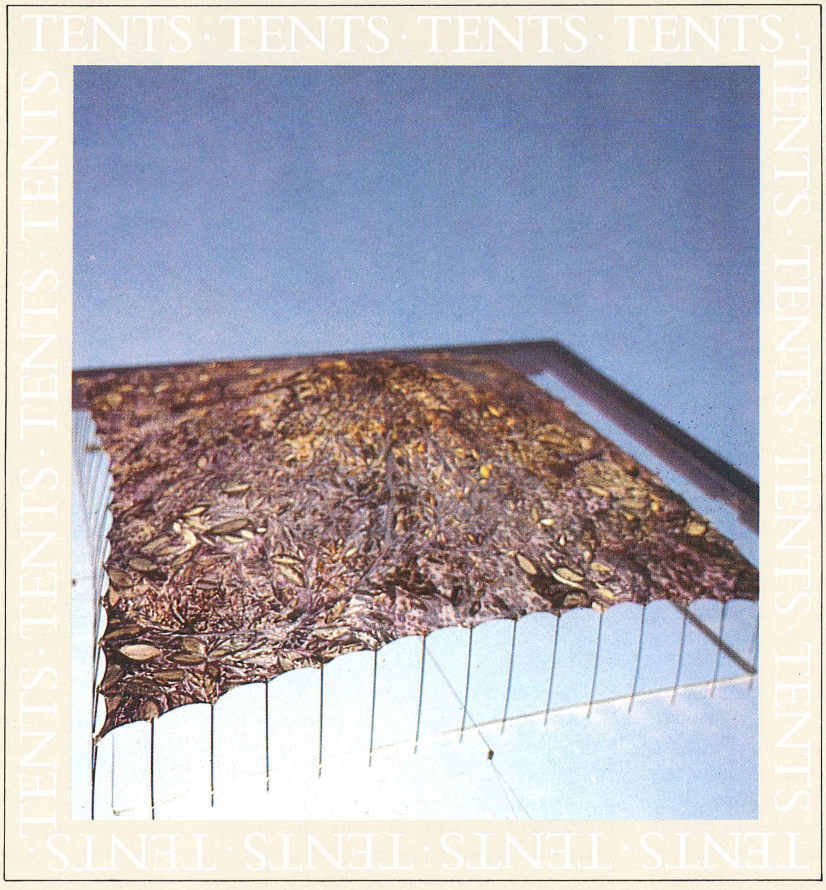
As Professor Frei Otto pointed out so succinctly some years ago, the suspended roof, or membrane, working in traction serves three basic functions: it is a load-bearing system (carrying only its own weight), a covering, and a space-defining form all rolled into one. The material means exist today as they never have previously for increasing the durability and the longevity of suspension systems through the use of synthetic materials. Improved technical means, such as fire-resistant fabrics, have made these systems, at least potentially, of much greater interest to certain developing societies in which neither post-and-beam nor domed structures are attractive alternatives. Skidmore, Owings and Merrill's Haj terminal is a good example of this.

It seems clear that as far as tents are concerned typologies of suspension systems do exist, as they do in other forms of construction. Such typologies can be based on purely structural characteristics, or for example, on various definitions of interior space to meet practical needs or traditional values (e.g. privacy). The bedouin herdsman in the Middle-East modifies the form of his tent according to daytime or nightime use, and delimits interior space with reed mats as screens held up with poles to create storage space, an area for receiving guests, or for sleeping space. Professor Otto's contribution for accommodating increased numbers of pilgrims to Mecca demonstrates how well an appreciation for a specific tent type (that of the traditional Haj Square Tent), modified and improved to meet requirements for greater densities in the tent city of Muna (near Mecca).

Results of research and innovation of this kind, for new structural systems or to improve sanitary, transportation and safety conditions in large groupings of lightweight buildings can be applied elsewhere. Ultimately it will depend upon the productive resources, such as craftsmen and craft industries, of the poorer non-western countries and political decisions at higher levels in such societies to determine whether technical innovations can be introduced with success.

Individual engineers and architects, like Buckminster Fuller and Frei Otto, have been important in promoting awareness of the numerous advantages of suspension structures for meeting 20th Century needs (sports and exhibition facilities, military shelters and disaster housing). They have done so through their personal capacities for invention and consistent devotion to a theme. While cogniscent of the advanced technical resources at their disposal, these innovators were often inspired by design solutions outside of their own culture. It is somewhat in this spirit that MIMAR has chosen to juxtapose traditional forms with radically new or sophisticated forms sharing some of the same principles with the old.

Not wishing to limit ourselves to the economic or the technical side of these issues, we have included examples of shelter that carry symbolic charges of religious and cultural values. It is often the interactions of these cultural dimensions, age-old or modern, with the unique laws governing suspension structures that produces astonishing and truly beautiful forms — creating an architecture for today and the future. — Editors



The first preliminary design for a garden tent in Riyadh designed by Omrania, Atelier Frei Otto Warmbronn with Büro Happold. Photograph courtesy of Institute of Lightweight Structures, Stuttgart.

Tents: Lady of the Builders

It seems particularly appropriate for an issue devoted to lightweight structures and nomadic architectures to follow so soon after an issue devoted to the work of women architects in the developing world since, although little acknowledged, it is a fact that the architects of almost all traditionally transient ethnographic societies were, and are, women.[1] Even where tents have evolved into symbols of royalty, into appendages of military strategy and expediency or into the ritual artifact of male-oriented society and behaviour, history suggests a nomadic archetype. Just as social systems never replace others without dramatising the classifications and myths of their predecessors, as if to make permanent their survival on another plane, so the material symbols of passing social systems remain to grant them a last image of themselves.[2]

Until recently, the literature of architectural history tended to exclude the developing areas of the world. It also denied the existence of an architecture of nomadism; hence the role of women in architectural creativity. Monumentality and permanence, traditional tenets of architectural judgement, found few prototypes from the "less civilised" world of ethnographic pastoralists. Anthropology, while attending to those areas within the developing world, has remained the "science of man" in the realm of housing and settlement. Even Amos Rapoport, in his germinal study of house form and culture, makes no mention of the particularly unique phenomenon of gender-related roles in the built environment, and despite our rapidly growing corpus of knowledge about man-environment relationships, the interface between various building activities and gender roles continues to elude us. We suggest that the architecture of nomadism provides an ideal study subject for filling this existing lacuna, and that there are a number of unique but persistent unifying features of nomadic environments which can provide a framework for the pursuit of contemporary concerns.

In the world of nomadism, it has traditionally been the women who have borne the responsibility for creating, erecting, maintaining and demounting the domestic environment, whether it be a tipi, a yurt or a black skin tent. All property relating to it, including the tent and its armature, the furnishings and utensils within it, have come from their hands. Even in those instances where women no longer tan and decorate the vellum or its internal leather furnishings, no longer weave the mats and tapestries themselves, it is still the responsibility of the bride's or wife's family to provide them as part of her dowry or upon the birth of her first child. A woman had ultimate jural rights over her own domain.

In contrast to the ownership of real property, or property with productive potential such as a herd, the ownership of domestic property generates a more intense psychological and poetic expression of identity, involvement and attachment. Emotional masculine involvement with herds, often voiced in pastoral lore, is more than matched by the poetry and metaphor which expresses feminine involvement with her personal domain, her domicile.

The degree to which a place fits our needs and reflects our personality determines our satisfaction with it. We distinguish our personal territory from that of others by "customising" it to suit our individuality, just as we use clothing. Personalised space, so essential to mental health, finds quintessential expression in the traditional mobile structure for several reasons. The investment of individuality in our choice of clothing is most easily extended into the micro environment of a built structure in which the materials of construction of clothing parallel those employed for immediate shelter, whether these be leather, felt or woven goods. We have found the frequent use of matching iconographies worked and woven into the spatial metaphor of both.

> In Egypt, the principal deity of architecture and reckoning was the goddess Seshat, "Lady of the builders, of writing and of the House of Books."

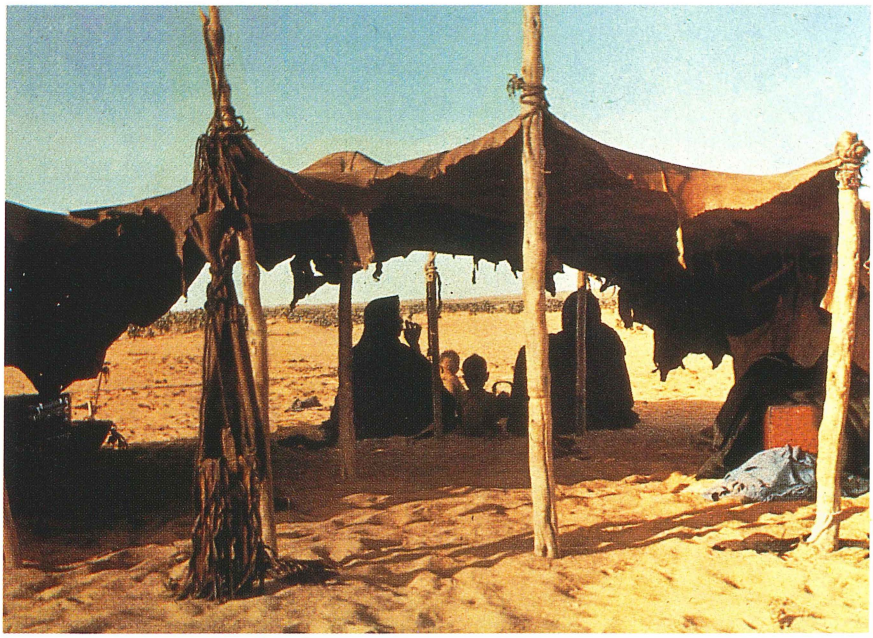
In a tent structure, small scale changes are easier to manipulate than large scale changes which require major investment, so that the process of identity is more readily realisable in a kinetic structure. The requisite repetitive assembling and demounting is equivalent to perpetual maintenance which itself intensifies the generation of the creative act. Space is also personalised through continual animated maintenance. Bachelard, quoting Henri Bosco, has called attention to the intense intimacy with our immediate environment generated by the polishing of a tabletop or a candlestick.[3]

Article by Labelle Prussin. Dr. Prussin is Professor of Architecture at the University of Washington, Seattle and has a special interest in peripheral communities of the developing world. She has written numerous books and articles and is the author of a soon to be published book on Islamic Arts and Architecture in West Africa. Photographs and drawings courtesy of the author unless otherwise indicated.

[1]The remarks which follow are the coalescence of a long standing interest in women in the architectural profession as a result of personal experience, several decades of research into African architecture and more recent teaching experiences in the studio context. They are also, at the same time, the introduction to some new directions in research which, we hope, may yield new insights into the nature of the design process itself.

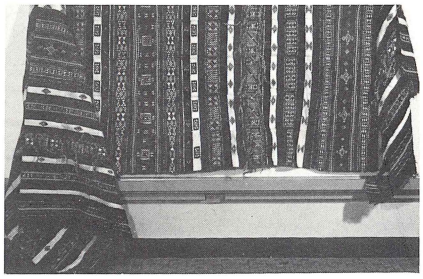
[2]Jean Duvignaud, The Sociology of Art (New York, 1972), p.9.

[3]Gaston Bachelard, The Poetics of Space (Boston, 1969), pp. 68-69.



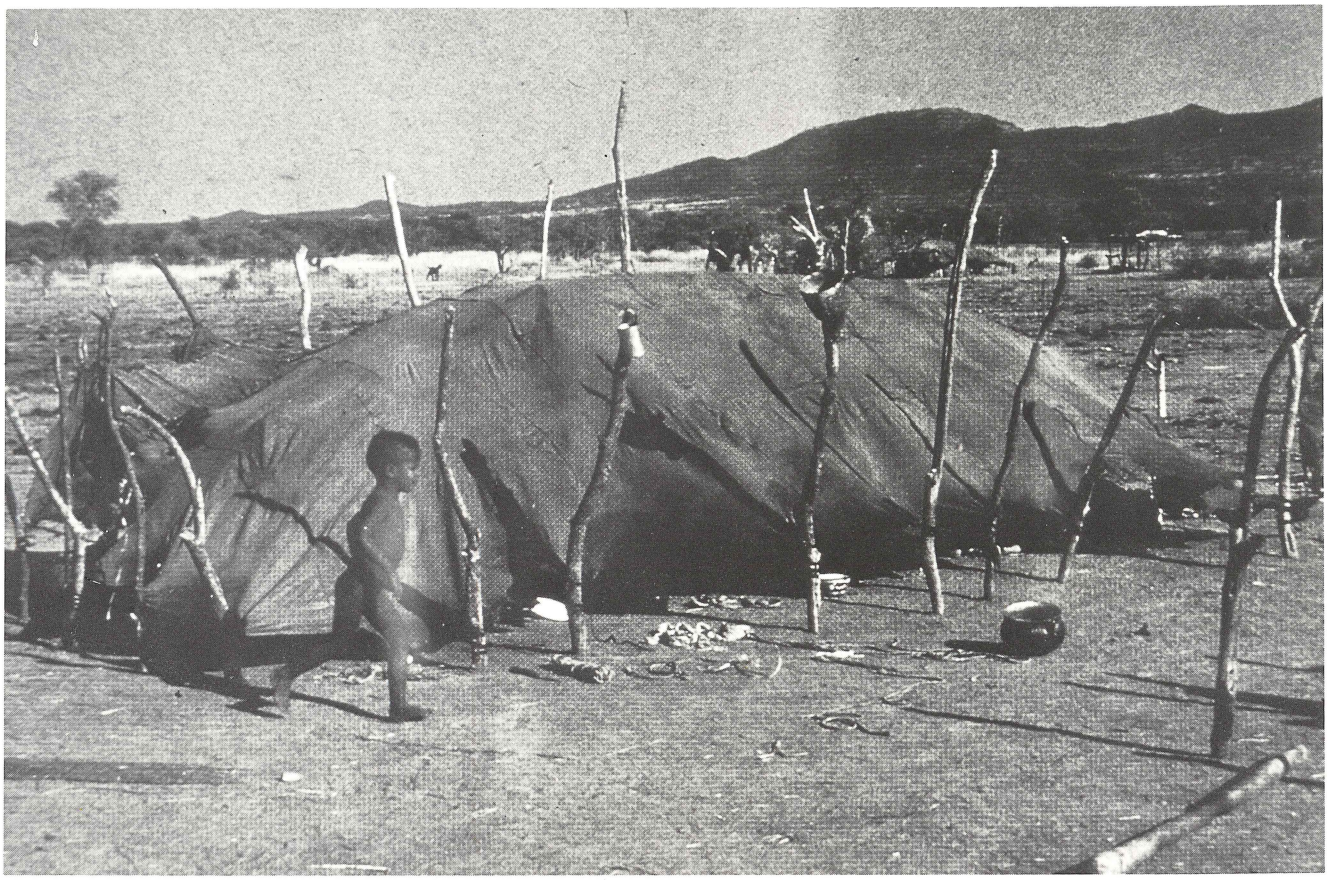
Left: An ehen with its goatskin vellum, from the Hoggar region of southern Algeria.
Left, below: A matframe ehen from the Air region of Southern Algeria.
Photographs: Architecture Slide Library, University of Washington.
Below: Tapestry details and colour preferences found in a wide range of West African tent structures.
Right: A Tuareg ehen photographed in Haute Volta.
Right, below: The interior of a Ioullemmeden ehen with its leather and mat interior, its suspended baggage, calabash supports and tabebut or bed. Photograph: Paul Toucet, Niamey.

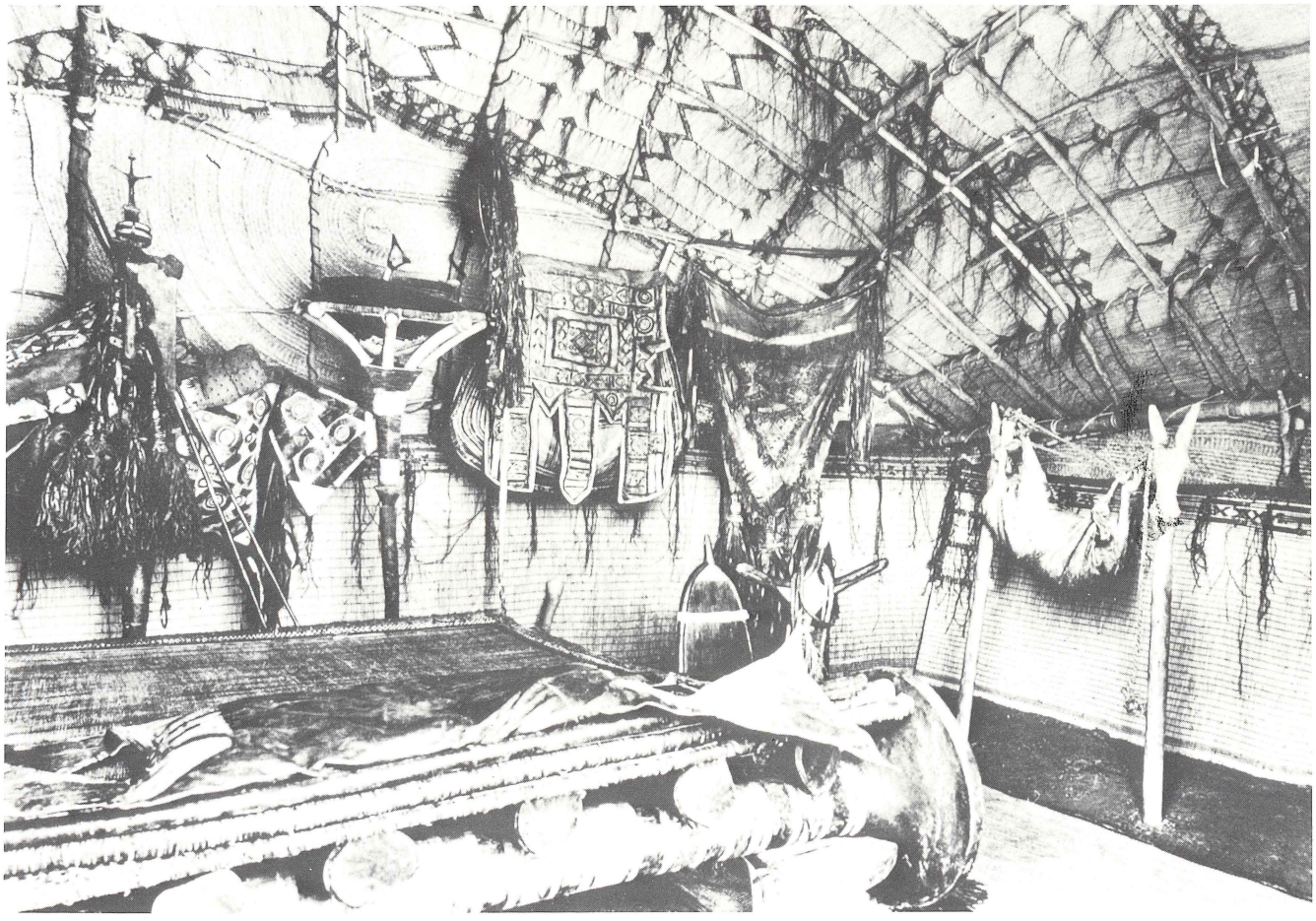
Finally, like other vernacular architectures, there is no distinction or segregation between designer, builder, owner and user: all are one and the same. This homogeneity in the creative process establishes a cosmological, mythological continuum in the built environment which extends from behaviour in space to its ultimate conceptualisation. No other building type embodies such a symbiotic association between occupant and object.

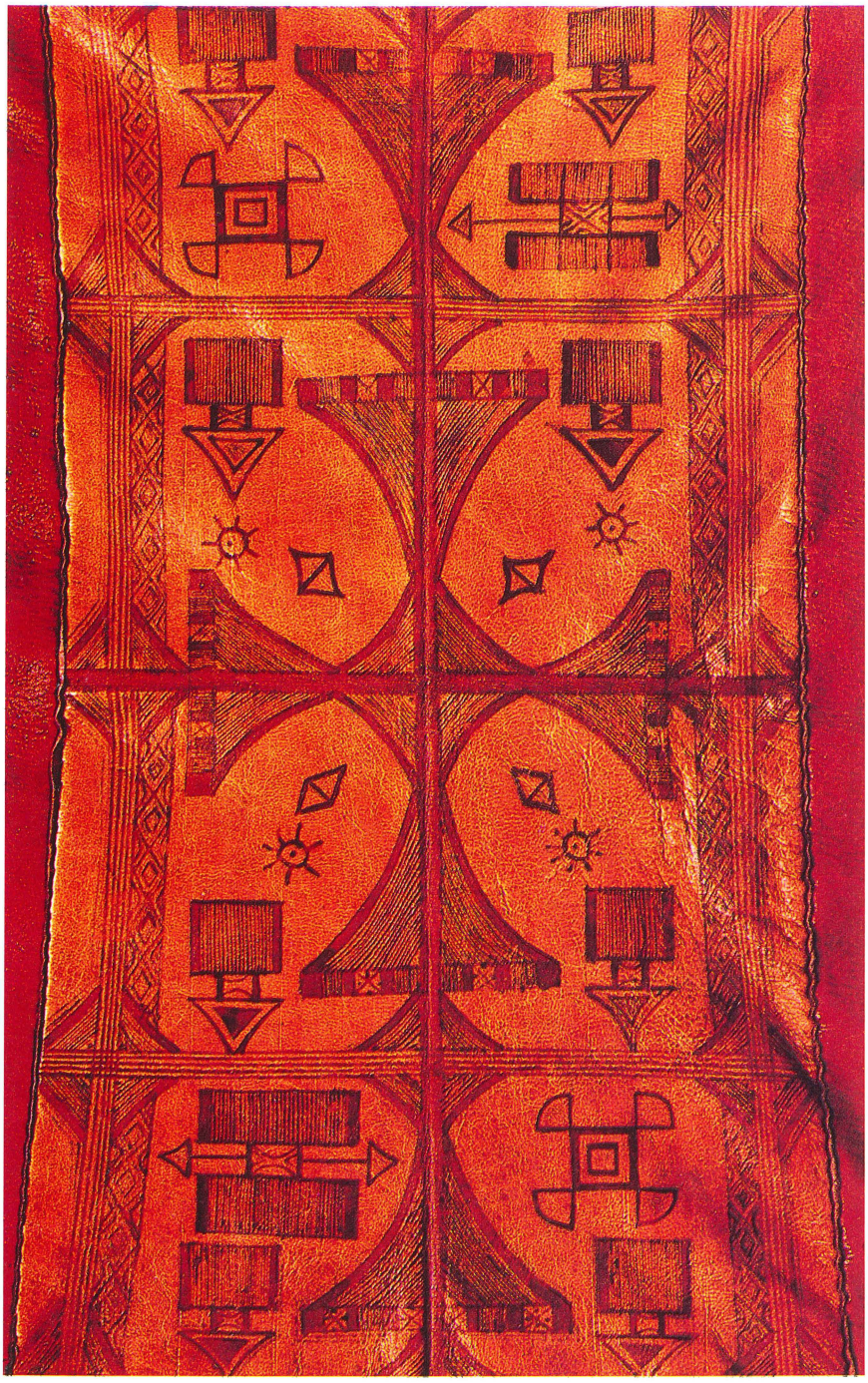


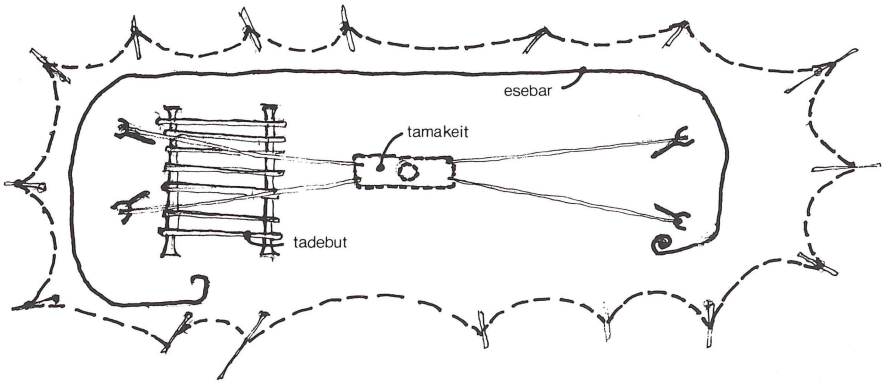
Among the Tuareg people both north and south of the Sahara desert, the *tamakeit* or central pole of the strip-woven or leather vellum tent is conceptually equivalent to the establishment of "place."[1] The term itself derives from the verb *anmenked, "to support", and is used in both a physical and moral sense. Immediately after it is first erected, Tuareg women, the bearers of the literary traditions, incise or burn apotropaic tifinar* (the written form of their language) formulas on the tamakeit to spiritually guard the interior. Amulets designed to assure the well-being of the tent inhabitants are suspended from this central post,

[1]*The Tuareg, often referred to as "the men of the blue veil", are a transhumant population whose territory embraces a vast area of the western Sahara. The population is divided into eight politically and geographically distinct groups, all speaking mutually intelligible dialects of the Berber-derived tamachek language. In spite of their linguistic relationship with Berber, Tuareg life closely approximates that of the Bedouin Arab. However, while other North African nomads have, in general, adopted the animal-hair Black Tent, the Tuareg use a range of skin vellum tents in combination with the Songhay-derived matframe tents. I would like to thank Susanne Curtis for calling my attention to several aspects of Tuareg life which I had been unaware of, during a recent graduate seminar on nomadic architectures.*







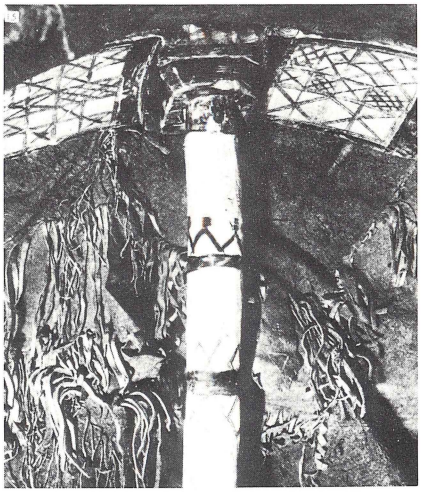


Plan of a vellum tent structure used by the Ioullemmeden Tuareg.

and the same post is used in childbirth. A mother gives birth inside her tent by squatting, bracing herself with the support of the tamakeit as she delivers. That this protective and supportive function is extended to include the spiritual realm is evidenced by its frequent appearance in Tuareg poetry as a metaphor for a beneficient force.

The tent itself, called an *ehen,* is synonymous with the Tuareg term for marriage, but it carries a broader meaning than mere abode, since it also implies shelter. One speaks of *ehen n elmusi* as the sheath of a knife, and the term has been extended to mean an entire lineage as well as any kind of house. The women of a household are called *set ehen,* literally "daughters of the tent," and a man proposes to his intended with the words *eg ehen,* literally "mount a tent." Marriage ceremony behaviour itself enacts the symbolic aspects of tent erection and the morning after the "wedding" the marriage tent is taken down and re-erected as a normal tent.

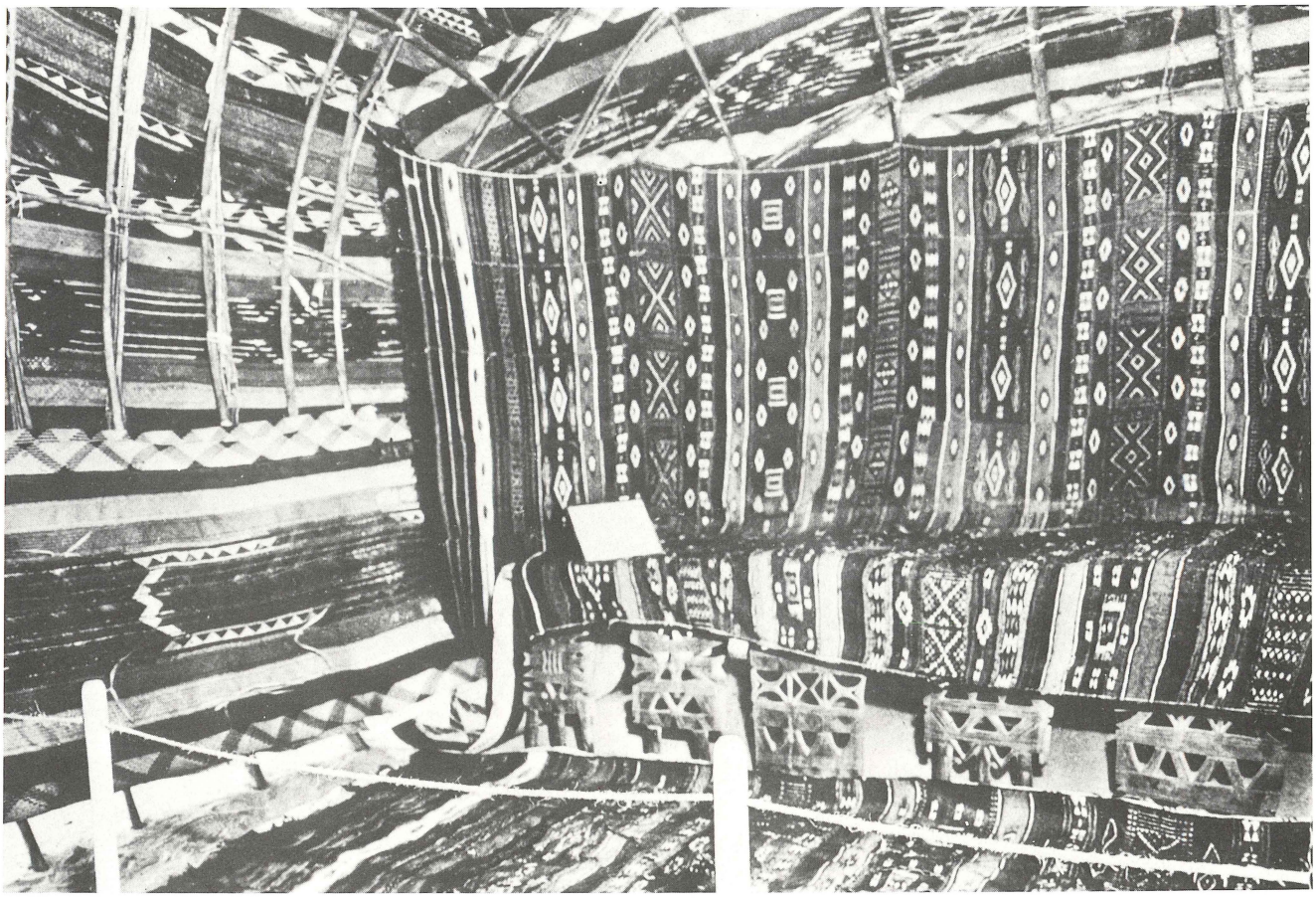
A similar relationship between structure and metaphor can be found in the term *esebar,* which refers to the woven, decorated mats used as side walls. The term derives from the verb *eber,* "to obstruct," and is used in reference to protection from the demons of the void during the period immediately following delivery of a child, when a woman is most vulnerable. The



Above, left: Leatherwork details from saddlebags and cushions made by the Tuareg women leatherworkers in the region of Tahua, Niger. Photograph: Jean Gabus, Musee d'Ethnographie, Neuchatel.
Above: The central support pole or tamakeit used by the Ioullemmeden Tuareg in the region of Niger River Bend, and Tahua, Niger. Photograph: Phototeque Musee de l'Homme.

eseber becomes a spiritually charged boundary, mediating between the sacred and secure interior and the profane, danger-charged exterior.

If we look at the house as symbol of self, then in Tuareg architecture we are looking at the house as symbol of woman. If living space is an extension of the body, and



The woven interior of a Djerma (Wogo) nuptial tent using tapestries woven by Fulbe weavers from Niafounke, Mali. Photograph: Paul Toucet, Niamey.

biological as well as social experience influence a woman's preoccupation with the relationship between inside, outside and its mediatory boundaries, then the *ehen* provides, as do other nomadic house forms, an ideal paradigm within which questions regarding distinctive differences between the genders in visuo-spatial aptitudes and in preferences for the quality of space and its pattern gestalts can be considered.

The contrast between male concern with facade and monument and female concern with function and environment, between the male concern with permanence and structural imposition and the female concern with adaptability and psychological need, between the male concern with public image and the female concern with biography and autobiography, is eloquently and poignantly expressed in the environment of tent architectures. The same polarities find expression in the nature of the Tuareg design process itself, in which the preference for cumulative building element assemblage from associated fragments from the inside out, constrasts sharply with the fixed view from the outside in, which is so characteristic of creativity in the monumental tradition. The Tuareg bed or *tadebut,* itself an assemblage of demountable elements, also serves as the measure of interior space and is used to establish the boundary of the matframe tents which some southern Tuareg clans use.

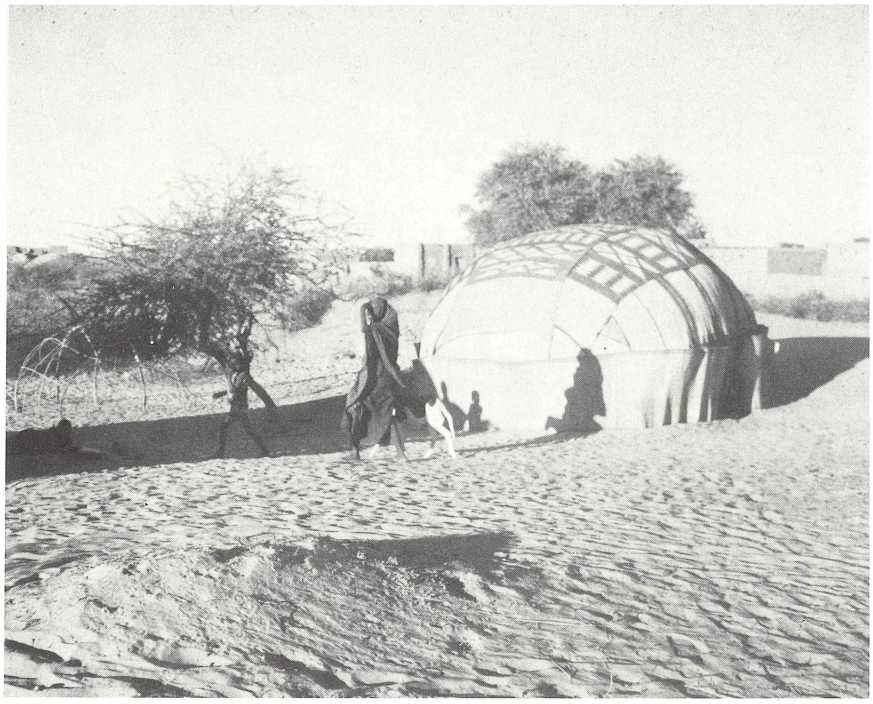
It has been suggested that the precise cardinal orientation of nomadic structures and their rigid division of interior space is a response to the deep psychological need for the sense of security which comes from knowing where one is, socially as well as territorially.[1] The more featureless the context of actual territorial space, the more rigid and artificial the model must be. It is no accident that the conical *tipi,* the domical *yurt* or the beehive matframe *ehen* are a response to the expanse of the North American plains, the windblown steppes of Mongolia and the sandblown savannah-sahel of North and West Africa. One is tempted to recall Bachelard's discussion of roundness and his suggestion that when a thing becomes isolated, it becomes round, assuming a figure of being concentrated upon itself.[2]

At the same time, a house constitutes a body of images that give humanity the proof or illusion of stability. A house is a place in which a human being's certainty of being is concentrated. And yet, a transient structure, perpetually moving along albeit familiar lines, is the antinomy of stability. Nomads, semi-nomads and transhumants, whose life consists of continuous, seasonal displacement necessitated by the search for and acquisition of subsistence, find themselves confronted with an apparent paradox: the need for stability affording shelter and protection and the need for mobility affording sustenance. The resolution of the contradiction is in a response which creates a closed miniature world in the form of cone, cube or dome whose interior manifests an intense emphasis on richness of surface and colour Bare and unadorned exterior surfaces are matched by elaborate interior detail, abundant with metaphor and iconography.

The sense of hiding and secrecy which such enclosure affords is reflected in the Fulbe *bororo* (nomadic) concept of space. Within the feminine hemisphere of the *wuro* or encampment, one finds one or more *suudu* or house units in the form of a basketlike, matframe tent. The term *suudu* derives from the verb "to hide," and it is a place where a being or thing finds shelter. The term carries with it the notion of compartment and a sense of hiding. Thus, the same term, like the Tuareg *ehen,* can be used in reference to a place where a person sleeps, to the envelope of a letter, a box, or a case in which objects are stored.

In contrast to the carpentered environ-

[1] *Edmund Leach, Culture and Communication (Cambridge, 1976), pp. 53-54.*
[2] *Bachelard, op. cit. pp. 232ff.*

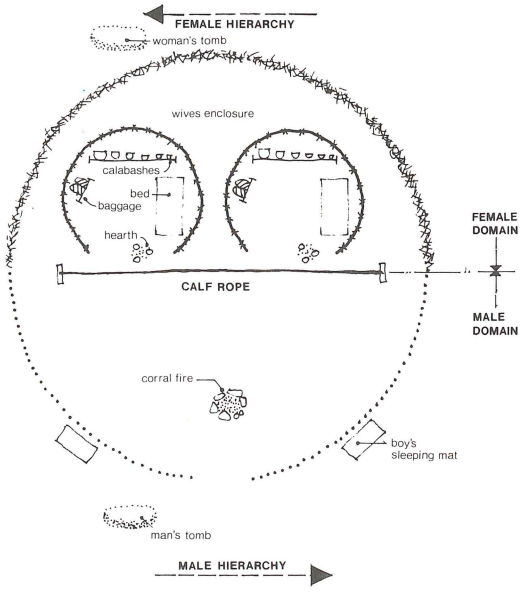


Left: Fulbe suudu on the outskirts of Goundham, Mali. Left, below: Fulbe bororo women erecting a suudu or matframe tent in Mali. Photograph: Marli Shamir.

ments of sedentary lifestyles and high tech societies, nomadic environments are soft and malleable, derivative of minimally modified natural materials. Materials of construction, materials used in the demarcation of assigned spaces and the mechanisms for privacy are evocative of early tactile experience associated with wellbeing.

It has been well documented that with the onset of sedentarisation, sex-role changes occur at all levels of social organisation. Shifts in power structures are reflected in property resources and in changes associated with building tasks and responsibilities per se. These can all be indexed by eventual changes in the built form, in the content of behaviours relative to the location and position of structural elements, and in the organisation, content and figural quality of decorative elements associated with the built form.[1]

Paradoxically, trends in contemporary society include increasing personal and social mobility, fragmentation and alienation from the natural environment, as well as further shifts in gender roles and rights. Current trends appear to be re-creating, at a higher level, many of the characteristic features of traditional nomadic societies. The in-depth study of their architecture of portable roots can, we believe, reveal some innovative insights and more appropriate design directions withhin a world of high technology, geometrically ordered living environments with their impersonal, bleak and barren surfaces.



Plan of a Fulbe bororo encampment.

[1]*See Labelle Prussin, "Fulani-Hausa Architecture: Genesis of a Style," in African Arts 9,3 (1976) for a discussion and examples of this phenomenon among the Fulbe-speaking peoples in West Africa.*