

# Cultures in Development

## Conservation of Vernacular Architecture

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### Abstract

Vernacular architecture is a dynamic cultural heritage and it is not 'frozen in time' like a historical heritage. Its local appeal makes it an important attraction in trekking and nature tourism. A fallout of cultural globalization, poverty and poor national policy emphasis on development and use of local building materials has brought about design and construction of 'modern' houses that has led to loss of vernacular character of rural Nepal that is not only unsustainable but also detrimental to Nepal's tourism industry. This study identifies such changes in architecture and planning; examines the loss of vernacular architecture, its causes and effects and proposes some policy moves to affect conservation of the vernacular architecture.

Nepalese rural vernacular architecture is as varied as the topography, natural environment and ethnicity of Nepal. This study focuses on the vernacular architecture of the middle Hills of Nepal through a case analysis of the village of Salle in Dhading District. Salle lies in the hills just outside and west of Kathmandu Valley. The article is based on descriptive surveys and observations made over the last seven years, 1996-2003.

The findings show that the loss of vernacular character is grave. Most dramatic changes are seen in roof and *bardali* in Dhading and the inroad of foreign construction materials such as CGI sheets (in Dhading) and RCC (in other roadside villages) has led to development of unsavory aesthetics unhinged from local setting. Development approaches based on principle of sustainability with a conscious policy of local building material usage can lead to a dynamic conservation of the vernacular.

**Keywords:** Vernacular Architecture; Building Materials; Conservation; Rural Development; Salle; Nepal.

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### Introduction

Architectural heritage is more commonly associated with high culture and antiquity and the heritage value of the vernacular architecture appears lost in its recentness, commonplaceness and anonymity. Indeed, the very title of the act that provides the legal basis for conservation of arts, architecture and other heritages in Nepal, i.e., the Ancient Monuments Protection Act (1955 and revisions), is illustrative of this attitude. Clearly vernacular heritage is not protected by the law in Nepal, as it is applicable only to buildings or artifacts more than a century in age. But vernacular architecture, although they may be of recent construction, is based on an indigenous traditional knowledge of both design and construction, and, which

exhibits a rare assimilation of social, environmental and economic demands of the place and the people in the austere aesthetics of sustainability. Indeed, vernacular architecture is valuable for its dynamism and its capacity of continuing evolution. These values and the unique local architectural character that has resulted out of consistent application of such values and knowledge over generations are as worth conserving as any ancient heritage. Although the artifact per se may not be ancient, they incorporate wisdom and aesthetics of architecture and construction methods developed over centuries in a manner most true to the indigenous society and the environment.

Like other aspects of life and artifacts of living, building and vernacular architecture in rural Nepal has been changing rapidly. The speed and nature of such changes are anything but evolutionary. The causes for such changes have been very many and range from general cultural globalization and the perceived loss of meaning and pride in things and ideas of local origin to general poverty, dwindling local resources and market

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availability of 'foreign' materials. The promotion and projection of non-vernacular material and methods as symbols of development is not as incidental as it is often made out, it is as much orchestrated through the so-called scientific knowledge, which is packaged as an external quantity. New buildings are already speaking a hybrid of the vernacular and the faraway and unless efforts for effective conservation are made urgently, the vernacular architecture may be something of history soon. Also, there are no guidelines available for interventions and even well intentioned attempts at conservation have led to loss of character and integrity.

The beauty and meaning of traditional architecture of rural areas arise out of their truthful response to the physical environment of the area. Their grandeur and significance lies in their naturalness and local belongingness. They respond precisely to the site, climate and material – the vernacular buildings are straightforward in seeking economy of resources and upkeep (Moholy-Nagy 1976). Like other folk arts, vernacular architecture has “important functions in maintaining ethnic identity and social structure, and in didactically instilling the important values” (Graburn 1976) in the society into the future. For, trekkers in rural areas, vernacular architecture compliments natural heritage (7) and its conservation is crucial for Nepal's tourism industry. Since the site, climate and local materials are much the same today as they were in the past, vernacular architecture of rural areas should not be viewed as a traditional novelty or a heritage to be preserved as is – while it carries good worth of contemporary use, it is also subject to developmental changes as any cultural artifact for living has to go through. The approach to conservation of vernacular architecture should be based on

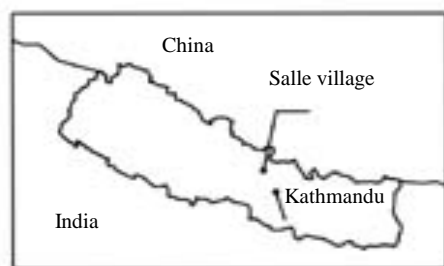


Fig. 1 Survey area

sustainable local development of materials and skills of building.

With the great variation of topography and natural environment and an equally large number of diverse ethnicity, rural vernacular architecture of Nepal can be as varied. However, on the basis of major construction material in use, we may divide Nepal into three broad vernacular architectural divisions eg. the Tarai, middle Hills and high Mountains. This study focuses on the village of Salle in Dhading District in the middle Hills. It seeks to answer such research questions as “*What are the factors that characterize the changes in vernacular architecture in rural Nepal? How can the*

*society accommodate the new socio-cultural, functional and technological needs of ‘development’ without losing the vernacular appeal? How may we build local sustainability in the process?”*

### Research method

The method followed in this research is basically field study followed by desk review and analysis of causes and effects. The field study included observation and documentation of changes, local people's perception of causes, reasons, long-term and short-term effects, advantages and disadvantages of the changes in terms of tradition and socio-cultural environment, function and economy and development and local control over resources.

The nature and extent of changes in vernacular architecture, (village planning and form, material and technique of building) was studied by comparing the state of buildings, primarily in a village in Dhading district of Nepal, as observed by research students over the last five years. Field data on function and form was collected through structured questionnaire and observation whereas socio-cultural opinions and perceptions were additionally identified in focused group and family discussions. Although these discussions were taken as both consultative and didactic, the survey method was largely descriptive and self-reportive. The observations in Dhading were compared with physical change data available for other rural areas, e.g. Mustang in Northern Nepal (Chapagain 2000) and Jhapa in Eastern Nepal (Dhimal 2002). All buildings in a representative section of the village were observed- the number of residences ranged from 8 in Mustang to 60 in Dhading.

Desk review was also made of literature pertaining to development and use of local material and forest resources in rural Nepal.

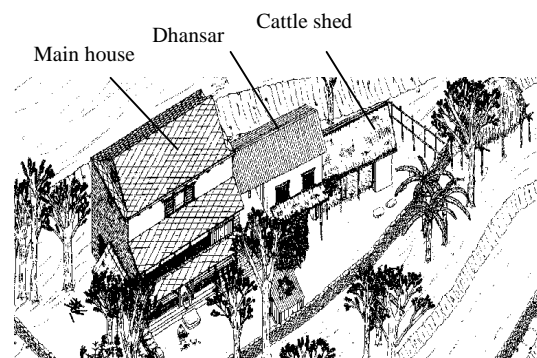
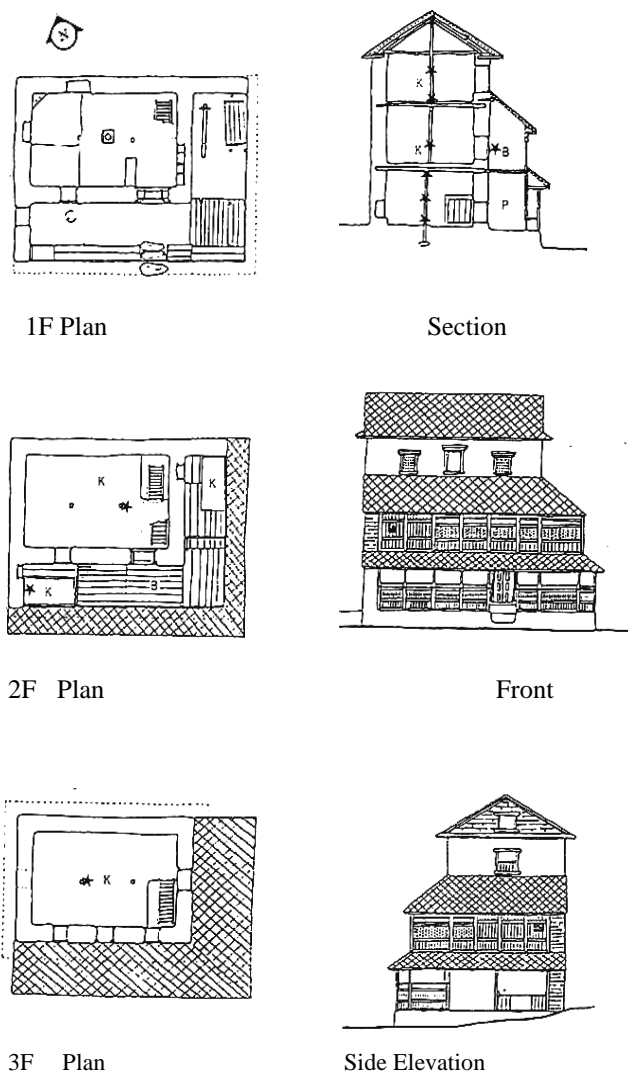


Fig. 2 Main house and other Buildings

### Findings

Several kinds of changes in vernacular buildings are found occurring and range from the change in location and site planning (Mustang, Jhapa), walling materials



A: Agena, C: Chula, P: Piddy, K: Kotha B: Balcony

Fig.3. A Traditional Vernacular House from Salle and methods (Jhapa, Mustang), roofing materials (Mustang, Jhapa, Dhading), roof form (Jhapa), material and form of window opening (Dhading, Jhapa) and plan form (Dhading, Jhapa).

(a) *Changes in village planning:* Vernacular planning of villages in the past appear to have been attempts at maximizing the individual benefits to a level that can be kept at almost an uniform level for a given social group and assuring collective good, the later defined in generally agreed principles of sensible use of land in the context of agriculture, irrigability, animal husbandry and climate. Tight layout of building within walled areas was used in Mustang largely due to its climate of icy cold wind. New buildings are springing up outside the walled towns and exposing life to insecurity and cold wind. In Dhading, the building units are dispersed in hill slopes and laid out in terraces to catch sun as well as to maximize agricultural land. In Jhapa, buildings are laid out to protect against the summer sun and to save from

possible monsoon flooding as well as hot winds. In recent years, the village houses have been built in low-lying areas as well as land exposed to winds due to increasing pressure on land. In Mustang as well as Jhapa, the changes have been a loss to the collective at the same time causing inconvenience and danger to individuals.

Table 1. Changes in Roofing Materials

Type of House	Type of roof	1996		2003	
		Number of house	(%)	Number of house	(%)
Main House	Thatch	31*	91	12*	27
	Slate	3	9	2	5
	CGI	-	-	30	68
	Total	34	100	44	100
Dhansar	Thatch	11+	85	11	42
	Slate	2	15	1	4
	CGI	-	-	14++	54
	Total	13	100	26	100

\*: Except in gr. Floor roof of houses (2 in 1996 and 1 house in 2003)

+: Except in gr. Floor roof of houses (2 in 1996), ++: Except in gr. floor roof of houses (3 in 2003)

(b) *Changes in building materials:* The most important change challenging the vernacular architecture in Nepal is the rapid change of building materials. In the whole of the country, and particularly in villages belonging to the hill districts, the vernacular roofing materials of thatch (*khar* in Nepali) and slate (*dhunga* in Nepali), is giving way to corrugated iron (CGI) sheets (See Fig. 1 and 4). In some cases, particularly in villages close to highways, reinforced cement concrete (RCC or RBC) has also been used. In Dhading, in all, now 68% of the main houses use CGI sheet roof and only 27% retain thatch and only two main houses (5%) have slate roof. The main reasons cited by residents for the preference to CGI sheets are (a) no rain penetration, (b) less repair demand, (c) good looking and (d) not blown away by heavy wind. In reality, CIG roof is blown away more in comparison to roofs with other materials in Dhading and Solukhumbu because of poor construction know how as related to anchoring to wall plates. They appear to have been forced away from stone roof as it needed a lot of precious wood, and for thatch roof too all of thatch, bamboo and reeds were already rare in the village environment. Loss of forest cover and marginal agricultural land suited for bamboo and reeds are behind loss of both of the indigenous roofing materials. Literature shows that the hill population of Nepal got introduced to the CGI sheet as a roof early through the Gorkha returnees of British and Indian armed services and got an inadvertent social status appeal! In terms of thermal performance, for the hill areas that have to face an average total of about four months of either too hot or too cold climate, the preference order should have been thatch, stone and CGI – the status appeal is

so strong that only 23% of the respondents in Dhading said that they were not satisfied with CGI sheet as it was hot in summer and cold in winter!

Table 2. Evaluation of CGI Sheet roof by Residents

Description of Evaluation Scale	No. of Houses*	%
Highly Satisfied	5	38
Satisfied	4	31
Not Satisfied	3	23
Don't Know	1	8

\*: Changes of thatch roof (1996) to CGI roof (2003)

The change in roof material has also affected the form of the house as the roof slope is considerably less for CGI as compared to thatch or stone and almost all of the newly built fifteen buildings carry a relatively squat roof.

(c) *Changes in building elements*: Normal addition to buildings such as a floor, sleeping verandah (*bardali* in Nepali), addition of floor over store house (*dhansar*) or addition of lean-to portico (*pidhi* in Nepali) have resulted from increase in family size (10) over the years and also due to functional specialization within (9). In Dhading, such additions have been seen in the monitored houses. Whereas in 1996, only 24% had *bardali*, in the main house, in 2003, this figure had grown to 59%.

Table 3. Changes in Bardali

Type of House	1996			2003		
	Total Houses	Houses with Bardali		Total Houses	Houses with Bardali	
		Number	%		Number	%
Main House	34	8	24	44	26	59
Dhansar	13	5	38	26	13	50

Windows have been added on the side of the buildings. With only one house having changed over to glazed window and that too made for experimentations on thermal environment within, most have remained traditional in terms of size, sill position and use of timber plank shutters.

While the kitchen fireplaces were 86% all earthen timber fueled open hearth in 1996, only 36% were such in 2003. Use of improved stove with chimney is made in 33% of the houses and 13% are without chimney. Most of these changes are achieved through local materials and skills and have not caused any adverse visual changes too.

(d) *Changes in plan form*: It is interesting to note that the walling materials in most of the rural areas of Nepal have remained local particularly because such materials tend to be heavy and are not economic to transport over long distance. This has also meant that the forms of the residential buildings have remained 'vernacular'. Only in the very few cases, where RCC

has been used in framed structure format in villages adjoining highways, radical changes in plan form is seen.

Generally, changes in plan form have failed to provide a better indoor environment as compared to the vernacular as that construction system is very well tuned to local climate. The user's evaluation of the new plan forms has ranged from poor to unsatisfactory. The new buildings are reported as hot and stuffy in summer and cold in winter.

(e) *Skills and techniques*: Changes in vernacular architecture are usually affected through use of new materials rather than through design and form improvements through continued use of local materials. Changing materials demand use of new technologies and skill, which are usually not locally available. This has created not only material but also skill dependency of the society and eroded its confidence. By contrast vernacular architecture is locally achieved and its maintenance and replacement is internally manageable. The sustainability of the above noted changes in vernacular architecture is indeed low. In rural areas using RCC construction, even the skill of the externally brought workers is insufficient for effective construction quality and building performance has been very poor.

(f) *Other implications*: It can be seen from the observation of the changes occurring in the vernacular architecture of rural Nepal that most of them have been at a great financial cost to the rural people (to the tune of \$ 10 per cubic feet) and has not lead to any improvement in the internal environmental and social performance of building. From an architectural point of view, the changes have been at discord with local material, environmental and climatic demands and logic of building. It is also evident that the roofing material that has been put to use is chosen mainly because of its ill-founded status image, transportability and lightness, availability due to aggressive marketing and inclusion in foreign assistance packages; and, it is not anything to do with internal environmental performance, the most critical factor for choice of roofing material in low rise building.

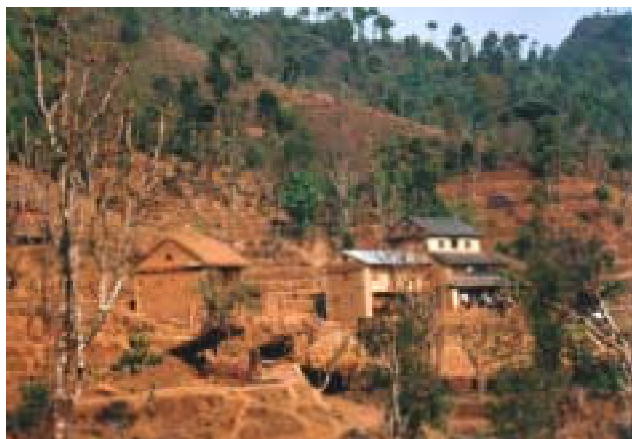


Fig. 4. Changing Roofs in Thatch, CGI and Slate

## Discussions

Changes in the name of development must necessarily provide for and lead to improvement in the quality of living. But the major change in vernacular buildings in Nepal, the replacement of thatch and slate by CGI as roofing material poses more problems, such as making it colder in winter and warmer in summer, in the internal environment of the building than improve it. Moreover, it has a large import cost to the nation and causes external dependency on construction as well as maintenance. Its adverse impact on the ethnic identity, sustainable aesthetic and material resource ideals of vernacular architecture and the general weakening of socio-economic self-confidence of the rural community are enormous. The conservation of vernacular architecture makes sense not because it is a heritage per se but because such action will reestablish a sustainable resource base and restore an architecture with local and ethnic characteristics. It will allow for a smooth developmental change well within the power of the local community to direct.

The local materials have been losing out for lack of marketing and appropriately informing the population. With educational institutions and media super loaded with information on foreign materials and technology, an impression is created that the local material is not worth using. For conservation of the vernacular architecture, the nation should embark on a information and awareness campaign based on hard facts of material quality, performance, construction and recurrent costs. There is a great need to incorporate such knowledge in the education of engineers and architects.

It is also notable that vernacular architecture is losing not only to new materials and the shortage of local materials, it is also affected by the breakdown of the traditional professions in construction which were family based. In recent times, members of families engaged in traditional construction have been taking to other professions leading to discordant changes in form and attitude (7).

As a newly developing country, Nepal's march towards modern living ought to be guided by the increasing awareness towards education and healthy living. Both of these demand innovations in vernacular architecture as the increasing congestion and pressure on land have resulted in an internal built environment that is often too warm, unventilated and dark – a situation neither conducive to health nor to education. The window, which should be a single most important element in affecting the qualities conducive to these objectives, is largely untouched by the change process. This more than clarifies that the changes have little or nothing to do with developmental objectives.

## Conclusion

This research had found that the reasons for use of foreign roofing materials are related more to the cost of the timber understructure pushed up by lack of supply than to the inherent performance criteria of the roofing material of iron sheets. Loss of timber and other forest resources is the main reason propelling rural population towards foreign materials of construction. To deal with similar and unmanageable dependency on fossil fuel triggered by loss of forest resources, Nepal has embarked for some time on the planned development of forest resources and renewable energy and Nepal's community managed forest development program is recognized as one of the more successful development activities. This program, if expanded to take care of production and distribution of building wood, has potentials of affecting conservation of vernacular architecture.

Although policy support for development, production and marketing of traditional building materials is important, this alone, however, will not be sufficient to affect conservation of vernacular heritage. Policy action to promote traditional construction trades and to revitalize and reinstate the locally available skill base will be as necessary.

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