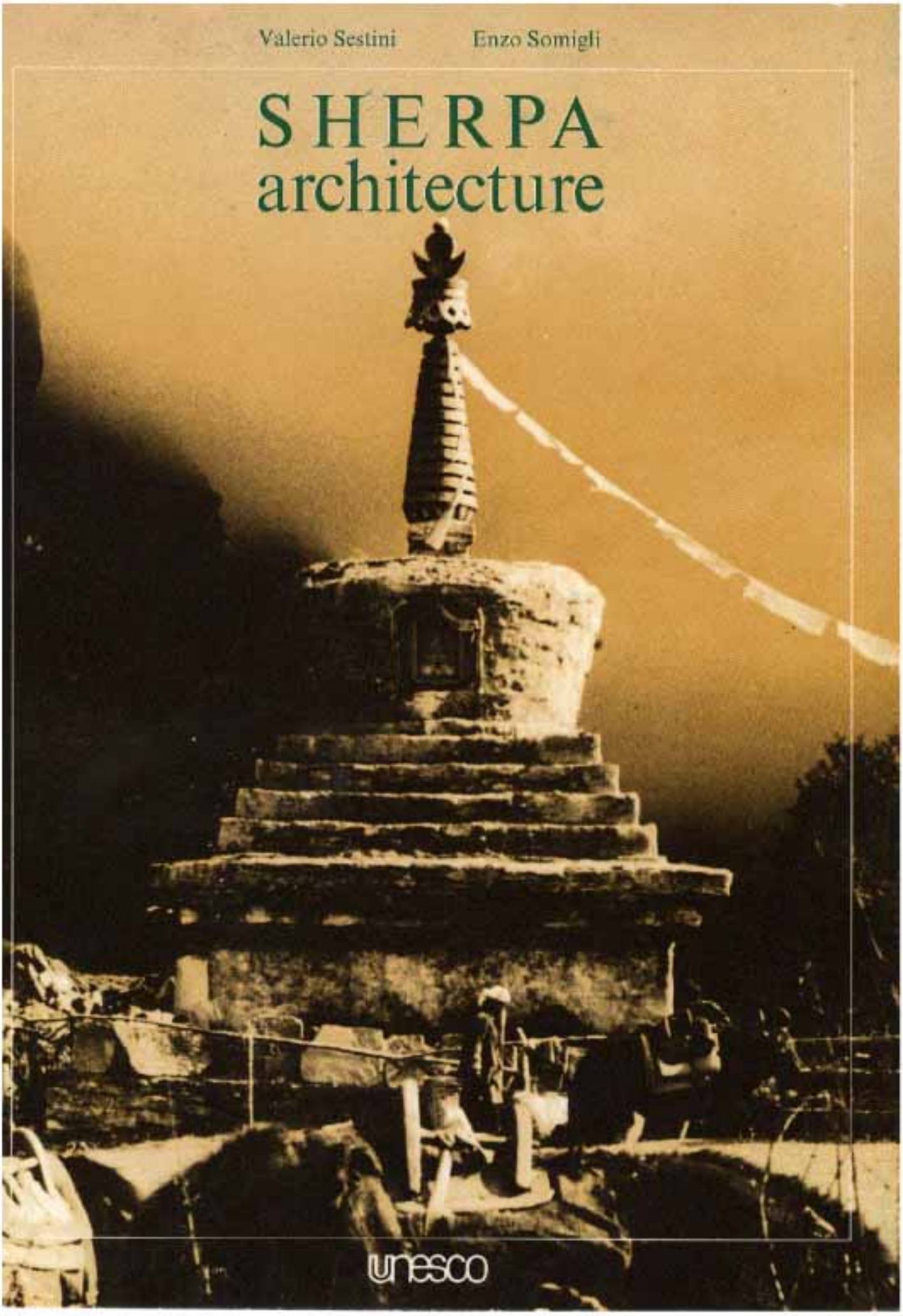
Valerio Sestini Enzo Somigli

# SHERPA architecture



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Valerio Sestini and
Enzo Somigli

Translated from Italian
by Timothy Paterson

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# *Preface*

For many years Nepal had been closed to visitors, except for rare permission given to groups seeking to climb its towering peaks or to small numbers of scientists carrying out research on the flora and fauna of the Himalayas. The resultant static situation, in which the art, architecture, religion and way of life remained medieval in character during much of the twentieth century, came to an abrupt end in the 1950s with the restoration of the monarchy to power and the opening of the country to visitors.

The long period of isolation ensured the survival of many examples of traditional art and architecture. During the past twenty years changes have been accelerating throughout Nepal and particularly in Katmandu. The government, conscious of the need to protect or to record its heritage before changes become too radical has called upon Unesco, and in turn Unesco is mobilizing the support of the international community, to aid it in carrying out a programme of conservation.

This publication is one of the means through which one of the architectural traditions of Nepal is being recorded for posterity and the information widely diffused. The report, prepared by the Italian architects Valerio Sestini and Enzo Somigli, has been illustrated with their drawings and a selected number of their photographs. It has been translated into English by Timothy Paterson of Florence, Italy, and into French by Raymonde Frin, of Paris, France.

The opinions and views expressed are those of the authors.

# *Acknowledgements*

The survey of Sherpa architecture, the results of which are published in the following pages, was made in 1975 during the expedition to Nepal organized by the Alpine Club of Italy and financed by the National Research Council of Italy. Excerpts from the survey first appeared in *Lhotse* 75, published in 1977 by the Alpine Club of Italy in association with Tamari of Bologna.

Particular thanks are due to the Council of the Alpine Club of Italy and its President, Senator Giovanni Spagnolli, for having included us in the expedition, thus enabling us to carry out this study, and to Professor Giuseppe Nangerini for help and advice during the initial and final stages of the survey before and after the expedition.

We should like to express our appreciation to the following:

The National Research Council of Italy, for having financed the survey, and the Chairman of its Technological Committee, Professor Mario Silvestri.

Unesco, for publishing the results of the survey; that they are published is also due to the kind assistance of H.E. the Italian Ambassador and Permanent Delegate of ltaly to Unesco, Ambassador Ludovico Carducci Artenesio.

All those who have helped us with expert advice and suggestions: H.E. Ambassador Gianfranco Pompei, the Italian National Commission for Unesco and in particular Professor Aldo Sestini.

Our friend and translator, Timothy Paterson.

*Florence, Italy*
*June 1978*

VALERIO SESTINI
ENZO SOMIGLI

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# *Foreword*

by His Excellency
Trailoka Nath Upraity,
Nepalese Ambassador
Extraordinary and Plenipotentiary
to France,
Permanent Delegate to Unesco

Nepal is a land of contrasts. The Terai along its southern border is low and with little relief, covered with jungle and swamps in which are found tigers, elephants, rhinoceroes and deer of different species as well as human habitations and cultivated areas. The Terai soon gives way to a mountainous central area 300-2,500 m high, dissected by valleys, of which the largest is the Katmandu Valley through which the sacred Bagman River flows. Its northern borders are formed by the Himalayas, the world's highest mountain range, including such world-renowned peaks as Sagarmatha (Mt Everest), Kanchen-junga Makalu and many others.

The peoples who settled in Nepal over the course of centuries were protected by the rugged terrain and isolation has contributed to the survival of many different traditions. This tendency was reinforced during much of the nineteenth and the first half of the twentieth centuries, as a policy of isolation limited contacts with the rest of the world. Thus, while elsewhere in Asia countries were influenced by the spread of industrialization and the effects of colonization, Nepalese society continued relatively unaffected. As a result, its way of life, religious practices and architectural styles continued with little change until 1951, when the monarchy was restored to power.

In the brief period of time which has followed, changes have taken place with rapidity, as one of the most important results was the decision to open the country to visitors and to stimulate commerce with the outside world. The city of Katmandu, for example, which only a few years ago had muddy roads and no facilities for visitors, now has paved highways and several hotels of international calibre. Education has become widespread within the valley and making marked progress elsewhere. Not all aspects of change have been desirable. While living standards have been improved, buildings of

outstanding beauty have been destroyed or marred by unsightly 'modern' additions.

The government, taking these factors into consideration, has decided to adopt a master plan for the conservation of the cultural heritage in KatmanduValley with the aid of Unesco and the United Nations Development Programme. This is to ensure for our people continued identification with their past and to bring to future generations knowledge of our traditions. This programme will also preserve the harmonious relationship between man and his environment which has been the hallmark of our architectural heritage.

Inevitably, similar striking changes to those taking place in the city of Katmandu, now linked by air with many other cities, by road with neighbouring countries, are gradually occurring in the more remote areas of the country. When one takes into account the varied origins of our people and the developments which have taken place in isolation, it is obvious that we are in urgent need of detailed documentation before our ancient ways of life and traditions disappear. The Sherpas who have settled in the southern slopes of Sagarmatha form one of the ethnic groups that are known to all the world because of their role as guides and porters for mountaineering expeditions. It is difficult today to conceive of any expedition to the higher peaks in Nepal without Sherpas. However, they also work with many tourists trekking through the mountainous areas of Nepal and, as a result, many are known personally to such visitors.

Much of the Sherpas' income today results from such work. Old patterns of subsistence agriculture and animal husbandry are being affected by the change to a money economy. Patterns of living and resultant changes to the architectural traditions are now taking place with increasing rapidity. Hence this study represents a very useful and unique record of a style of architecture which may largely disappear in a few generations. I wish, therefore, to express my appreciation to the two architects, Valerio Sestini and Enzo Somigli, who have carried out this survey of Sherpa architecture. Their documentation is an important contribution to the studies of traditional architecture of a people accustomed to living in a very challenging environment.

Finally, I would like to take this opportunity also to express my appreciation to the Director-General of Unesco and to the members of his staff who have supported my country in the work to record and to conserve our cultural heritage.

# The environment and population of Khumbu

## Essential geography

The Himalayan mountain ranges, the greatest mountain system in the world, are parallel ranges extending from east to west in broad belts, which vary as regards altitude, geomorphology, climate and vegetation. In Nepal, three successive parallel belts extend from the hot, steamy plains bordering on India in the south to the Tibetan frontier in the north. These three belts are the southernmost outer belt, the sub-Himalaya foothills; the central belt, the pre- or low Himalaya range, with peaks rising to over 3,000 m; and, with a difference in altitude of 3,000 m, the northern belt or main range, the high Himalayas, the character of which is distinctively Alpine. Of unequalled majesty, the peaks of the high Himalayas soar as high as 6,000-8,000 m and are dominated by Mount Everest (8,848 m), the highest mountain in the world. In eastern Nepal, close to the main, northernmost range of the high Himalayas, lies the Khumbu region, the home of the Sherpas, a people of Mongoloid stock, Tibetan culture and Lamaist religious beliefs.

The Khumbu region (Fig. 1) spreads out fanwise to form a series of deep, wide, convergent valleys, down which rush torrential streams to the confluence with the Dudh Kosi, the natural boundary of Khumbu, flowing through a narrow gorge in an outer range of the northernmost Himalaya belt. At the head of the valleys, many of which branch out into smaller side-valleys, magnificent crests and peaks varying in height from 6,500 m to 8,800 m, rise up above the main divide separating Nepal from Tibet. In the Everest massif, in addition to Everest (8,848 m), Lhotse (8,501 m) and Lhotse Shar (8,383 m), as well as Cho Oyu (8,153 m) farther to the west, all exceed 8,000 m. The crests of the spurs separating the valleys and the passes communicating with them exceed the 5,000 m mark. Such high altitudes, which inevitably affect climate and vegetation, are

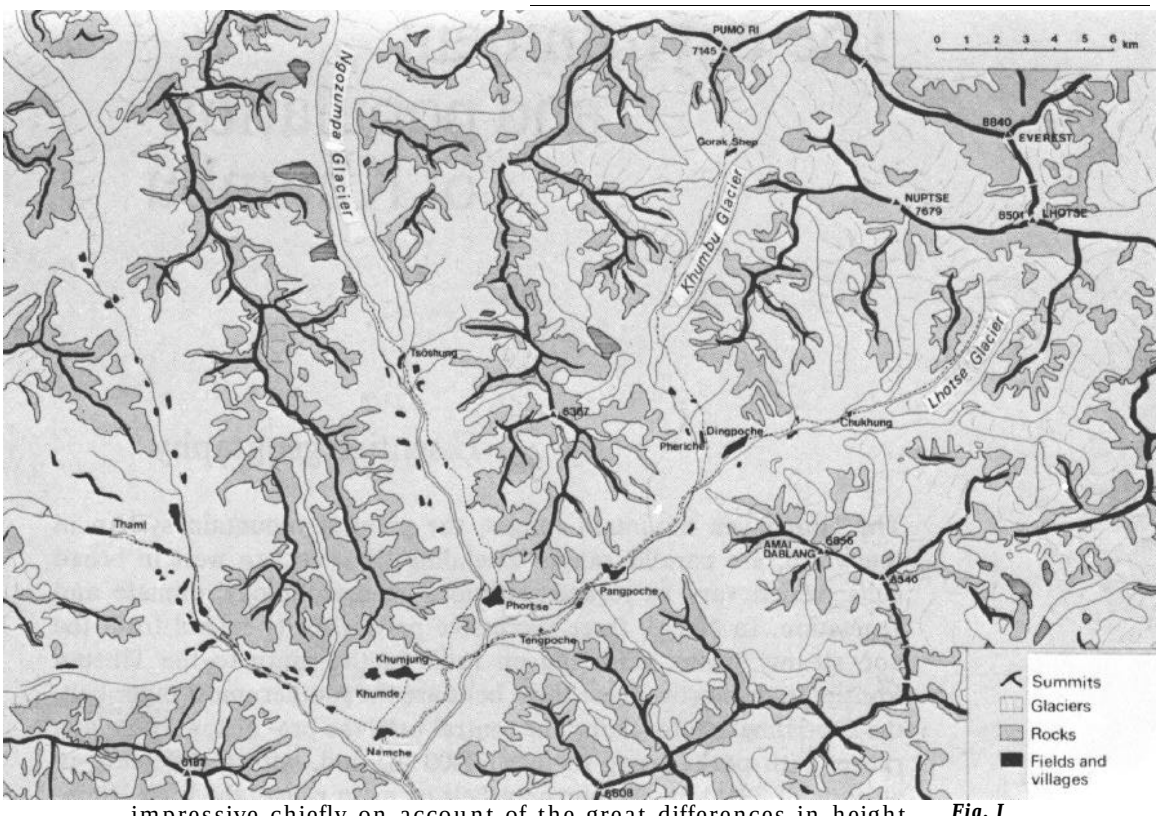



***Fig. I***
The Khumbu region.

impressive chiefly on account of the great differences in height, varying from 2,000 m to 4,000 m, between the beds of the valleys and the peaks towering above them. The valleys, apart from being deep, are wide, forming U-shaped cross profiles as a result of Pleistocene glaciation. This same characteristic is found in the valleys of the Alps. The heads of these wide valleys are obstructed by glacier tongues forming ice-streams, while the lower ends are covered with moraine deposits alternating with short stretches of flat alluvial terrain and the silted-up beds of old lakes. The gently sloping glaciers overhang the steep sides of the valleys, either of bare rock or coated with snow or ice with deep grooves cut by avalanches.

The mountains of Khumbu are composed of granitic rock with a prevalence of crystalline schists, that is, gneiss and other metamorphosed rock. Sedimentary rock is also found in the mountains of the Everest massif dating from the Palaeozoic, interspersed with yellow veins of crystalline limestone. The geological composition of such rock gives rise to sharp outlines and crests as a result of the effects of weathering, which here are particularly severe, mainly the abrupt rise and fall in temperature, that is, intense cold followed

by a sudden thaw; the mountain peaks are usually pyramidal in shape. The mountainsides at the lower ends of the valleys, in contrast to those at the upper ends overhanging the glaciers, tend to be less steep, and therefore grassy, thus providing pasture for the Sherpas' herds of cattle and yak.

Together with the mountains overhanging them, glaciers are the outstanding feature of the Khumbu region. The largest vary in length from 5 to 19 km, three of which are as long as 16-19 km. In length they are comparable with those of the Alps. But it must be borne in mind that just as the average altitude of the mountains in the region is considerable, so is that of the climatic snow-line, which varies from 5,000 to 6,000 m, despite heavy rainfall during the summer monsoon. Furthermore, there are few natural basins in the area to catch melting snow, so that the glaciers are fed mainly by avalanches, both large and small, sliding down the steep mountainsides. The tongues of the glaciers are furrowed with crevasses and strewn with moraine debris. Some of the smaller side-valleys are blocked with moraine deposits carried down by the glaciers, thus forming embankments and, consequently, lakes.

There are few woods and forests in Khumbu, though the tree-line extends to as high as 4,000 m. Apart from there being little soil below the 4,000-m line, the Sherpas, too, have played their part in cutting down trees to provide grazing grounds for their herds. Woods in lower Khumbu consist mainly of firs and rhododendrons, while in those of upper Khumbu birch and juniper predominate. At higher altitudes, where no snow or ice, moraine deposits, bare rock or rock falls exist, the lower slopes of the valleys tend to be grassy. The quality and quantity of the grass depend on whether the side of the valley is more often exposed to the sun or lies in the shade. If the side of the valley is exposed to the sun, the growth of grass is more abundant and the soil more humid. During the summer months the Sherpas put out their herds to graze on these pastures which extend to as high as 5,500 m.

The Sherpas practise high-altitude economy. At the end of winter they leave their villages, to which they return in the autumn, and lead their herds not only to the high pastures, but to the low hills and slopes as well. Their livestock includes yak and sheep. The former provide milk, meat, hides, hair for blankets and coarse cloth, and even fuel; in addition to ploughing, they are used as pack-animals and for riding. The Sherpas are also farmers, though the land they can cultivate is exceedingly scarce on account of the geographical and geological nature of the country; the small plots of land they succeed in cultivating are indeed scattered oases. Furthermore, the crops that can be grown at such high altitudes must of

necessity be meagre; above the 3,500-m line only potatoes and buckwheat are planted. Winters are long and cold in Khumbu with moderate snowfalls. Damp mists swirl up the valleys; during the summer monsoon they envelop villages and fields for days on end. Whereas in the outer ranges the fields of the Sherpas lie on terraced slopes, in Khumbu, small plots of cultivated land are enclosed with low stone walls.

The main villages in the wide valleys of Khumbu[1] are built on alluvial cones, on old moraine deposits, the beds of small silted-up lakes, and on ledges on the lower mountain slopes. They tend to be uniform in layout, though the dwelling-houses are scattered, isolated or grouped together in short rows in the midst of land under cultivation. A *gompa,* (temple), usually stands in the centre of the village. Subsidiary settlements used during the summer months, when the herds are put out to graze, are similar in layout. On the other hand, in bigger villages where trade is carried out, as well as in religious centres with monasteries, the houses are built dose together. Pangpoche, the highest village inhabited all the year round, lies at an altitude of nearly 4,000 m. Subsidiary settlements in the lower pastures, comprising groups of houses or scattered huts similar to those of herdsmen in the Alps, are to be found as high as 4,750 m.

In northern Nepal, communications with Tibet by means of paths are easier than with southern Nepal on account of the gorges that have to be travelled through or by-passed. The same holds good for Khumbu, despite the high altitudes of the passes into Tibet obstructed by perennial snows, the highest of which is the Nangpa La standing at the head of a long glacier 5,716 m above sea-level.

## The Sherpas of Khumbu

Since 1951, when systematic exploration of Khumbu was first undertaken, much has been written about the region. Among writers of note are Hagen, Furer-Haimendorf and Haffner, who have above all dealt with the ethnographic, anthropological and geographical aspects of the valleys of Khumbu. Their writings are essential to an understanding of the social and economic structure and customs of the Sherpas who inhabit them, as well as their daily lives and religious beliefs.

It is now generally agreed that the name 'Sherpa' is derived from the Tibetan *shar-pa,* which means 'people from the east' (*shar,*

1. These villages are Namche Bazar, Khumjung, Khumde, Phortse, Pangpoche and Thami.

'east', *pa,* 'people'), to indicate their origin from eastern Tibet.' The name 'Sherpa' is also used to indicate other peoples inhabiting valleys and mountain slopes bordering on Khumbu such as Solu, Pharak and the high Rolwaling valley, as well as regions farther west, namely the upper reaches of the Sun Kosi river in Yelmu, the Arun gorge and the southern slopes of the Himalayas. Sharing a common origin, the Sherpas of these regions have maintained traditions and customs that distinguish them from the Bhotias, the other people of Mongoloid stock inhabiting the higher Himalayan valleys of Nepal, to the extent that a separate name to identify them is justified.

Among the Sherpas inhabiting these regions, those of Khumbu are the most representative. As Furer-Haimendorf writes :

> Although the population of Khumbu represents only a fraction of the total number of Sherpas, it is a group of vital importance for the understanding of the characteristic features of the Sherpa way of life. For in the high valleys of Khumbu, remote from the influence of peoples inhabiting the middle ranges of Nepal, Sherpa society and culture has developed on its own lines: adaptation to an inclement habitat has led to intensive specialization in such economic activities as yak-breeding and trade with Tibet.*

Trade with Tibet, before the frontier was closed, provided the Sherpas of Khumbu with an assured livelihood. Concerning the former trade with Tibet, Toni Hagen writes:

1. On the origin of the name 'Sherpa' C. von Firer-Haimendorf comments as follows: 'The name Sherpa is said to be derived from the Tibetan shar-pa, which means "easterner", but it is not clear in what manner this term came to be associated with the particular group now known as Sherpa. From the Tibetan point of view Sherpas are southerners rather than easterners, and even within a purely Nepalese setting there is no real justification for the term, as Bhotias *(a term by which peoples of Mongoloid stock originating from Tiber* in *the north are* generally *known)* not described as Sherpas dwell to the east as well as to the west of the Sherpa country. But whether justified or not, the term has come to stay and is used by the Sherpas to distinguish themselves from other Bhotia groups.' ('The Sherpas of the Khumbu Region', *Mount Everest : Formation, Population and Exploration of the Everest Region,* p. 124, London, Oxford University Press, 1963.)

   Research carried out by M. Oppitz into the origin of the name 'Sherpa' based on both Tibetan and Nepalese documents and Sherpa oral tradition, is of particular significance. The Sherpas' place of origin could well account for their being called the 'people from the East', since they emigrated to the Khumbu region between the fifteenth and sixteenth centuries A.D. through the Nangpa La (5,716 m) from the district of Salmo Gang in the province of Kham in eastern Tibet. ('Geschichte und Sozialordnung der Sherpa', *Khumbu Himal,* Vol. VIII, Innsbruck/Munich, Universitatsverlag Wagner, 1968.)
2. Firer-Haimendorf, op. cit., p. 126.

Of course the Sherpas had no goods of their own besides their cattle and dairy produce with which to carry on trade. They were therefore first and foremost middlemen, who traded in various products with Tibet, the Nepal Midlands and India. From Tibet they imported principally salt, which is not found in Nepal. Another important commodity was wool. They exported, besides their own cattle and butter, above all rice, paper, sugar, dyestuffs and kerosene. In former days, iron extracted in the Nepalese mines at Those was also of importance; but for some time now the Sherpas' once-profitable iron trade with Tibet has been at a complete standstill. The reason for this is probably that the newly-opened route to Tibet via Kalimpong is considerably more convenient. Moreover, the salt trade with the southern Midlands had already begun to fall off a long time before the Tibetan frontier was closed, for since the improvement of the roads from the south Indian salt has become cheaper.'

However, the Sherpas were soon to find another means of livelihood, of greater importance perhaps than trade with Tibet, at a time when it had already begun to flag. Once the Himalayas of Nepal had been opened up to mountaineers, explorers and tourists, it was not long before the Sherpas

proved themselves skilled porters in high mountains for the numerous expeditions ever since the twenties. The former Himalaya Club in Darjeeling set up an exemplary system of recruiting and registering the Sherpas, which has been of invaluable service to mountaineers from all over the world. Each Sherpa is given an official 'service book' in which all his achievements and qualifications are entered with incorruptible objectivity, and many of these Sherpa books are today documents that bear eloquent witness to the history of the opening up of the Himalayas.'

lt must be pointed out that this new means of livelihood, which employs many young Sherpas of both sexes, has proved successful not only on account of their natural resistance to fatigue, but also because of their ability to live and work at high altitudes without undue effort. To this must be added their cheerful nature enhanced by innate qualities of goodness and willingness to do almost anything asked of them, more of which will be said later. Sherpas working as porters for mountaineering and trekking expeditions, ever on the increase, are recruited through several agencies in Katmandu.

The layout of Sherpa villages and the kind of farming and breeding they engage in are conditioned by climate and environment. As regards the latter activity, the Sherpas cross-breed yak with Nepalese cattle, as well as keeping flocks of sheep and goats. As pastures are scarce, they are forced to move with their flocks and herds for most of the summer months. During this seasonal nomadism, the herdsmen

I. T. Hagen, Nepal, p. 92, Bern, Kiimmerly & Frey, 1971.
2. Hagen, op. cit., p. 89.

live in subsidiary settlements situated as high as 5,000 m, known as *yersa* or phu; they stay in each of these settlements for only a few days.

Sherpa herdsmen also move to another kind of subsidiary settlement known as *gunsa* situated at lower altitudes below the main villages. Here, in addition to there being richer pastures for their herds, when the meadows round the main villages are closed to all livestock to allow for recuperation, there are more opportunities for planting potatoes which are lifted earlier than in the fields near the main villages.

A prominent feature of the Sherpa way of life concerns bureaucratic and administrative matters. The fact that State and district administration affects the Khumbu region only in part has led to the villagers' organizing their daily life with a minimum of external interference, and, consequently, to their appointing their own officials from among themselves to administer their affairs and settle disputes. Such a high degree of self-government is also found in Sherpa family life, which is independent and self-sufficient without in any way undermining the communal solidarity characteristic of Sherpa villages.

Another prominent feature of the Sherpa way of life in Khumbu is the Sherpas' attitude towards religion, embodied in their profound Lamaist beliefs, which is at once evident to anyone travelling through the high valleys of the region. That religion plays a vital part in the Sherpas' daily lives is reflected in the *chorten*, mani-walls and prayer-flags fluttering on their houses. The mantras and other sacred Buddhist inscriptions on the stones of the *mani*- or prayer-walls impress on the traveller the fact that religion with the Sherpas is not only deeply felt, but above all is to be lived with and practised in the privacy of their domestic temples and in their dealings with their fellows. Such an innate religious attitude is in character with the serene, kindly nature of the Sherpas, who are humble and tolerant of human failings.

Close contact in the near past with Tibetan Buddhism has given rise to numerous temples and monasteries in Khumbu, which are the focal point of Sherpa religion; centres in which the eternal spiritual principles underlying the phenomena of material existence are ever kept alight.

# Architecture in Khumbu

## General characteristics

The influence of Buddhist culture, above all from the Nepal midlands and Tibet, reached the remote high valleys of the Himalayas in successive stages, having lost some of the initial intensity accompanying its creation in an earlier age. If, on the one hand, the remoteness of the high valleys, resulting from hazardous communications in inclement surroundings, has slowed down the spreading of Buddhist culture, and therefore any further progress in architecture and other works, on the other, it has tended to maintain intact ancestral traditions. So much so that the high valleys are veritable islands of culture in which living artistic forms are condensed and preserved, whereas elsewhere they are on the wane, or already belong to the past.

The tide of Buddhist culture reached Khumbu in recent years embodied in Lamaist philosophical thought from Tibet across the border to the north, where it had its beginnings many centuries earlier. But that does not mean that architecture and other works created under the influence of Buddhist culture have lost any of their original integrity-as opposed to intensity-of thought and expression. On the contrary, such innate integrity in Sherpa architecture is not so much a matter of age or chronology, whereby its origins may be traced, as of unchanged principles on which it is based.'

1. Religious architecture in Khumbu is fairly recent despite the Sherpas' having settled in the region at a much earlier date. According to Oppitz, Sherpa immigration into Khumbu took place in four successive stages: the proto-clans arrived between 1530 and 1600, followed by the newer clans between 1750 and 1850, the pseudo-clans between 1800 and 1850, and, finally, the Khambas after 1850.

   The first gompa was built at Pangpoche about 1860, a second at Thami about 1870, and those at Khumjung and Namche Bazar early in the present century. The most important gompa in Khumbu is at Tengpoche; built in 1921-1922, it was destroyed by an earthquake in 1933, and rebuilt shortly

In addition to Buddhism, the remoteness, ruggedness and overwhelming grandeur of the Khumbu region are also important factors that have left their mark on the culture and traditions of the Sherpas, who over the years have adjusted themselves to an inhospitable environment and learnt to live in balanced harmony with it.

Although religious architecture in Khumbu-in particular, the gompa or monastery,[1] and the stupa-like chorten-is not so imposing and magnificent as that in neighbouring Tibet, above all in Lhasa, it nevertheless repeats by and large the same forms and dimensions, though with a definite style all its own.

Architecture in Khumbu differs considerably from that in the valleys of central Nepal, Katmandu in particular, populated in the main by Newars. As regards the high valleys in northern Nepal south of the Himalayas, this difference is all the more marked, even though the various peoples inhabiting them are of Tibetan stock with the same culture and traditions. Among these peoples are the Thakalis[2] and other Sherpas who, settling in areas farther south, have in due course been absorbed by the local population and lost many of their former customs and traditions. Other factors leading to their gradually becoming readjusted and absorbed are climate and environment.

In the valleys of Khumbu, architecture, too, has been influenced by climate and environment. The roofs of houses, for instance, are different from those in Tibet. Whereas in Tibet roofs are flat on account of light rainfall, in Khumbu, as in other regions of central and southern

afterwards to the same plan, though with one or two modifications in the porch before the entrance. (See M. Fantin, *Sherpa, Himalaya, Nepal,* Bologna (Italy), Tamari Editore, 1971.)

1. In Tibet, Ladakh and other regions where Lamaist culture prevails, the term *'gompa'* refers to a monastery, which may contain one or more *lha-khang,* (temple(s)). In Khumbu the word *'gompa'* is used indiscriminately for a monastery, temple or chapel. Generally, a single lama resident in the village performs seasonal and domestic ritual, as well as attending to the spiritual welfare of the villagers. The monastery at Tengpoche and the nunnery at Devuche, where the communities of monks and nuns live in houses standing round the temples, are quite exceptional.

   Concerning the spelling of *gompa,* Fosco Maraini, reviewing *Lhotse '75* in the *Bolletino-Notiziario* of the Alpine Club of Italy (Florence Branch), Nos. 2-3, 1977, writes thus: *'Gompa,* in Europe and America, is written in a variety of ways *: gonpa, gonpa, gomba, gonda.* Such variety is due to travellers' having transcribed different local pronunciations. When written, *gompa* is spelt *gon-pa,* and therefore should be pronounced *gompa* or *gompa.'*
2. The layout of villages and grouping of houses in Thakali and the region north of Mustang are similar to those in Tibet. Houses, in fact, are built close together round an inner courtyard on to which the rooms open: the centring of rooms round the courtyards has an important psychological effect in that it unites the various members of the family.

Nepal where rainfall is heavy, they are of the ridge or sloping type. On the other hand, roofs of houses in Khumbu, though differing from those in Tibet, resemble more closely those of houses across the border in Bhutan,[1] south-east of the Himalayas. Roofs of houses in Punakha Dzong and Tsongsa Dzong, for instance, in addition to affording ample shelter from heavy rainfall, are of interest, architecturally, both as regards style and the way they are built.

In order to better understand the architecture of Khumbu, one must look to the Sherpas that inhabit the region and consider their great inner strength sustained by profound religious beliefs. Only then will it be clear how they have succeeded in adjusting themselves to the rugged country of Khumbu and, by dint of sheer back-breaking toil, built villages on the beds of old lakes in broader valleys or on sizeable ledges between mountainside and river gorge.

Throughout Khumbu, Sherpa villages are the inevitable result of a conscious, co-ordinated choice of the sites on which they are built, as well as of a deep respect for tradition and religious principles. An important feature of the villages, which does not strike the onlooker at first sight, but which gradually emerges on further analysis, is the invisible though definite link existing between the scattered groups of houses. Here again the origin of the link is to be found in the Sherpas' common religious tradition; the link is so strongly forged that it has given rise to social integration and firm spiritual unity, which not only causes day-to-day village life to be lived to the full, but also enables the villagers to endure the rigours of an exceptionally harsh environment.

Embedded in the precepts of Tibetan Lamaist tradition and civilization, the Sherpa villages of Khumbu, despite recent social and political upheavals, are still in the main unspoilt, though the danger of their being spoilt by so-called innovation in the future is ever present.

## The Sherpa house

Architecturally, the style of Sherpa houses in the villages of Khumbu is more or less of three types, one of which is the prototype on which the remaining two are based.

All three types of Sherpa house are elongated in shape, two-storeyed, with a ridge roof; the ground floor is partly built into the

1. A notable feature of monasteries in Bhutan is the variety of functions they fulfil. On occasion they become administrative centres, farms and even military strongholds. It thus follows that they are solidly built and resemble fortresses. Windows, roofs and carved woodwork are elaborately decorated in bright colours which heighten and complete the overall architectural effect.

slope of the hill or mountain behind it. The simplest type, naturally less socially evolved, consisting of a single block, is also the pattern most used by Sherpas when building their houses. Storage space and a byre for cattle in cold weather are on the ground floor, while on the upper floor is the living-room where the domestic and social life of the family takes place.

As regards the remaining two types of Sherpa house, two or more blocks, conspicuous from the outside, are added to the single block, thus elongating still further the basic linear pattern, or else causing it to be jointed so as to form an L-shape. The upper floor of the larger, modified pattern of house is used as a private place of worship.

The jointed, L-shaped pattern of house is not found in all villages. Exceptions to the rule are Namche Bazar and Khumjung. Detailed examination of L-shaped houses reveals their having been built earlier than the remaining two patterns, on account of the condition and colour of the wooden fixtures, which tend to be considerably worn as a result of weathering, while the walls are cracked owing to ground subsidence, and, like the wooden fixtures, are worn by the weather. To these must be added other factors concerning form, style and building methods not found in houses built more recently.

As a rule, houses in the villages of Khumbu stand singly or in small groups, though at Namche Bazar (Plate 1) they are built close together on the slopes of a natural amphitheatre, and therefore in a semicircle. In front of each house is a small open space or yard (Plate 2) where rice, buckwheat and millet are spread to dry in the sun. Here, too, weather permitting, newly harvested crops are sorted and graded prior to storage, and firewood is piled up for the winter months.

It is usual for all houses in a village to be built with the doors and windows facing in the same direction, that is, south-east, in order to be better exposed to the warmth of the sun. There are no doors, windows or other openings in the backs of the houses, partly because they are built into the slopes, and partly because they do not face the sun.

The principle underlying the construction of Sherpa houses is indeed remarkable. At first sight they appear to be of simple, common-place build, whereas, on closer examination, various interesting factors emerge concerning form, colour, building methods and the purpose for which they are built. These houses, in fact, are solidly built, with an outer protective wall enclosing an inner wooden frame, the former separate from the latter.

As for style, a prominent feature of Sherpa architecture is the

large windows (Plate 3) in the fronts of the houses facing the valleys; like the adjacent doors, they are made of wood, and are finely carved in keeping with honoured tradition. The geometrical designs carved in the wood, though of exquisite workmanship and undoubtedly enriching it, are occasionally over-decorative in detail. The vivid colours in which the windows are painted lend a touch of brightness to, and so offset, the sombre tones of the walls surrounding them. Thus, architecturally, the vividly painted windows are of prime importance as they greatly heighten the overall effect.

As mentioned above, Sherpa houses are two-storeyed. On the ground floor, one or two rooms provide a byre for live-stock, while others are used for storing fodder, firewood and farm implements. A flight of wooden stairs, usually in the byre, leads to the upper floor. A short passageway facing the stairs in turn leads to the large

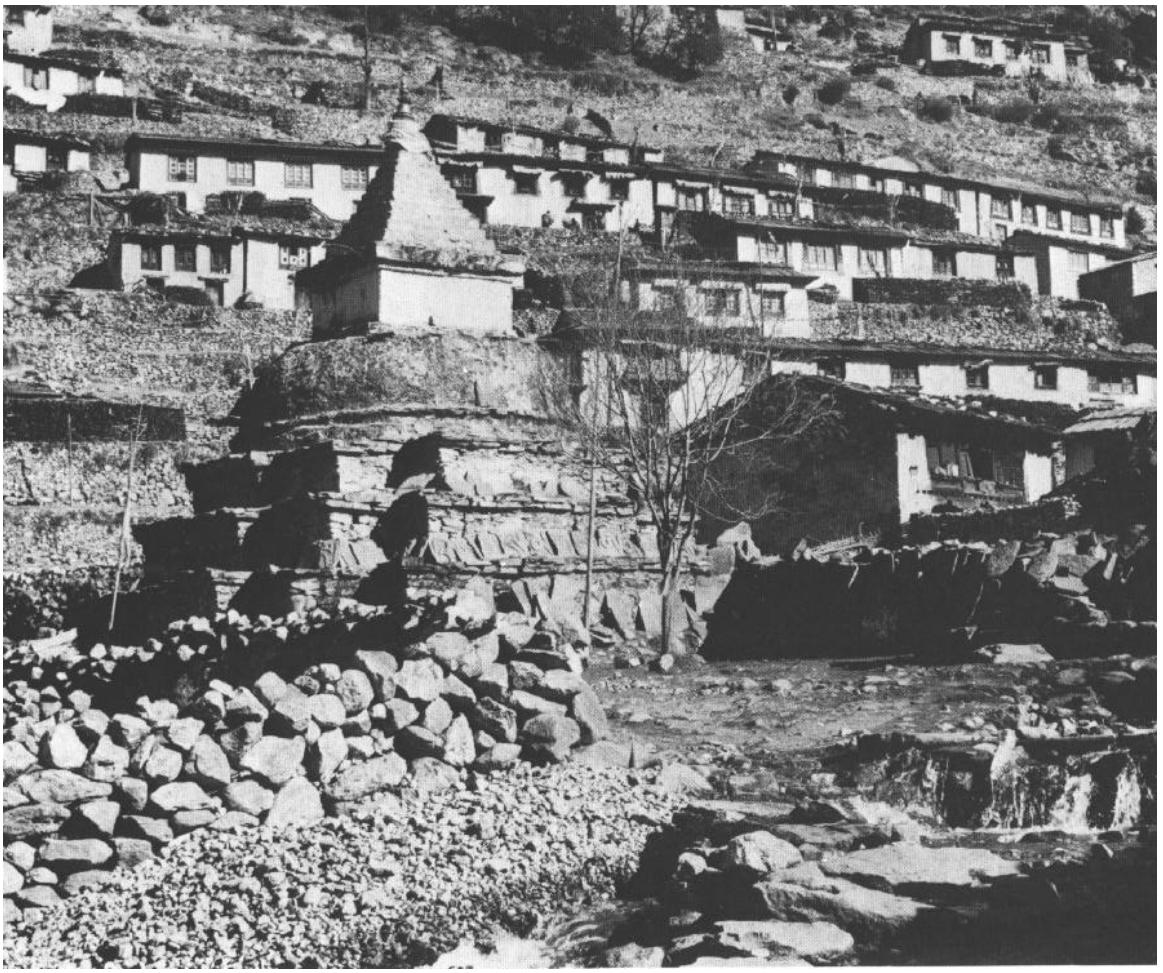


***Plate I***
Namche Bazar with its *chorten* in the foreground.

living-room.' The same short passageway often gives on to a partly roofed terrace (Plate 4) where the lavatory is housed in a small shed.

The choice and arrangement of furnishings in the living-room are such as to afford the greatest possible comfort to the family using it. The focal point is the open hearth for cooking and heating, round which the various members of the family forgather. The seat of the house-owner is beside the open hearth, and next to him is the seat of honour: here, as elsewhere in Nepal, guests are held in high esteem. Business, too, is transacted round the hearth as there

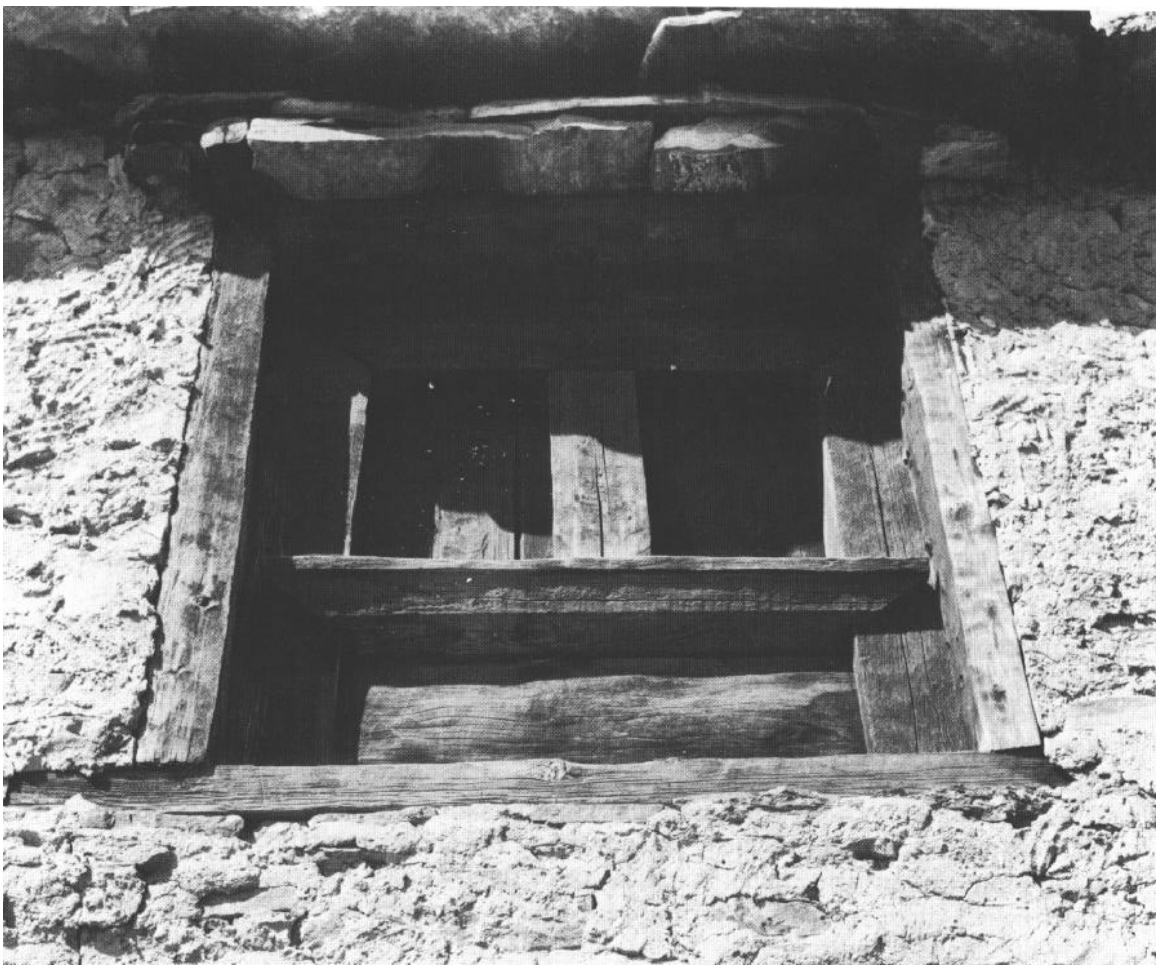
1. Variations in the customary pattern of Sherpa architecture are to be found in a number of houses recently built or altered in Namche Bazar. While the living-room is in no way modified, it is entered through a separate passageway leading off to other rooms, generally bedrooms for travellers, traders and other guests.

***Plate 2***
A dwelling-house at Thami.

are no public buildings for this purpose in Sherpa villages. The function of the hearth in gathering together the Sherpa family, their relatives, friends and guests is all the more important during the monsoon, when damp penetrates every corner of the house and only heat from the open fire can counteract the general feeling of discomfort.

On festive occasions the living-room becomes a dance hall. Relatives, friends and guests of the family, when not dancing, sit on a broad bench running under the windows to the open hearth behind a long, low table. Both bench and table are low in keeping with Eastern tradition and religious principles whereby the greater part of family and social life takes place at floor level. Family life at floor level accounts for the careful choice of wood for the floor-boards and the widespread use of carpets. At night members of the

***Plate 3***
Window-frames with geometrical patterns in Sherpa dwelling-houses.



family and their guests sleep on soft carpets and brightly coloured blankets spread on the bench and floor.

On the opposite side of the living-room, between the hearth and the staircase, is a kind of alcove containing the bedstead of the house-owner's wife, who sleeps on it with the younger children. On shelves by the hearth stand the family's cooking-pots, teapots, crockery, butter churn, a wooden jug or cask filled with chang, and, abreast of modern times, a pressure-cooker. All food is cooked on the open hearth. The high open hearth is made of slabs of stone. As there is no chimney, smoke from the fire escapes through an opening in the roof. Strips of yak meat are smoked on wooden slats suspended from the roof above the hearth.

To complete the furnishings of the living-room, the wall opposite the windows is lined with long, dark wooden shelves. On these stand rows of shining brass and copper vessels for holding water, as well as wooden bottles and other ornaments finely carved in unmistakable Tibetan style. Beside, and in sharp contrast to them are shiny plastic knick-knacks and the inevitable thermos flask made in China, which, as with the pressure-cooker, has already found its way into Sherpa homes.

***Plate 4***
part of the loggia in a dwelling house at namche Bazar

The wall opposite the shelves of brass and copper vessels is well lit on account of the two or three windows let into it; the play of light and shadow on the wall between the windows is seen to better advantage from the middle of the room.

In addition to a dance hall, the living-room of a Sherpa house is used as a private place of worship. In a house without a small gompa containing plaster or wooden figures of tutelary saints and deities of the Buddhist pantheon, propitiatory rites are performed in the living-room to protect the house and its occupants against the forces of evil and to invoke prosperity and well-being. On such occasions, a monk assisted by a disciple take their seats on the long bench under the windows, on which the house-owner's wife has spread soft carpets, and begin to say prayers and read sacred texts. During the performance of the propitiatory rites, both the monk and his disciple are shown numerous little attentions by the house-owner and his wife who serves them Tibetan tea in silver cups. Meanwhile other monks go up on to the roof and terraces where they give blessings and hang out coloured prayer-flags on long bamboo canes. Thus a Tibetan tradition of venerable standing is perpetuated whereby the house is protected against evil by the powers of light. The combined living-room and private chapel is indicative of family unity and religious beliefs alike, which are further reflected in the mentality and daily life of the villagers.

Well-to-do Sherpa families have a small private temple in their

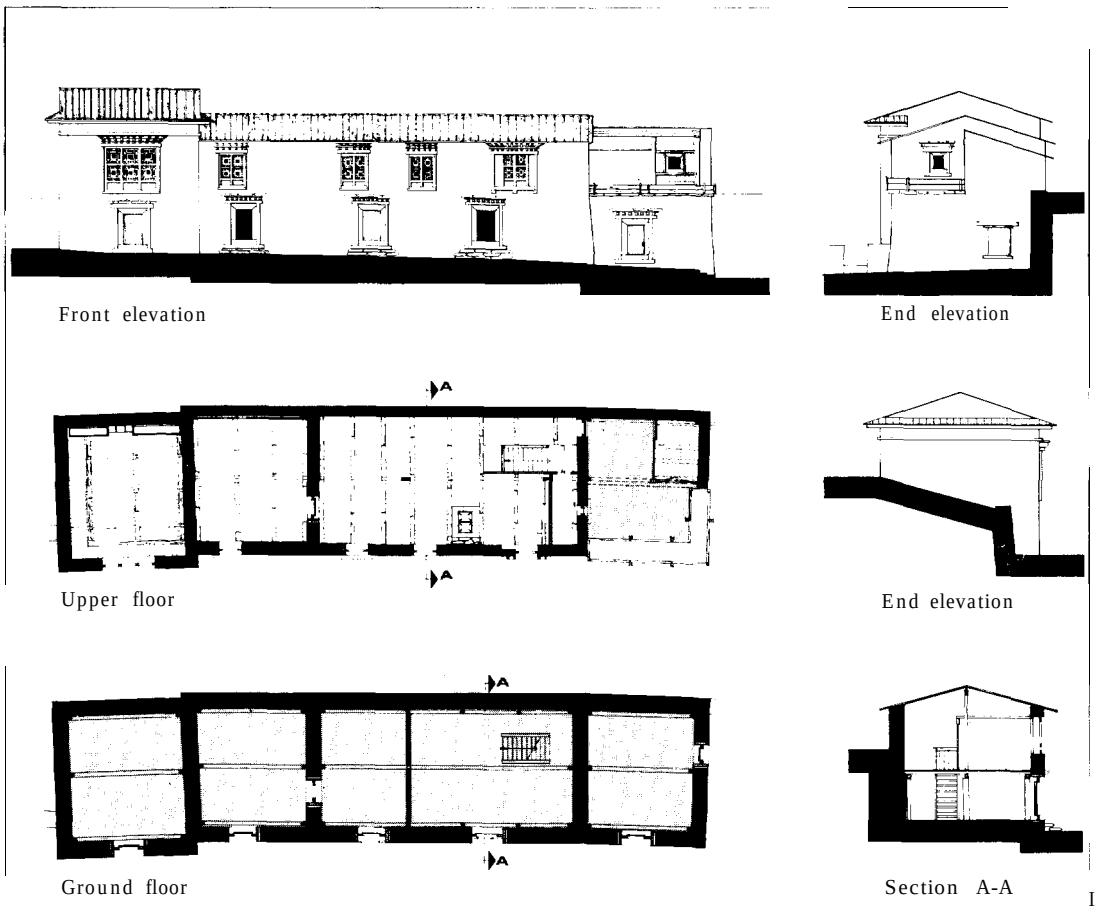



*Fig. 2*
Dwelling-house at Phortse. The ground floor of the house at Phortse has a room at the far end of the upper floor which is used as a private place of worship. Similar though smaller than the *lha-khang* in a *gompa*, the main wall of the private temple is lined with shrines containing tutelary deities of the Buddhist pantheon, and shelves holding sacred texts and other liturgical vessels. The remaining walls are panelled and decorated with geometrical patterns. The double wooden ceiling, too, is decorated with geometrical patterns in the shape of squares in which are inscribed circles representing the mandala.

Viewed from the outside the conspicuous features are the particular shape of the roof and the large window which illuminates the shrines containing the deities.

The living-room of the house at Phortse is bigger than in some houses and better finished. It is lit by three windows and has a store-room at the head of the stairs.

houses where all rites and services are performed in accordance with the Tibetan calendar (Fig. 2). The temple is usually a square room with a large window and panelled walls decorated with vividly coloured religious paintings. The ceiling is divided into squares in which are inscribed circles representing various types of mandala. Opposite the window stands the altar with tutelary deities of the Buddhist pantheon. On either side of the altar are shelves holding a small collection of sacred books printed on rough paper from wooden blocks and other liturgical vessels, such as cups for water and offerings, and butter lamps; a number of *lankha* or *tkang-ka* (painted scrolls), hang from the ceiling.

Many differences in construction-for example, layout-emerge from a comparison between Sherpa and Tibetan houses. The layout of Tibetan villages, too, is quite different from that of their Sherpa counterparts. House's in a Tibetan village are built closely together with windows facing an inner courtyard and small streets in between. Tibetan houses to be built round a courtyard, on to which open the in the high Kali Gandaki valley from Lete onwards, and also in Mustang.

As in Khumbu, the layout of Tibetan villages and houses has been shaped by climate and environment. To a certain extent Tibetan domestic life takes place on the roofs of houses which are flat on account of low rainfall. Severe cold and icy winds have caused Tibetan houses to be built round a courtyard, on to which open the windows; even in spells of very cold weather, sunshine is trapped in the courtyard, thus affording a little heat which is reflected into the house through the windows.

Tibetan houses may consist of several rooms on one or more floors; the combined kitchen and living-room, known as *chakang* or *thapang*, together with the hearth, is the focal point of family life. As in the Sherpa houses of Khumbu, it brings together and unites the various members of the family. The kitchen leads to the other rooms of the house, usually bedrooms, which are occasionally used as store-rooms, as well as the main store-room, in which the family's more valuable property is kept, and the private temple or place of worship. The temple is often situated on the flat roof, in keeping with religious principles whereby the rooms used for daily domestic life are built in successive, ascending grades and culminate in the temple on the roof.

# Religious architecture in Khumbu

## Origin, form and symbolism of the stupa

In order to understand the symbolical and religious significance of the stupa-like *chorten* of Khumbu, the origin and early developments of the Indian stupa, dating back to the beginnings of Buddhism, must be traced.

Over the years following the founding of Buddhism by Gautama, the All-Enlightened One, in northern India in the fifth century B.C., the building of stupas-reliquary mounds usually domed or shaped like a beehive-came to be associated with places considered sacred by the great majority of converts to the new religion and later visited by pilgrims.

Among converts to Buddhism the Emperor Asoka of the Maurya dynasty,[1] which thrived in India from the fourth to the second centuries B.C., is worthy of note. As Asoka intended Buddhism to spread throughout his vast kingdom and become its official religion, he commanded that religious monuments be built in large numbers. The earliest monuments built by Asoka were stone pillars with capitals in the form of a stylized lotus similar to those at Persepolis. A high, circular stone railing or screen was placed round the pillar to separate it from the outside world; in the intervening space the rite of circumambulation was performed.*

The significance of these early monuments cannot be overlooked as, from the standpoint of architecture, they may represent an intermediate stage between a mandala, or cosmic circle, and the stupa

1. For a historical account of Buddhism during the Maurya dynasty, see C. Eliot, *Hinduism and Buddhism,* New York, Barnes &Noble, 1971 (first published 1921).
2. For the symbolic significance of the pillars, see: Nelson I. Wu, *Chinese and Indian Architecture,* New York, George Braziller, 1963.

proper'(Fig. 3). From the stand-point of religion, the stone pillar is the very core of Buddhism: the central, vertical axis is the spiritual heart of divine law as represented by Buddhism, from which springs the material body of Buddhism, and, in turn, the unpersonified rupa or image of the Buddha himself. Again from the standpoint of architecture, the placing of the circular railing or screen round the stone pillar to separate it from the outer material world, though of religious significance, suffices to give both pillar and railing strictly architectural value by creating a definite space between the two.

Further analysis of the significance of the stone pillar and surrounding railing reveals a spatial triad: the non-existence of inner

1. The significance of the mandala is dealt with succinctly by Madanjeet Singh in *Himalayan Art,* London, Macmillan, 1968; and at length by G. Tucci in *Teoria e Pratica del Mandala,* Rome, 1969.

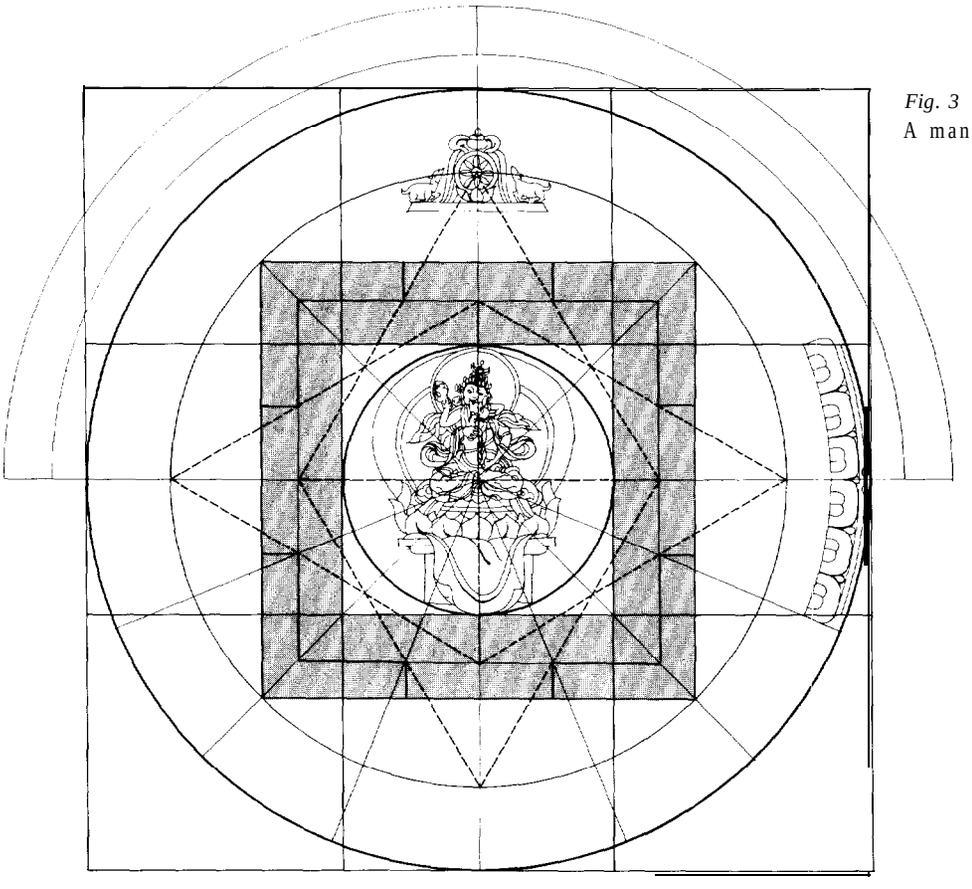


*Fig. 3*
A mandala.

space in the solid stone pillar; an intervening space between the foot of the pillar and the railing; and the space beyond the railing. All later architectural developments of the stupa are based on this spatial triad.

Few traces of early reliquary mounds built over the sacred relics of the Lord Buddha, or else in his memory, are to be found today. The reason for this is that the material used to build them was either clay or wood. On the other hand, early monuments built of stone have survived the passage of time. Architecturally, Buddhist monuments of this kind are of great importance, for it is from them that the stupa as we know it today eventually developed. Unfortunately, of the large number of stupas erected by the Emperor Asoka very few still stand; a few of these were later incorporated into bigger stupas built in successive stages.

Early monuments such as these consisted of a large, solid hemisphere or dome, inside which four or so intersecting, supporting stone walls were built to offset the thrust caused by the earth used to fill the dome. As a rule, the inner supporting walls were arranged so as to form a square within a circle, the ends of the walls coinciding with the four cardinal points; the resultant invisible pattern resembled a mandala or cosmic circle.

A stone cube, or kiosk, known as *harmika*, was placed on top of the dome in line with the central vertical axis. A circular balustrade was in turn built on the cube, from the centre of which rose a shaft supporting a number of rings or 'umbrellas',[1] that is, a stylized version of canopied umbrellas used to provide cover for royalty or other important personages; the rings or 'umbrellas' were later considerably modified. A high stone railing or screen was built round the foot of the dome to separate it from the outside; the rite of circumambulation was performed in the intervening space. Four monumental gateways, known as *torana*, representing the four cardinal points were built in the circular railing.[2]

These early reliquary mounds or stupas were greatly transformed over the centuries that followed, mainly as a result of the evolution and spread of Buddhism throughout East Asia-China, Tibet, Nepal, Sri Lanka, Japan and Korea in particular, which more than other Asiatic countries came directly under the influence of Indian culture. Stupas in Tibet were strongly influenced by those built in Nepal. As with the early stupas erected over the relics of Buddha,

1. Concerning the symbolism of the canopied 'umbrellas', cf. A. Volwahsen, *Indian Architecture,* Fribourg, Office du Livre, 1968.
2. A description of the *torana* in the stupa at Sanchi is given by H. Goetz in *India,* p. 54, Milan, Il Saggiatore, 1959.

or in his memory, the later stupas were built as monuments to commemorate the dead or to hold relics.

The most representative of Indian stupas built to the above plan is the great one erected at Sanchi over an earlier monument dating from the second century B.C. (Fig. 4) The stupa stands on a hill overlooking the surrounding plain, and can be seen from a considerable distance: the magnificence and majesty of the Lord Buddha and the religion he spread are expressed in its massive dimensions. Aligned with the four cardinal points, it is built in accordance with the principles of Buddhist cosmology, as, for example, the basic symbols of circle and sphere. Fortunately, the stupa was not destroyed during the Mogul invasion of India in the sixteenth century A.D. as the Buddhist monks had already abandoned it three centuries earlier. Buried in dense jungle undergrowth, it was eventually discov-

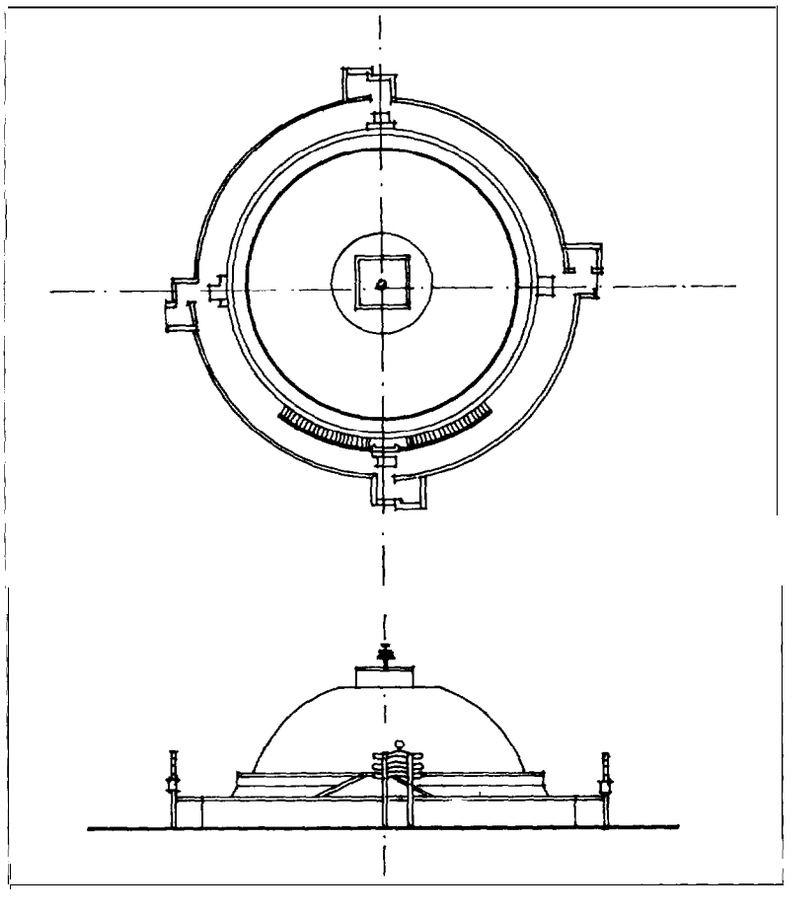


***Fig. 4***
The Indian stupa at Sanchi.

ered by General Taylor in 1818. The ruined stupa was partly restored at the turn of the present century, though with little respect for traditional Buddhist architectural style.

Another Buddhist stupa worthy of note is the one at Borobudur, in the island of Java, built a thousand years later (Fig. 5). Compared with the stupa at Sanchi, from an architectural standpoint it is considerably more evolved. It stands on a low hill in a wide valley; its contours repeat those of the chain of mountains in the background. The mass of the stupa is built on a polygonal base aligned with the four cardinal points. From the latter rise four flights of steps leading up to a wide terrace, on which stand five high, polygonal steps surmounted by three circular steps. A succession of seventy-two small stupas built on the circular steps winds its way round the central dome which symbolizes the 'supreme truth'. Between each of the

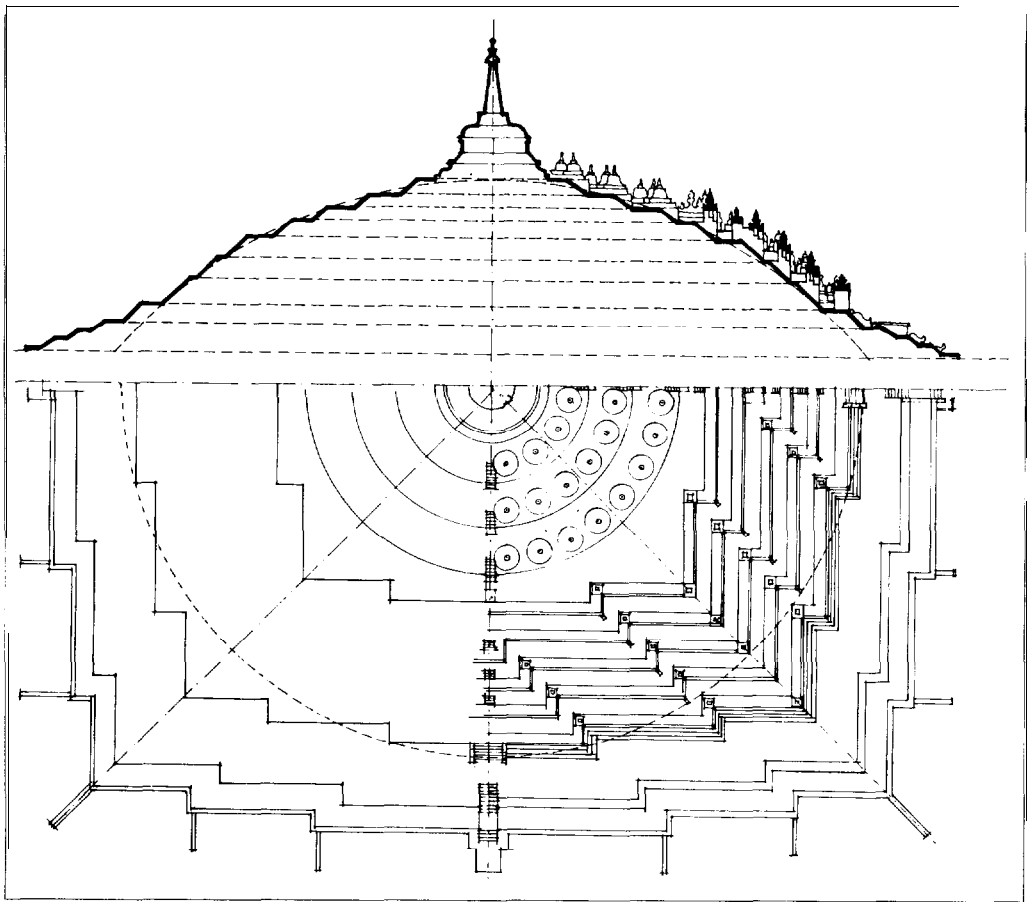


***Fig. 5***
The Buddhist stupa at Borobudur.

five polygonal steps are interminable galleries of bas-reliefs representing Jataka (or birth-) stories said to illustrate the *Lalita Vistara*, a celebrated biography of the Lord Buddha by Dharmarakcha. Carved with marked realism, the ascending succession of bas-reliefs personifies the Buddhist concept of 'plurality that perishes' before 'eternal unity' and the 'supreme truth'.

Mention of the stupa at Borobudur is incomplete without reference to the gigantic *chorten* or *kumbum* (literally, 'the hundred thousand images'), at Gyantse, in Tibet.[1] The final effect of the realistically carved reliefs of the former and the vivid colouring of the paintings inside the seventy-three chapels of the latter is similar in that both blend with the spatial dimensions and architectural style of the monuments they adorn.

Mention must also be made here of the stupa at Bodhnath, the centre of Tantric Buddhism in Nepal (Figs. 6 and 7). The ground plan of the stupa is clearly inspired by a mandala. Three flights of high, wide step-like terraces form the base of the big *anda* (literally 'egg') or circular dome. On the dome stands a dado supporting the stupa tower which tapers up to the circular top crown in a succession of low, square step-like 'umbrellas'. The monumental effect of the stupa is enhanced by the alternation of squares and circles ascending from the base to the crown round the central vertical axis. The overall effect is in turn enhanced by the simple houses of the pilgrim monks clustered in sharp contrast round the stupa.

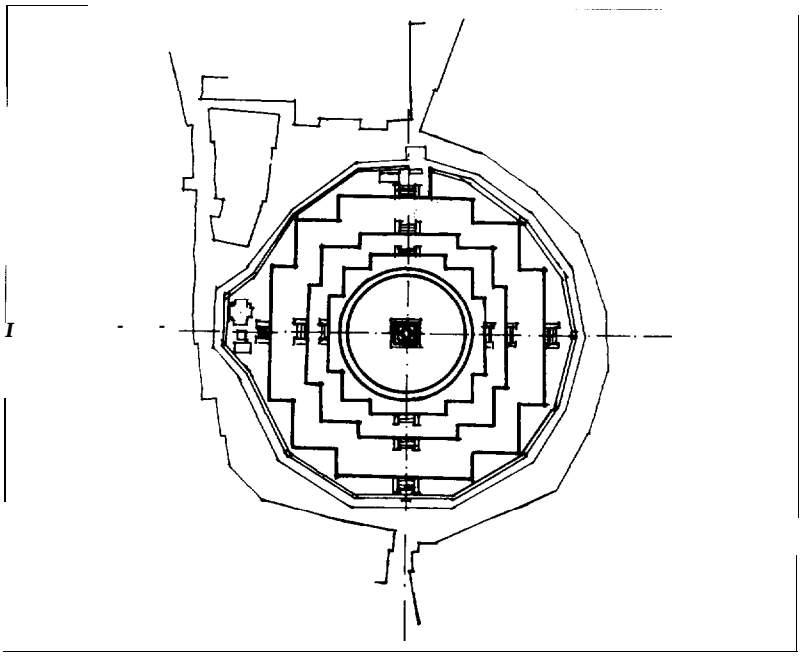
As with the succession of seventy-two small stupas winding round the central dome of the Borobudur stupa, the alternating squares and circles at Bodhnath are suggestive of a rotatory cosmic movement round a central vertical axis or centre of far-reaching symbolical and religious significance. Four small stupas stand at the corners of the first step-like terrace, while flights of steps aligned with the four cardinal points lead up to the main dome. The four cardinal points together with the vertical axis of the tower cause the monument to be projected in five directions.

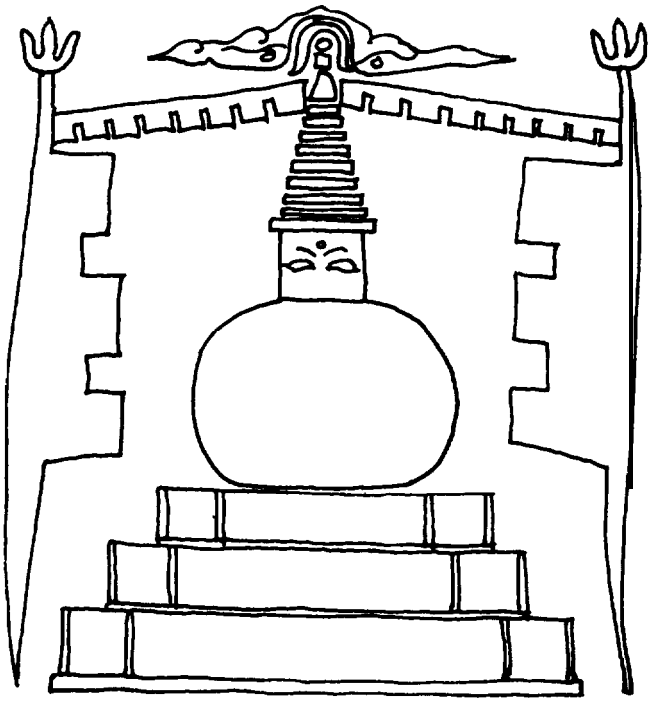
As explained above, the ground plan of the stupa is circular round a central vertical axis. It is thus not only visible from all directions, but also sheds its religious message in all directions. In other words, the stupa, as has been written, is 'all-seeing and is projected in all directions at the same time'.*

A similar spatial concept, two-dimensional as opposed to three-dimensional, is to be found in the Buddhist mandala. Assuming the pattern of the mandala, though two-dimensional, to be a three-

I. For an exhaustive study of the *kumbum* at Gyantse, see G. Tucci, *Indo-Tibetica*, Vol. IV, p. 168-300, Rome, Reale Accademia d'Italia, 1941.

2. The symbolism of the stupa is dealt with at length by Nelson I. Wu, op. cit.





***Figs. 6 and 7***
The stupa at Bodhnath.

dimensional projection seen from above, the figures represented in it appear to be reversed, facing the onlooker, as it were. This reversed effect coincides with the belief that Buddha always faces his followers wherever they may be. That is to say, he faces them in all directions, and therefore can be seen by them from all directions. This same effect is found in the architecture of all those religions which have as their keynote the circular ground plan.

A further aspect of the stupa is that it symbolizes 'the knowledge of God, the abode of God, and the body of God'.[1] It is also indicative of man who succeeds in transmuting matter into the likeness of God. It may therefore be assumed that the architectural and religious basis of the stupa is *vastu purusha* mandala, that is, 'place' (vastu), 'essence' *(purusha)* and 'form' (mandala), bearing in mind that the basic geometrical pattern is always that of the circle in a square.

## The *chorten* in Tibet

After its introduction into Tibet, the shape and dimensions of the Indian stupa were somewhat transformed, as was the name by which it was later known, that is, *mChhod-rten*, pronounced 'chorten' (literally, 'a receptacle of offerings'). Despite this transformation, the symbolism of the Tibetan chorten is still that of the Indian stupa. Just how the transformation came about is open to conjecture; suffice it to say that the Tibetan *chorten* has retained the spiritual and religious, as well as the symbolical, significance of the Indian stupa, as proof of its having originated in the latter. In fact, it is certain that modified versions of the Indian stupa were built in Gandhara, bordering on India in the north-west, as early as 100 A.D., and successively in Kashmir to the east, and finally in Tibet.

That the Tibetan *chorten* originated in the Indian stupa is borne out by comparison with the stupas at Sanchi, in India, and at Bodhnath and Carumati in Nepal, though the transformed shape and dimensions characteristic of the former, in contrast to the latter, are evident. The Tibetan *chorten* is less ponderous, and more slender and elegant than its Indian counterpart, especially as regards the *anda* or dome. In the Indian stupa the dome raised on a square base is spherical in shape, whereas in the Tibetan *chorten* it is oval and more elongated on account of its reduced diameter. The lighter, oval effect is heightened by the tapering shaft or spire supporting a greater number of ring-shaped 'umbrellas', surmounted in turn by a crescent cradling a disc.

I. Concerning *vastu purusha mandala, see* Volwahsen, op. cit., and Wu, op. cit.

Although the transformation of shape and dimensions undergone by the Tibetan *chorten* was paralleled by a gradual transformation of Buddhism as it spread from India to Tibet, the essential spirit and symbolism of the religion are ever present. In fact, tangible manifestations of Buddhism embodied in Lamaist tradition are to be seen everywhere in Tibet in the large number of *chorten,* which in turn are a manifestation of the profound Buddhist faith of the Tibetans who built them.

Structurally, the Tibetan *chorten* is highly complex; sacred books translated and studied so far describe eight or so basic models and instructions as to how they are to be built. These eight models correspond to the eight major events in the life of Gautama the Buddha: tradition, in fact, has it that eight stupas were built in the eight places where these events occurred.[1]

The models from which *chorten* in Tibet are most frequently built are those which symbolize 'the supreme Enlightenment', 'the descent from Heaven', and-by far the most monumental of all eight-that of 'the many gates'.

The *chorten* symbolizing 'the supreme Enlightenment' consists of a square base surmounted by several steps, on which stands the dome or principal part of the shrine. The dome is not a plain hemisphere in the strict sense of the word, but rather an inverted, truncated cone known as a *bumpa.* A tapering shaft or spire supporting thirteen 'wheels' or 'umbrellas' rises from the centre of the dome and terminates in an ornate crown or ring topped by a crescent moon and the disc of the sun. This last emblem with the other parts of the *chorten* make up a complex symbolic structure or scheme of the Buddhist universe in its Lamaist version.[2]

The *chorten* symbolizing 'the descent from Heaven' differs from that of 'the supreme Enlightenment' in that four flights of steps are placed at the four sides of the shrine. Besides representing the descent

1. For a description of the eight models of Tibetan *chorten,* see G. Tucci, *Indo-Tibetica,* Vol. I, Rome, Reale Accademia d'Italia, 1932. The eight stupas upon which the Tibetan *chorten* are based are as follows: stupa of 'the descent from Heaven' at Kapilavastu, the Buddha's birthplace; stupa of 'the supreme Enlightenment' at Magadha, where the Buddha attained supreme Enlightenment; stupa of 'the great miracle' at Kusinagara, where the Buddha entered Nirvana; stupa of the 'proclamation' of Buddhism at Benares, where the Buddha began proclaiming or preaching Buddhism; the 'Kanika' stupa at Vaisali, where the Buddha meditated on his life-span; stupa of 'the many gates', also called 'victorious', at Sravasti; the 'noble' or 'shining' stupa at Ts'adge; the 'lotus' stupa at Tikacasi.
2. Lamaism is dealt with at length by D. Seckel in II *Buddhismo,* p. 49, 70, Milan, 11 Saggiatore, 1963; by L. A. Waddell in *The Buddhism of Tibet,* Cambridge, W. Heffer, 1934; and by D. Snellgrove & H. Richardson in *A Cultural History of Tibet,* London, Weidenfeld & Nicolson, 1968.

of Buddha from the Tushita Heaven, the steps lead up to the base of the dome; by ascending them and walking round the dome, pilgrims perform the rite of circumambulation.

The *chorten* symbolizing 'the many gates', in addition to being by far the most monumental of the eight types built in Tibet, differs from those of 'the supreme Enlightenment' and 'the descent from Heaven' on account of its great size. The most representative *chorten* of 'the many gates' stands by the monastery at Gyantse; as already mentioned, it is a gigantic structure known as a *kumbum*, meaning 'the hundred thousand (images)' and refers to the paintings and statues to be seen in the seventy-three chapels of the building. While ascending the steps during the rite of circumambulation, pilgrims pass by each of the chapels which may be considered, architecturally and symbolically, an integral part of the whole.

## The *chorten* in Khumbu

The various *chorten* in Khumbu, in the villages of Namche Bazar, Pangpoche, Thami, Phortse and Khumjung (Fig.8), are all based on the two stupas at Carumati and Bodhnath. An exception, however, is the *chorten* standing by the monastery at Tengpoche, which is clearly of Tibetan origin.

The *chorten* at Tengpoche (Plate 5) symbolizes 'the supreme Enlightenment', that is, the type of *chorten* most frequently found in Tibet. as, for instance, on the outskirts of Lhasa, Gyantse and Shigatse.

The pedestal of this *chorten* consists of a plinth or base on which stands a large, square dado surmounted by two cornices above painted wooden dentils (small square wooden blocks). Four symbolical steps rise from the pedestal to the dome or *chorten* proper. The base of the dome is circular and symbolizes the five powers; in wooden models and paintings the circular base is, as a rule, decorated with stylized lotus blooms. Rather than a plain hemisphere, the dome is an inverted, truncated cone symbolizing the 'seven concomitants of Enlightenment'.[1] On the sides of the dome facing north and south are two large medallions bearing the *rupa* or image of the seated Buddha. The dome is surmounted by a circular drum capped with moulded lotus blooms, from which rises a shaft or spire adorned with thirteen ceremonial 'umbrellas'. The spire is in turn topped by a circular, fretted crown, an inverted crescent, a disc, and a small

*Plate 5*
The *chorten* at Tengpoche.

I. For an explanation of the symbolism of the Tibetan *chorren*, see Tucci, Indo-*Tibetica*, Vol. I, op. cit.

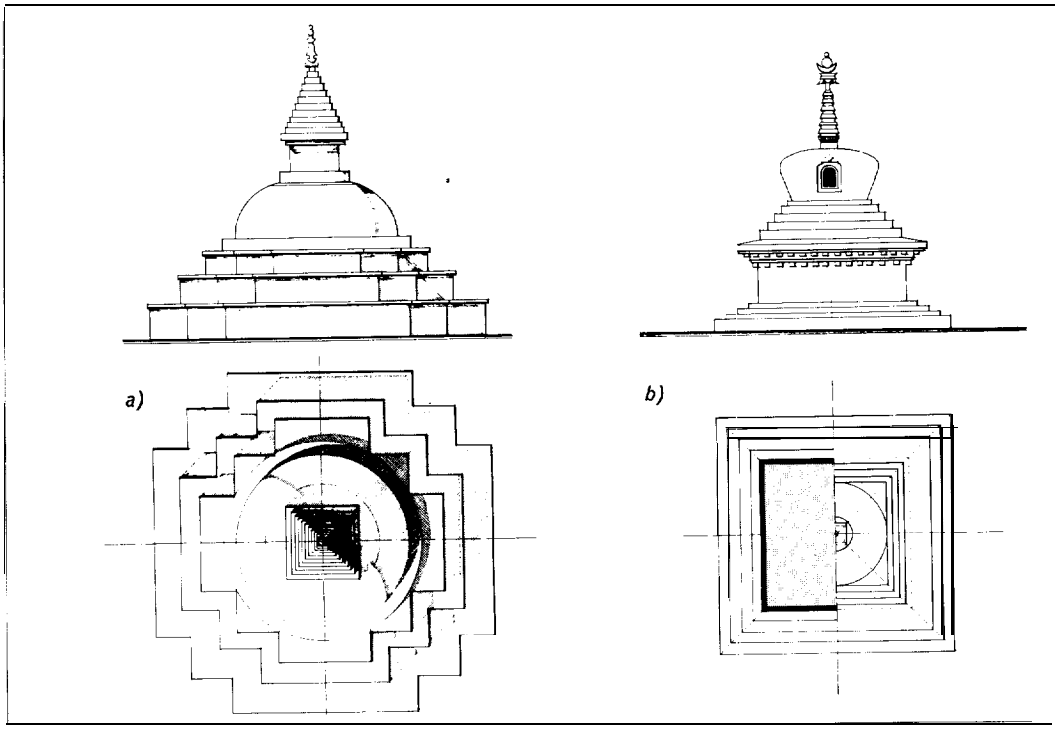



*Fig. 8*
Various types of *chorten* surveyed in Khumbu. Chorten are best described as abstract Buddhist concepts made visibly concrete: as in neighbouring Tibet, so in Khumbu they are symbolical of the presence of man throughout the region, as well of his devout religious faith.

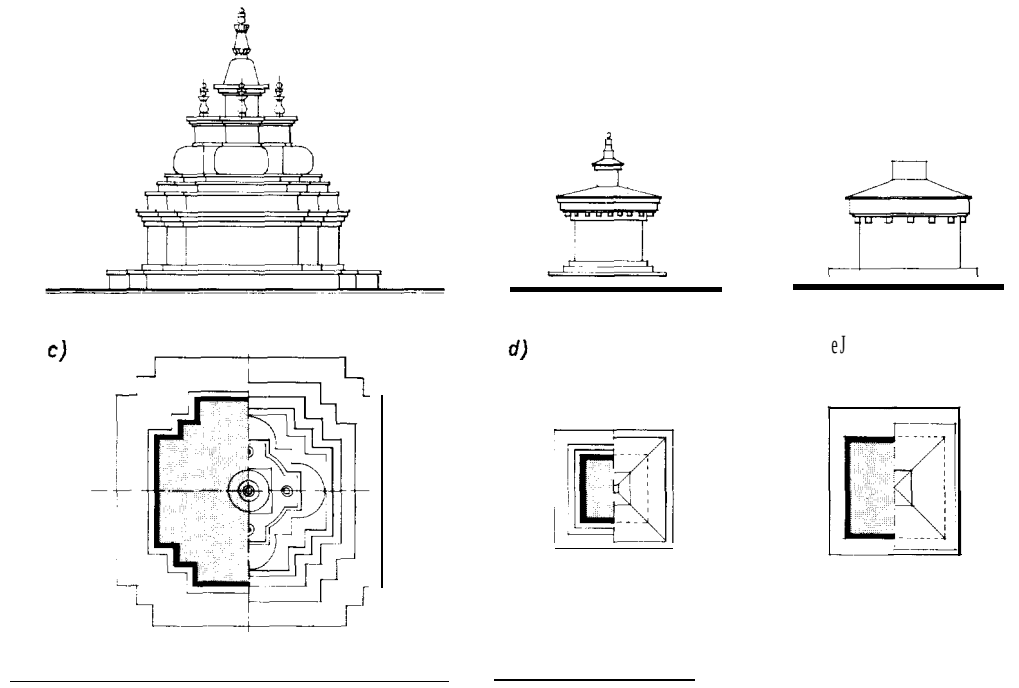
The various types of *chorten* surveyed in Khumbu are shown here.

Type (a) based on Nepalese stupas, those at Carumati and Bodhnath in particular, is found in nearly all the villages of Khumbu.

Type (b), the only *chorten* of its kind, stands near the monastery at Tengpoche; it symbolizes 'the supreme Enlightenment', a type frequently found in Tibet, as, for example, at Gyantse. Apart from slight differences in form and dimensions, similar types of *chorren* are found in Mustang and many parts of Ladakh. The numerous paintings of stylized *chorren,* usually on *tankha,* symbolizing 'the supreme Enlightenment', are further evidence that this type is frequently found in regions where the Lamaist faith prevails, and is therefore the model on which others are based.

Type (c) is somewhat of a rarity as regards form and dimensions. Undoubtedly of Indo-Nepalese origin, it is possible that the five *kenjira* flanking the four sides of the dome and on top of the spire respectively, symbolize the five Dhyani (or Jina) Buddhas.

The small *chorten,* as represented in (d) and (e), were found near the big *chorten* at Tengpoche. Clearly of Tibetan origin, they are, however, limited as far as symbolic expression is concerned, often being found near bigger, more important *chorren.*




spherical pinnacle: the crescent with the disc and the spherical pinnacle symbolize air and the ether respectively.

The dome of the *chorten* in particular is in a poor state of preservation since it is some considerable time since it was last plastered with clay. Despite the eroded surface of the dome and the crumbling steps and cornices, the lines of the *chorten* are still reasonably pronounced.

That the *chorten* was built in accordance with Tibetan canon is borne out by comparing it with the description, dimensions and interpretation of its various parts given by Tucci in his great work Indo-Tibetica. Unfortunately, this could not be done with the *chorten* in the villages of Namche Bazar, Pangpoche, Thami, Phortse and Khumjung, which are all of Indo-Nepalese origin. However, a comparative architectural study of several wooden models kept in the Tengpoche monastery was possible.

These models are of undoubted interest as they are representative of the *chorten* most frequently built in Khumbu, as well as of others less frequently built. Among the models is one which seems to have been used for building the *chorten* outside the monastery. Another model of interest is that of the *chorten* symbolizing 'the descent from

Heaven', of which the dome and dado in the pedestal are decorated in bright colours. A rare model of particular interest is one with a diminishing succession of steps built on an eight-sided ground plan. Its origin is undoubtedly Tibetan, as is borne out by the *chorten* standing outside the monastery of Tashigang, in western Tibet.

Of particular interest, too, is the model in which the base of the dome, instead of the usual ascending succession of steps, is a gentle curve adorned with stylized lotus blooms carved in relief. This model symbolizes, appropriately, the 'garland of lotus blooms'.

Models of *chorten* are also kept in Buddhist monasteries outside Khumbu, as, for example, Lamayuru, in Ladakh, and Pemiangtse, in Sikkim. As with the models in the Tengpoche monastery, these, too, are of great help when carrying out a survey of *chorten;* the detail and accuracy of their dimensions makes easier the task of comparing them with the large *chorten.* One can only hope that these precious models will continue to be preserved.

Concerning models, mention must be made of the small votive *chorten* symbolizing 'the great Enlightenment' in the middle shrine of the upper *lha-khang,* 'God's house' or 'temple', at the Tengpoche monastery. The *chorten* is made of silver and brass studded with precious stones; despite the profusely decorative, embossed silver base and dome, it is clearly a copy of the wooden model in the monastery. A similar votive *chorten* is represented in a wood-engraving at Tengpoche (Fig. 9); in it an explanation is given of the symbolical significance of its various parts, including the ritual flags hanging from the crown of the spire above the dome. The correspondence between the silver and brass votive *chorten* and the one represented in the wood-engraving is all the more evident in that the frame of the shrine holding the *chorten* is a repetition of its stylized counterpart surrounding the wood-engraving.

In the survey of *chorten* made in the villages of Khumbu, only the larger of these were examined, and a mere list was compiled of the smaller ones along paths, usually near mani-walls and sacred inscriptions on rock faces. These *chorten* were obviously built by devout Sherpas who had no guidelines to work from, let alone wooden models. Their value, architecturally, is therefore limited, especially when it comes to making comparative studies with wooden models, though it cannot be denied that these simple *chorten* are an overt expression of the Sherpas' Lamaist faith.

Concerning the *chorten* at Namche Bazar, its simple lines are such that one is led to place it in the class symbolizing 'the many gates', the most representative of which is at Gyantse, in Tibet. Although there is a close similarity between the two, the *chorten* at Namche, from the standpoint of architecture, is not strictly of

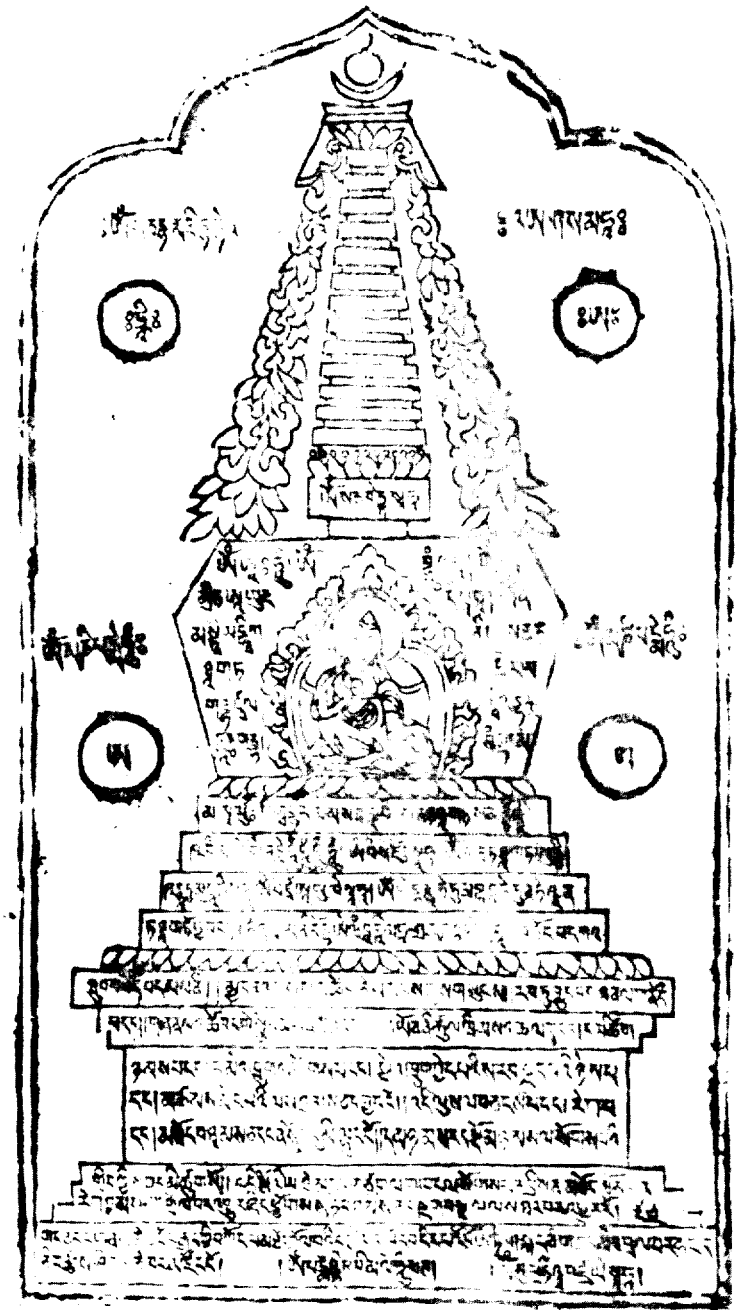


*Fig. 9*
Wood-engraving of a votive *chorten* at Tengpoche.

Tibetan origin, but rather is derived from the two older stupas at Carumati and Bodhnath in the Katmandu Valley, in Nepal. Evidence for this is to be found in the innumerable photographs of Tibet now available: careful examination of them shows that the most frequent *chorten* are those symbolizing 'the great Enlightenment' and 'the descent from Heaven', whereas those of 'the many gates', apart from the one at Gyantse and several others elsewhere, are uncommon.

The *chorten* in the village of Namche Bazar (Plate 1) is situated in a natural amphitheatre and is visible on all sides. Built of inferior-quality material, its base consists of three diminishing polygonal steps which symbolize earth. On the plinth above the top step stands the dome, which is flattened as opposed to hemispherical, as if overburdened by the weight of the tower above; in shape it resembles the ancient Indian stupa or reliquary mound. On the flattened dome stands a cubic kiosk or *harmika*, from which rises the pyramid-shaped tower or spire supporting thirteen 'umbrellas', capped by a circular metal crown, to which are attached ritual curtain-like flags. The umbrella-tower is topped by a *kenjira-a* stylized architectural ornament made of gold-lacquered wood and shaped like a pinnacle.

*Plate 6*
The *chorten* and free-standing gateway at Namche Bazar .

Unfortunately, the *chorten* at Namche Bazar is in a poor state of preservation. More than on other parts of the shrine, the outer layer of clay on the dome has all but worn away through long exposure to the elements. As a result, the underlying brickwork has been damaged.

Lying on the steps of the base of the *chorten* are slabs of stone bearing sacred symbols and mantras, mostly the ubiquitous formula *Om Mani Padme Hum*. The outer meaning of this mantra is 'Hail to the Jewel in the Lotus Flower', referring both to the Bodhisattva Avalokiteswara and to his incarnation, the Dalai Lama, though other mystic, exoteric readings are possible.

Similar to the *chorten* at Namche Bazar, both as regards shape and dimensions, are the two at Khumjung, the two at Dingpoche, and the single one at Khumde. Their various parts are illustrated in detail in the figures.

With regard to the *chorten* at Pangpoche, it is almost impossible to explain the symbolical significance of its various parts on account of its particular shape, which makes it difficult to compare with the wooden models. On the other hand, it is possible that the *five kenjira* flanking the four sides of the dome and on top of the spire respectively, symbolize the five Dhyani (or Jina) Buddhas.

A form of architecture in Khumbu inspired by the *chorten* is the free-standing gateway. Three of them are to be found near the villages of Namche Bazar (Plate 6) and Khumjung, and the monastery of Tengpoche. The gateways are clearly of Tibetan origin, as

they are not uncommon there, though they differ from those in Khumbu in that they are surmounted by a *chorten* proper. As a rule, the mandala and deities of the Buddhist pantheon are represented on the underside of the lintel. In addition to those near Gyantse and Lhasa, in Tibet, Tibetan-style gateways surmounted by a *chorten* are occasionally found in Nepal, as, for instance, at Tsarang, south of Lo Mantang, in the Mustang region bordering on Tibet. Simplified versions of the gate-chorten are, however, found in Nepal: of the original *chorten,* only the *harmika* or cubic kiosk surmounted by the *kenjira* remain. A typical gateway of this kind stands on the road to the monastery of Garphu, in northern Mustang.

As to *gate-chorten* in Khumbu, both their shape and dimensions are even more simplified: instead of the characteristic dome and spire, the gateway is surmounted by a sloping ridge roof topped by a *kenjira.*

An architectural survey of *chorten* is incomplete without the stylized representations of these shrines on slabs of stone and *tsa-tsa,* that is, votive medallions of moulded clayey earth, found throughout Khumbu (Plate 7 and Fig. *IO). Chorten,* Buddhist deities and sacred inscriptions on stone slabs are basically different from those found in the central Himalayan belt, which, instead of being engraved, are painted. In regions farther north where the Sherpas have been absorbed by the local population, techniques used to engrave *chorten* and other symbols on the slabs vary from simple graffiti to bas-reliefs on a coloured ground. In Khumbu, the latter technique is predominant.

The religious concept behind these engraved stone slabs is to reckon day-to-day actions, whether good or evil, with a view to the acquisition of *sonam* (religious merit), or, quite simply, as a mark of devotion. In all meritorious actions adding to each Sherpa's individual store of *sonam,* what really counts is the thought behind the deed; even a simple slab of stone may express deep religious commitment.

One such votive slab near Pangpoche is engraved with a *chorten* of 'the many gates'; its lines clearly indicate that it is of Nepalese origin.

Other votive slabs were examined and catalogued in the course of the survey on the basis of their figurative and plastic qualities. The lines of some of the *chorten* represented on them are engraved with bare simplicity, while on others they are more fanciful. In both cases, the stone engravings conform to Lamaist iconographical models.

*Tsa-tsa,* or votive medallions of moulded, clayey earth baked in the sun, fall into two main categories: in the first are represented

stylized *chorten* in relief, in the second deities of the Buddhist pantheon. The *chorten* medallions are by far the older of the two categories and, as a rule, bear passages from the Buddhist creed. The types of *chorten* represented on the medallions are those symbolizing 'the descent from Heaven', 'the supreme Enlightenment' and 'the many gates', which again goes to prove that these three types are the most frequently built.

One such votive medallion was found in the village of Khumjung, though it is almost certain that it was brought there from some other place or monastery. Symbolizing 'the descent from Heaven', it bears a formula from the *prajnaparamita*, embodying the various stages of spiritual perfection leading to Supreme Wisdom, as attained by, among others, the *sramana* Vairocana: 'Of all things which proceed from a cause the *Tathagata* has explained the cause, and has also explained their ceasing."

It would appear that votive medallions bearing *prajnaparamita* texts were those most frequently used when consecrating a *chorten*, by being placed inside the dome. Thenceforth the *chorten* was a sacred shrine set apart from other works created by the hand of man: the votive medallions placed inside the dome in fact symbolize the body of the Buddha and the Wheel of the Law.

While making the survey of *chorten* in Khumbu, it was soon evident how all abstract religious concepts can be duly transformed and made visibly concrete through the medium of painting, sculpture and engravings, thus causing the supreme truths expressed by the Buddhist faith to shine forth in a welter of sacred images and symbols.

## The *gompa* in Khumbu

The survey of the numerous *chorten* in Khumbu showed that they are for the most part of Nepalese origin, especially as regards form and dimensions. An exception, however, is the *chorten* at Tengpoche which is undoubtedly of Tibetan origin.

Concerning the survey made of *gompa* or monasteries in Khumbu, there is no doubt as to their being of Tibetan origin. It is therefore appropriate that in order to better understand the architectural and religious significance of the monasteries in the region, they should be compared with their Tibetan counterparts.

The earliest monasteries of importance in Tibet were built from the eighth century A.D. onwards, Buddhism having been introduced into the country about the middle of the seventh century following

1. The significance of the *prajnaparamita* is dealt with by Tucci in *Indo-Tibetica*, Vol. I, op. cit.

its decline in India, mainly through the efforts of Padmasambhava (in Tibet, Guru Rimpoche).

Before the advent of Buddhism, Tibetans followed the Bon religion; in due course Buddhism absorbed much of the indigenous practices of Bonism, to the extent that the former was considered a natural offshoot of the latter. Buddhism, however, soon predominated and became better organized as the power of the lamas gradually increased. In fact, once the monasteries had been turned into centres of power, their principal purpose being to act as a symbolic link between religion and the day-to-day life of man, the lamas set about transforming the country.

Early Tibetan monasteries were virtually religious strongholds. As the word *'gompa'* signifies, the monasteries were 'solitary places', the earliest of them being built far from the noisy activity and oppressive influences of villages and towns, which enabled the monks to apply themselves to their devotions undisturbed. Nevertheless, most monasteries were later built within easy reach of villages and towns; others were placed on the more important trade routes and soon acquired fame and prestige.

In order to provide monastic communities with a living, the monasteries in due course came into possession of land extending for many miles around; peasants and shepherds inhabiting monastic income-producing property paid tribute to the monasteries in kind, mainly agricultural produce.

It was in these monasteries that the great task of translating sacred Buddhist texts was undertaken. Innumerable volumes of canonical commentaries, as well as liturgical treatises and other philosophical and scientific works, thus saw the light and became vehicles for Buddhist culture which spread far and wide, even to China, among other countries, during the Mongol dynasty in the thirteenth century.

In the fifteenth century Tsong-kha-pa (1357-1419) brought about a great reformation of the Buddhist church: his followers, who were called Gelug-pa (the virtuous), or, more popularly, 'Yellow Caps', soon became the leading sect in the country, and subsequently developed into a real 'established church'. Under *Gelug-pa* influence the number of monasteries steadily increased. Besides the magnificent Potala, at Lhasa, monasteries such as Sera, Depung, Galden and Rechemg were built near by. Mention must also be made of Samie, dating from the eighth century; Tashilumpo, the former seat of the Panchen or Tashi Lama; and Sakya, dating from the eleventh century.

For the most part, Tibetan *gompa* or monasteries resemble one another in shape and dimensions : two-storeyed buildings are common, those with a third storey less so. As a rule, the ground plan conforms

to a mandala. As is known, the mandala is the visible representation of the sum total of natural and spiritual forces: it encloses, as it were, consecrated space-in this instance, the monastery. Based as it is upon the pattern of the sacred mandata, the ground plan is divided into separate segments or comportments, each of which, in the monastery rising above it, has a liturgical or spiritual function as, for example, the *cham-ra* or stone-paved forecourt of the Tengpoche monastery in Khumbu, in which the ritual Mani Rimdu dances are held, As with the ancient Indian stupa, so with the Tibetan monastery the rite of circumambulation is performed before the consecrated space within is entered. Prayer-wheels or cylinders, about 30 cm high, stand in rows around the monastery walls and are turned by pilgrims before entering, as, for instance, at the monastery of Lo Gekar, in the Mustang region.

Monks, novices, pilgrims and other visitors are now ready to pass through the atrium or porch before the entrance of the *Iha-khang*, adorned with a welter of symbolic frescoes painted in vivid colours. Flanking the entrance are the four *gyaf-chen-de-shi* (Guardians of the Four Quarters), whose task is to project the monastery against evil spirits. The Wheel of Life, too, depicting the cycle of death and rebirth, and the Eight Glorious Emblems are ever present.

*Plate 8*
The *gompa* at Tengpoche.

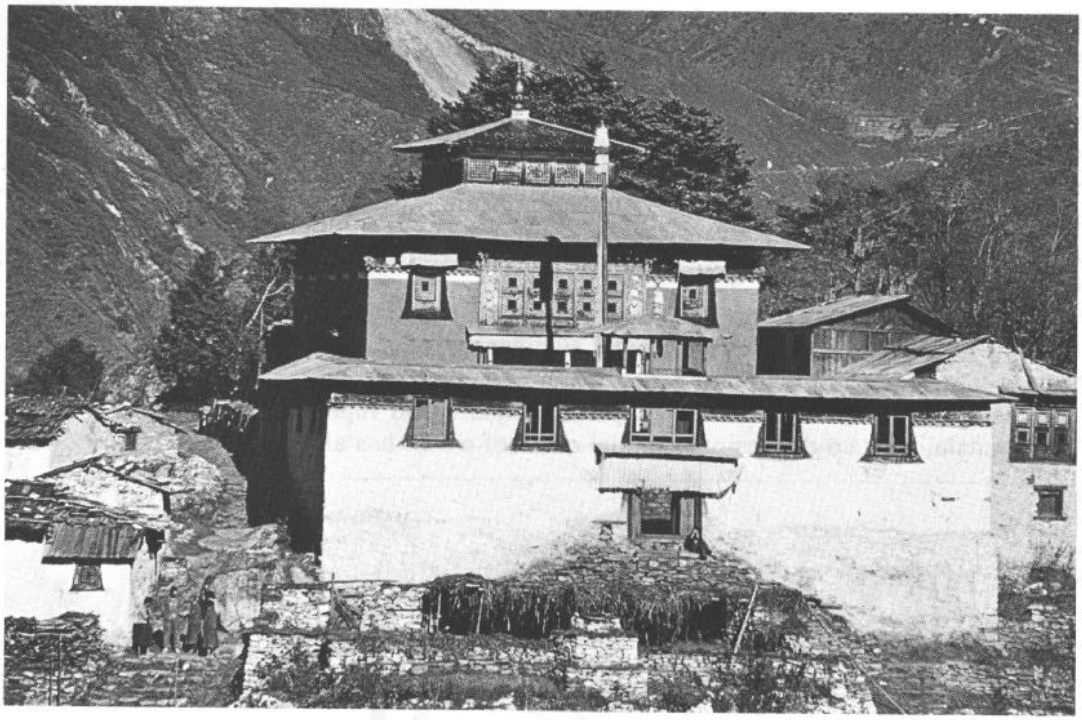
Within the monastery proper, separated from the material world outside, is the main hall or *Iha-khang*, literally 'God's house' or 'temple', filled with images and deities of the Buddhist pantheon; the centre of the hall or temple is reserved, in theory, for the principal deity. In some Tibetan monasteries the centre reserved for the principal deity is surrounded on four sides by a painted wall; in the space in between the rite of circumambulation is performed.

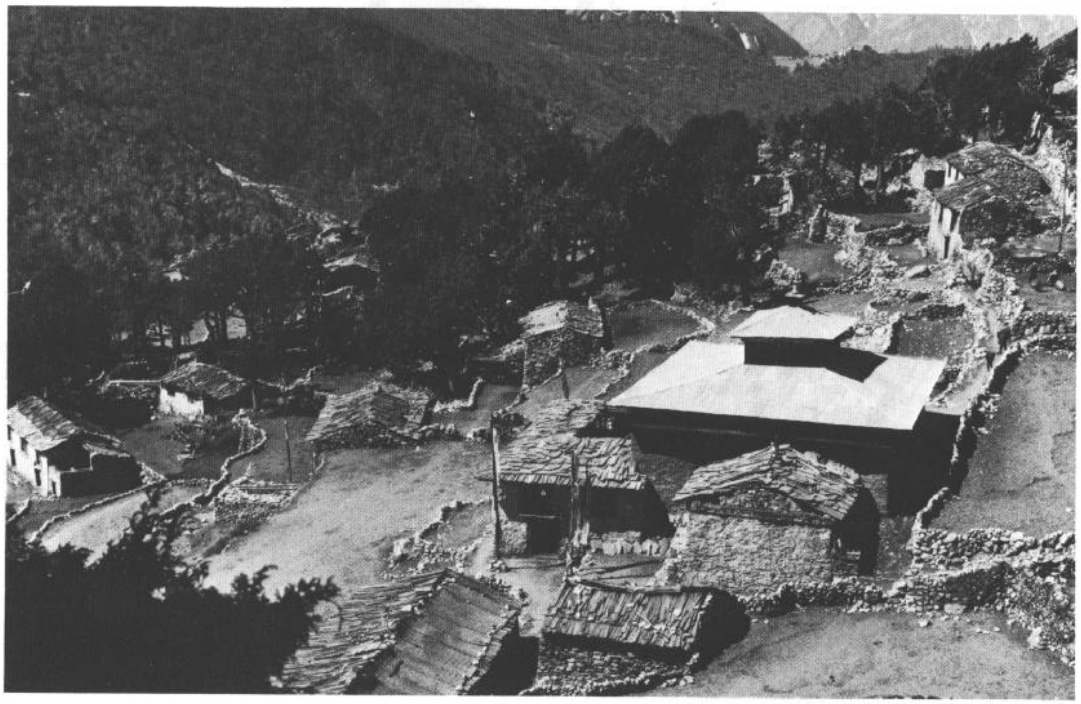
*Plate 9*
Dwelling-houses and *gompa* at Pangpoche.

The earliest monasteries in Tibet consisted of a single hall or *Iha-khang* described above, from which all others evolved over the centuries. In due course an atrium or porch, also described above, was added before the entrance. A square forecourt enclosed on three sides with a portico, known as *yab-rin* in Tibet and *cham-ra* in Khumbu, was built on to the more important Tibetan monasteries; in it monks and pilgrims forgathered to perform liturgical and collective rites. In Tibetan villages a monastery with a single hall or *Iha-khang*, and one or two outhouses, was the basic pattern, and soon became the focal point of religious and community life.

All *gompa* in the Khumbu valley are in the main based on Tibetan models, as, for example, those at Tengpoche (Plate 8), Khumjung and Pangpoche (Plate 9), as well as at Namche Bazar and Thami, though the sites on which the last two stand differ from the others.

The most important monastery in Khumbu is at Tengpoche





(Fig. 11). The main building stands on the upper part of a broad, grassy, gently sloping spur and is surrounded by the smaller houses of the monks and Lama or abbot; a few houses on the lower part of the spur are used by pilgrims and other visitors. By the path near the monastery leading down to Khumjung and Namche Bazar are situated a big *chorten* symbolizing 'the supreme Enlightenment' and two smaller ones close by. A few yards away is the free-standing gateway, of which the underside of the lintel is decorated with vivid frescoes.

As in earlier monasteries in Tibet and later ones in Khumbu, the key to the religious and symbolical significance of the ground plan is to be found in the main hall or *Iha-khang.* At Tengpoche as elsewhere, the *lha-khang* is in the shape of a square and represents the mandala, the two-dimensional spatial effect of which has already

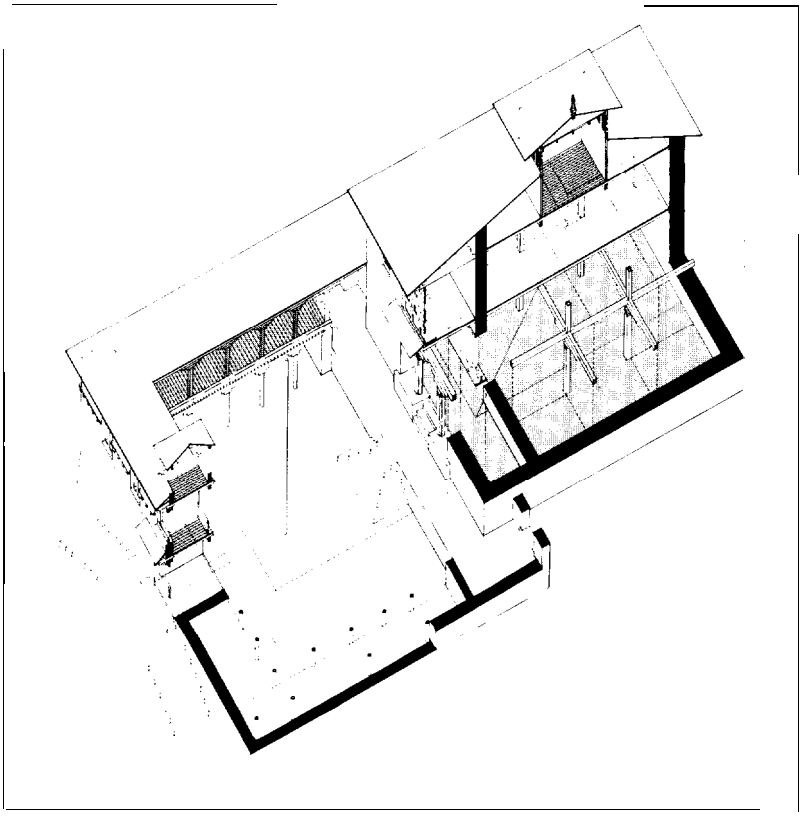


*Fig. II*
The plane surfaces and inner space are seen to better advantage in the axonometric projection of the *gompa,* as are the supporting wooden framework and massive walls enclosing it.

been described in the chapter on the origin and symbolism of the stupa. The circumference of the mandala and the squares within it are repeated in the *Iha-khang* by the thick walls encircling it and the inner supporting structure of pillars and beams. As the focal point of the mandala is its centre, so the principal deity to which the *Iha-khang* is dedicated occupies, in theory, the central square, though, in practice, its carved figure is kept in a shrine standing against the wall opposite the main entrance. The axis round which the two storeys of the *Iha-khang* are built projects up through the squat, four-sided tower and culminates in the *kenjira*, a stylized architectural ornament of gold-lacquered wood shaped like a pinnacle. The arrangement of the four pillars supporting the inner structure of the *lha-khang* is such that there is plenty of room for the rite of circumambulation to be performed, and wind and percussion instruments to be played during religious ceremonies.

The walls opposite the main entrance and on the right as one enters are lined with shelves holding sacred texts and shrines containing deities of the Buddhist pantheon. In the remaining two walls-that is, opposite the shelves and shrines, and on the left as one enters-are three windows and the main entrance.

The four pillars are surmounted by shelf-like capitals on which rest four wooden beams supporting the floor above. The immediate effect of the inner structure of pillars and beams is one of extreme lightness. The effect of lightness is enhanced by the brightly coloured decorative elements and the graceful lines of the finely carved shelf-capitals supporting the beams. Indeed the *Iha-khang* appears to be dematerialized as if devoid of physical weight-of the spirit, as it were, rather than of matter. A profound sense of harmony compounded of space and architecture, as well as of spirit and matter, pervades the place, to the extent that it seems not of this world but of the divine spheres. On the other hand, the *Iha-khang* is wholly functional, as is evident during religious ceremonies, when man, space, architecture, the vivid colouring and ritual music are at one with each other.

During religious ceremonies music is provided by monks playing wind and percussion instruments. Among the former are long horns, flageolets and a white conch rimmed with silver; among the latter are big and small drums, and cymbals of various kinds which make a violent clash when struck together. While playing their instruments, the monks sit between the pillars on low benches covered with carpets and cushions. Before the monks are small, narrow wooden stands on which their instruments rest, as, for example, the long horns.

A number of *tankha* or painted scrolls hang from the ceiling

of the *Iha-khang,* while *ka-pan* or shot silk banners are attached to the shelf-capitals of the pillars.

The atrium or porch, built into the main body of the *Iha-khang,* is both symbolical and functional. From the standpoint of architecture, the contrast of the front of the building and the dark interior of the porch glimpsed through the entrance, and consequent distribution of light and shadow between the two, immediately attracts attention. Furthermore, the effect caused by the fine columns flanking the entrance, painted with stylized lotus blooms and surmounted by carved shelf-capitals decorated with concentric circles, as they emerge from the shadows, is indeed impressive. The basic pattern of elaborately ornamented columns flanking the door of the porch, enhanced by the beautiful, long window on the first floor, is repeated in other *gompa* in Khumbu, for instance, Khumjung and Pangpoche, though in a minor key. The walls on the inside of the porch are entirely lined with wood and decorated with symbols and deities of the Buddhist pantheon, among which, as already mentioned, are the Guardians of the Four Quarters, the Wheel of Life and the Eight Glorious Emblems.'

The jambs and lintel of the main door of the *lha-khang* are moulded in relief. The red-lacquered door is adorned with brass bosses and above it there is a projecting cornice decorated with zoomorphous figures whose monkey heads are painted yellow and dark blue.

A flight of wooden stairs against the right wall inside the porch

1. The Guardians of the Four Quarters, representing the four cardinal points, are tutelary deities living on Mount Sumeru, the 'world-mountain'. In the Buddhist hierarchy they occupy the lowest levels, their task being to guard the monasteries against evil spirits. It is for this purpose that they flank the main entrance in pairs.

   The Wheel of Life, painted on the left wall of the atrium or porch, illustrates the cycle of death and rebirth. In it are depicted the six spheres of *Samshara,* connected with Karma and its working. In Nepal, *Samshara* assumes the significance of illusion and the separative self; in each of the six spheres is a sacred image of Buddha that indicates the way to liberation and transmutation of the separative self. In the centre of the wheel is a circle enclosing a red cock, a green serpent and a black pig symbolizing lust, anger and stupidity-the three main obstacles to Enlightenment in the whirling fray of human existence. The wheel is held by a monster symbolizing *Samshara.*

   Also depicted in the atrium or porch are the Eight Glorious Emblems, symbols of fortune. To the left are the two Goldfish, the Victorious Standard, the Conch and the Lotus Flower of Immortality. To the right are the Royal Baldaquin, the Monogram of Fortune, the Cup of Ambrosia and the Wheel of the Law. (See A. *Getty, The Gods of Northern Buddhism,* Oxford, Clarendon Press, 1928; A. K. Gordon, *The Iconography of Tibetan Lamaism,* Tokyo, Charles E. Tuttle, 1959; L. A. Waddell, *The Buddhism of Tibet,* Cambridge, W. Heffer, 1934.)

leads up to the *floor* above the *lha-khang* or main hall. Four stone steps lead down from the door of the porch to the wide, stone-paved base of the main front of the *lha-khang.* Although it closely resembles Tengpoche in other respects, the stone-paved base is not to be found in the *gompa* at Pangpoche.

At the bottom of the porticoes, on either side of the main front of the *Iha-khang,* are two small doors through which pilgrims enter and leave the forecourt while circumambulating the monastery. As in former monasteries in Tibet, rows of prayer-wheels are set in a long niche in the massive right wall of the main building; these are turned by pilgrims while performing the rite of circumambulation, Unlike Tengpoche, there are no prayer-wheels at the monasteries of Pangpoche and Khumjung, though they are to be found along the wall by the path leading to the monastery at Namche Bazar.

On the upper floor of the *Iha-khang* or monastery proper is a large room with a long window overlooking the forecourt, where monks, among other things, make wood-engravings. At Tengpoche and Pangpoche, a further two rooms, reserved for the abbots of the two monasteries, lead off from the main room overlooking the forecourt.

The walls of the rooms on the upper floor, like those on the ground floor, are entirely panelled with wood and elaborately decorated with deities and sacred symbols. Decoration of this kind is so widespread in Buddhist architecture because, in accordance with Buddhist principles, to paint the deities and sacred symbols in this way is to take an active part in religion-to be at one with the Lord Buddha, as it were. A steep stairway on the upper floor leads up to the treasury in the squat, four-sided tower above, in which relics, vestments, and miniature wooden models *of chorten* are kept.

The square forecourt, enclosed on three sides with a two-storeyed portico made entirely of wood, is built on a lower level than that of the *Iha-khang* or main hall. The area of the forecourt without the portico is the same as that of the inner hall *of'* the *Iha-khang.* In the middle of the forecourt stands a high pole called *tarchen* or *tar-shing,* on which is placed a cylindrical canopy of coloured cloth. The forecourt is entered through a door in the thick walls enclosing it.

The *cham-ra* or forecourt has many uses. These range from gatherings held by monks to religious ceremonies such as the Mani Rimdu dances. That the forecourt is used for such ceremonies at other monasteries as well is borne out by a drawing made in 1902 by Sven Hedin at Tashilumpo, in Tibet.'

I. For a description of Tibetan monasteries at the turn of the century, see Sven Hedin, *Tram-Himalaya,* London, Macmillan, 1910.

The portico enclosing the forecourt at Tengpoche was demolished and rebuilt in 1975. The survey made of it since it was rebuilt is therefore of documentary value. However, photographs of the monastery taken by Tilman in 1950[1] show that the portico had been considerably altered prior to being demolished in 1975. Unfortunately, nothing is known about the shape and dimensions of the monastery before it was totally destroyed by the great earthquake of 1933. One can only suppose that the shape and dimensions of the present monastery are the same as those of the earlier building.

The walls of the *lha-khang* or main hall of the monastery overlooking the forecourt are painted reddish brown, with broad black bands under the eaves; below the black bands are a white band and dentil-like reliefs forming a frieze in between. The brightly painted window-frames on the upper floor of the *Iha-khang* stand out in sharp contrast to the reddish-brown walls surrounding them; the contrast is heightened by the subdued white walls of the forecourt below.

The *gompa* at Pangpoche resembles in many respects that at Tengpoche in ground plan, shape and dimensions, though it was built earlier: as at Tengpoche, a square forecourt was added on to the *Iha-khang* or main hall at a lower level. It also has an upper floor, although unlike Tengpoche, there is a recess under the roof as a substitute for the squat, four-sided tower. A similar recess is found in the monastery at Khumjung. Two *mani-lha-khang,* that is, temples containing a big prayer-cylinder, flank the *lha-khang,* and were built at the same time, whereas the portico enclosing the forecourt was added on later. The building is in a poor state of preservation, as is the rest of the village.

The *gompa* at Khumjung, the first to be built in Khumbu, is different from others in the region in that there is no upper floor and it has one or two peculiarities in the atrium and *lha-khang.* An atrium or porch, barely visible from the outside, is built on to the *lha-khang;* the upper part of it, in which is set a long window, opens on to the interior of the *lha-khang* like a gallery. Consequently, the *Iha-khang* is well lit, and the bright colouring of its decorations are thus seen to better advantage.

A peculiarity of the *lha-khang* is the central square of the ceiling, the four corners of which correspond to the four supporting pillars. The square is in fact raised so as to form a recess under the roof as a substitute for the squat, four-sided tower of the kind surmounting the monastery at Tengpoche. The shelf-capitals of the rectangular pillars represent elephant heads carved in bold relief. In the middle

1. H. W. Tilman, *Nepal Himalaya,* Cambridge, Cambridge University Press, 1952.

of the central square or recess under the roof, enframed by beams painted in shades varying from dark green to blue and yellow, is a large mandala. The colouring of the walls on the outside is the same as at Tengpoche.

Two less important *gompa* are at Namche Bazar and Thami. The former differs from others in Khumbu in that it was built in successive stages, with the result that the various parts of the monastery, standing at different levels, lack harmony. Nevertheless, the way the *gompa* at Namche is built gives one a good idea of how monasteries and other buildings in Khumbu were enlarged or the general plan modified.

The *gompa* at Thami is a two-storeyed, rectangular building standing against a rock face which in part projects over it. The monastery must have formerly been of small dimensions, or else consisted of a single *mani-Iha-khang*. An important feature of the building is the numerous windows in the main front. A wide stone terrace was recently built to provide more space before the monastery, thus considerably improving the general appearance of both the building and its immediate surroundings.

From the survey made of monasteries, it is clear that symbolism is one of the highlights of religious architecture in Khumbu, further intensified by the vivid colouring of innumerable images, demons and deities of Buddhist mythology. As the role of architecture in this instance is to give concrete form to this rich symbolism, it must of necessity conform to its intricate norms, so that in turn it assumes forms that are highly symbolical.

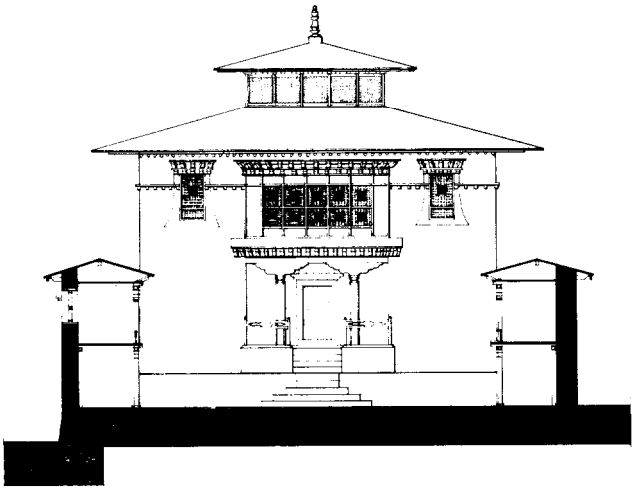
# Building materials and building art in Khumbu

## Environment and building materials

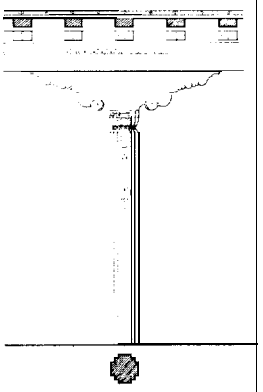
Building materials used in Nepalese architecture are few and simple. In Katmandu, the principal materials used to build temples, dwelling-houses and other edifices over the centuries are wood, brick and stone. Simple though these three materials may be, the use to which they are skilfully put offsets this apparent drawback; the addition of relief work, and tasteful if vivid colouring, never fails to enhance the effect of the whole. Artistically wrought metals, such as gilded bronze, are also often used as ornamentation. The use of baked clay in friezes and other embellishments, overlaid with graceful images moulded in delicate relief, is also widespread.

In the remote, high valleys of Khumbu, the availability of building materials is even more limited on account of climatic and physical conditions, such as hazardous communications which have tended to isolate the region from the rest of Nepal. This has naturally given rise to a primitive building economy confined to the valleys of the region, and moreover common to all mountain folk who, independent of one another and as a result of an inhospitable environment, all end up by using the same building materials for the same purposes.

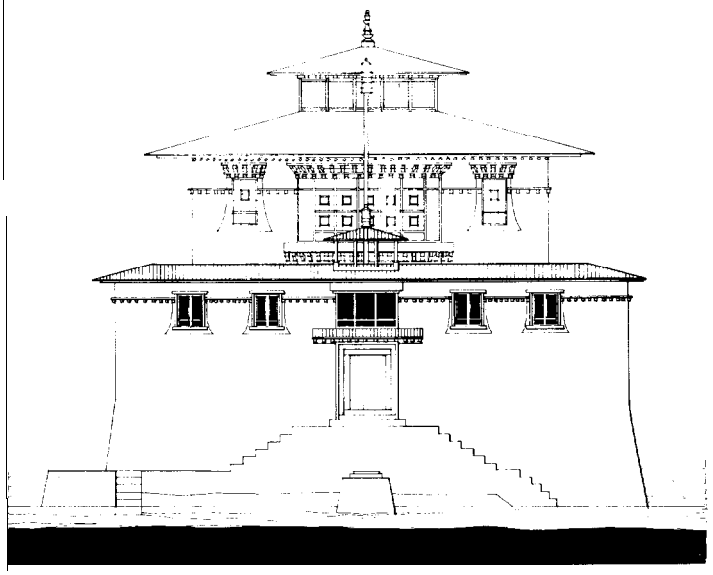
Despite these seemingly overwhelming obstacles, the tide of Buddhist culture embodied in Lamaist religious thought, on reaching Khumbu, has contributed considerably to the development of architecture. Like other mountain folk, the Sherpas have had to make do with what scant building materials are to be found in their inclement habitat, exploiting them to the full with specific techniques and appropriate building methods. The result has indeed been satisfactory and practical in that dwelling-houses, as well as religious and other buildings, in addition to being well suited to the rugged surroundings, are weather-resistant, yet not without graceful lines and vivid colouring peculiarly their own.



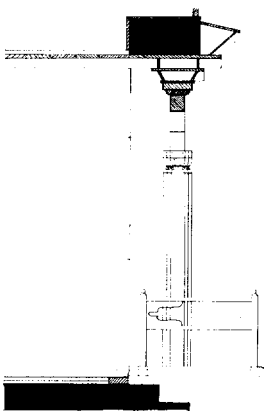
Section A-A



Structural details of Dorch



Section B-B



Building materials most commonly used in Sherpa architecture, because few others are readily available in Khumbu, are wood and stone. A factor that has contributed noticeably to the harmony and balance in the architecture of the region is the specific use of a particular building material such as wood or stone, and the way it is exploited. If at times wood is used more than stone, or vice versa, or one building method is preferred to another, it is because a particular edifice, whether dwelling-house, monastery or hut in a subsidiary settlement, must be specifically built using more wood or stone as the case may be, in order to better suit the needs of its occupants, and also to be at one with the environment.

Such simple, elementary architecture as this, compounded of wood and stone, must of necessity appear poor and humble. Yet through the clever use of vivid colour on window-frames for instance, in contrast to the subdued, uniform tones of the walls surrounding them, it immediately acquires strength and character.

Roughly dressed stone is used as a building material in the walls of Sherpa houses, in walls enclosing fields, in muni-walls, and in *chorten;* cut into slabs it is used in roofing and paving. Wood, on the other hand, is used in building the supporting framework of pillars and beams in dwelling-houses and monasteries, as well as in roofing in the form of shingles, carved ornamentation and other

*Fig. 12*
The *gompa* is built in successive, ascending grades round a central axis, in keeping with Lamaist principles, as shown in the drawing of the main front and cross-section. The axis round which the two storeys of the *lha-khung* are built projects up through the squat, four-sided tower and culminates in the *kenjira,* a stylized architectural ornament of gold-lacquered wood shaped like a pinnacle.

In the square forecourt, enclosed on three sides with a portico, monks and pilgrims from villages throughout Khumbu forgather to perform religious and collective rites, the most. important of which are the Mani Rimdu dances held for three days at the end of November. The forecourt, separated from the outer material world by the portico enclosing it on three sides, spiritually faces the main front of the *gompa* proper.

The *tarchen,* or high bamboo pole bearing a long cylindrical flag with prayers written on it, stands in the middle of the square forecourt: the square, in fact, is the architectural and religious basis of the monastery at Tengpoche and of others elsewhere in Khumbu. The main front of the *gompa* is built on a stone base at a level higher than that of the portico. The twofold pattern of the main front consists of the porch and the beautiful, long window on the floor above, rising to below the eaves. The criss-cross patterns of squares and oblongs into which the long window is subdivided is, again, based on the square. The window itself is enframed with painted stylized leaves and flowers on a brightly coloured ground in sharp contrast to the solid, reddish-brown walls surrounding it-a characteristic that distinguishes religious from lay architecture in Khumbu.

trimmings. Metals, gilded bronze in particular, much used to adorn buildings in Katmandu, are an exception rather than the rule in Khumbu. When not of gold-lacquered wood, kenjira-pinnacles surmounting gompa-are made of gilded bronze, as are the thirteen 'umbrellas' on the spire of the *chorten* at Tengpoche.

## Building materials and constructional details

Used separately, wood and stone, the materials most readily available in Khumbu, are not sufficient to build an edifice, whether dwelling-house or *gompa,* in its entirety. Used separately, however, they do have distinct functions. Wood is used to build the inner framework or supporting structure of pillars and beams, and stone the thick outer walls enclosing it, the former being separate from the latter.[1] In simple, straightforward terms, the wooden supporting structure consists of vertical pillars on which rest horizontal beams, often repeated in upper floors, as, for instance, in gompa (Fig. 12). Unlike conventional structural methods in which the various parts of a compound steel structure, for instance, are welded or riveted together, in Khumbu beams are not fastened to pillars, but merely rest on the large shelf-capitals surmounting them, the role of the shelf-capitals being static. An inner wooden framework or structure of this kind, suitable for supporting vertical loads, and, consequently, vertical thrust, is wholly unsuitable for absorbing horizontal thrust, as caused by earthquakes and the force of the wind. Such horizontal thrust is absorbed by the thick, outer protective walls enclosing the inner wooden framework.

The origins of an inner wooden framework consisting of upright pillars and horizontal beams resting on shelf-capitals, and outer stone walls, are indeed ancient and are common in Chinese architecture. A framework of this kind is functional in that there is ample space between the pillars for such activities as religious ceremonies.

The Sherpas, a people of Tibetan origin and culture, after settling in Khumbu, have preserved their traditional building methods, adapting them to the new environment wherever necessary and exploiting the natural resources of the country to the full.

1. The same method is used in Langtang, though the architecture of this region is totally different from that of Khumbu, both as regard form and style. (See B. Franceschetti, *L'Uomo e I'Ambiente nelle alte Valli del Trisuli e del Langtang (Nepal Centrale),* Turin, 1966.)

### *Construction using stone*

In Khumbu, stone is more readily available than wood and therefore widely used, especially in buildings in which equilibrium is dependent upon the force of gravity, that is to say, in solid vertical structures in which compressive stress is caused by the weight of the material used to build them.

The use of stone in simple horizontal structures such as an architrave or beam resting on the capitals of pillars, or else in more complex structures such as arches and vaults, is totally unknown not only in the Khumbu valley, but in the whole of the Himalayan region as well. This also holds good for other regions and towns of Nepal, as, for instance, Katmandu, where the basic structure is still that of vertical pillars supporting horizontal beams, as may be seen in the many fine temples there.

In Khumbu, the widespread use of stone varies from small, undressed blocks in the walls of buildings to slabs for roofing and paving; the shape of the slabs is more or less natural, as they are easily quarried from stratified rock. Stone obtained from fluvio-glacial deposits during land reclamation, often combined with turf sods, is also used to build walls enclosing fields.[1]

Stonework is either dry or bound together with rudimentary mortar made of soft, clayey earth. The reduced resistance arising from a building method of this kind is amply compensated for by the considerable thickness of some walls which are often as much as 1 m. Moreover, stonework is reinforced with large, square, dressed blocks of stone built into edges and corners, as well as round door- and window-spaces.

Stonework-the interior and exterior of walls in particular-is rarely left uncoated, but is plastered with clayey earth. The layer of clayey earth, besides giving finish to stonework by filling in cracks between stones in dry walls, is excellent weatherproofing material. In religious buildings the layer of clayey-earth plaster provides a first-rate ground for colour decorations.

Cornices and other simple, projecting, repeated ornamentation, when not of stone, are made of wood which is more easily shaped and carved with primitive tools (Fig. 13).

As mentioned above, stone is often used in roofing with good results. Cut into slabs, by sheer force of weight it resists strong monsoon winds which would easily blow off lighter material.

1. Turf sods are often used to build huts and other simple dwellings in seasonal settlements, as, for example, the shelter affectionately known as the 'Sherpa Hotel' at Periche, or as roofing material.

*Construction using wood*

In Sherpa architecture of Khumbu wood is of primary importance. As already mentioned, it is used to make the inner supporting framework of buildings, as well as to embellish and finish them.

Structurally, wood is used on account of its excellent physical and mechanical qualities, for example, its resistance to bending and shearing stress. It is also used to make pillars because of its resistance to compressive stress. Another quality of wood is that long beams, joists, rafters, planks and boards are easily sawn from timber obtained from high forest trees such as pines and firs. It is also easily planed, shaped and carved with primitive tools such as are used by the Sherpas.

Timber for building material is found in large quantities in the Dudh Kosi valley between Phakding and Namche Bazar, where the mountain slopes are covered with fir and pine forests. Timber is also obtained from forests in the Bothe Kosi valley north of Namche Bazar, as well as from the forests of Punki near the confluence of the Dudh Kosi and the Imja Khola.

Woodwork in monasteries, the inner supporting framework in particular, is better finished than that in dwelling-houses. Wood surfaces, in fact, are planed with greater care to make them smooth, mortise-and-tenon joints are better fitting, cross-sections more symmetrical. In the overall ground plan of monasteries which conform to the pattern of the mandala, the arrangement of the four main supporting pillars is such that they rise up through the floor above and culminate in the squat, four-sided tower. The framework of four basic pillars is reinforced by secondary pillars standing parallel

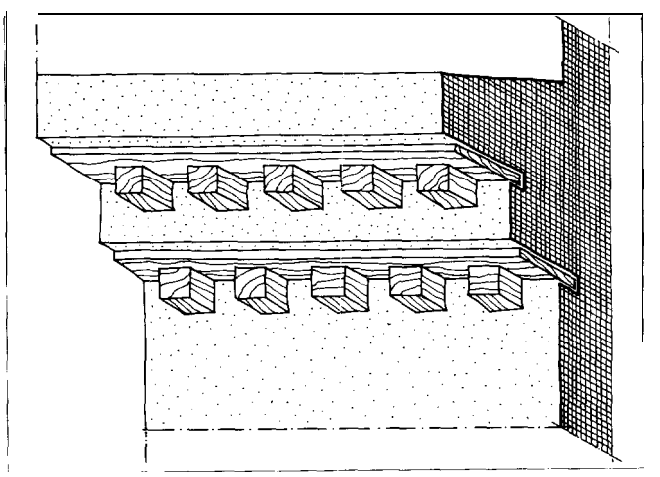


Fig. 13
Wooden cornice.

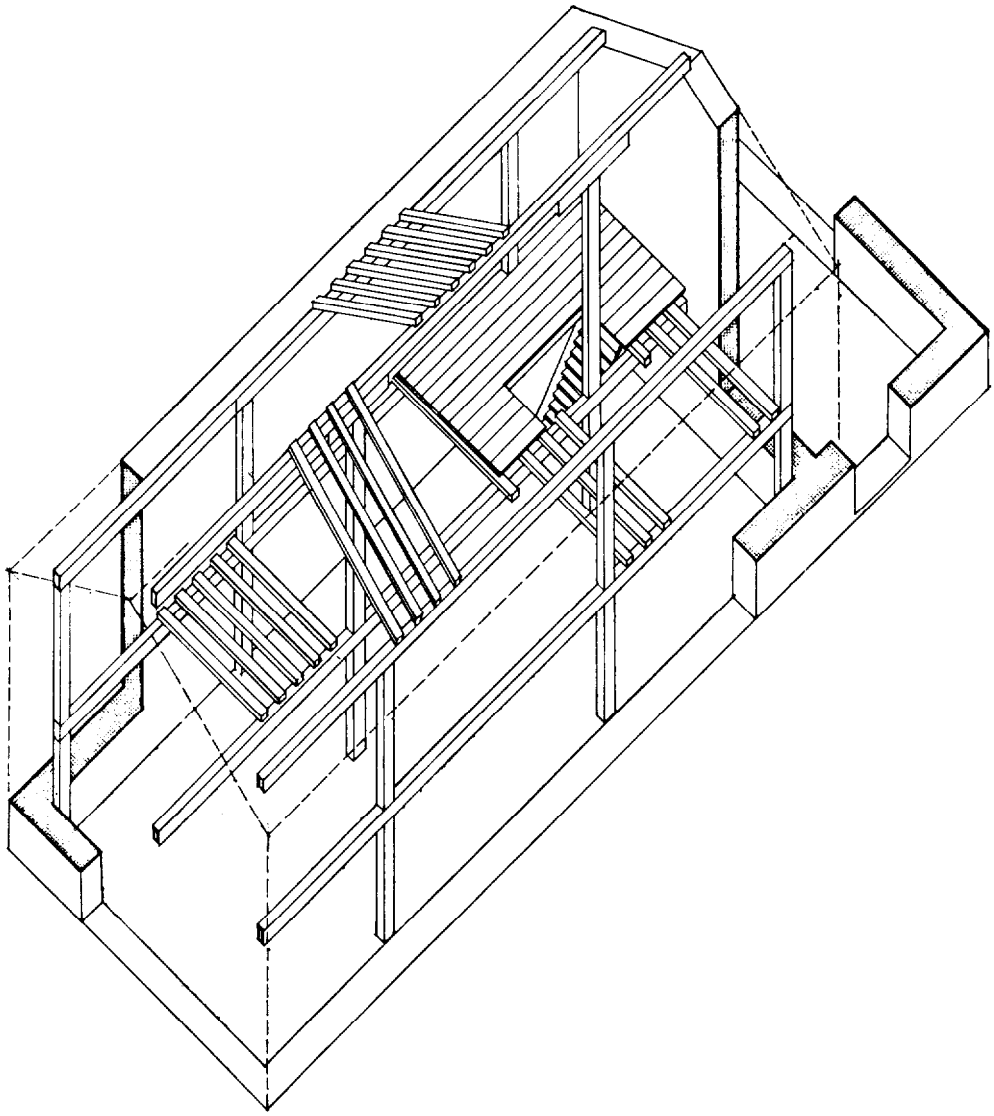
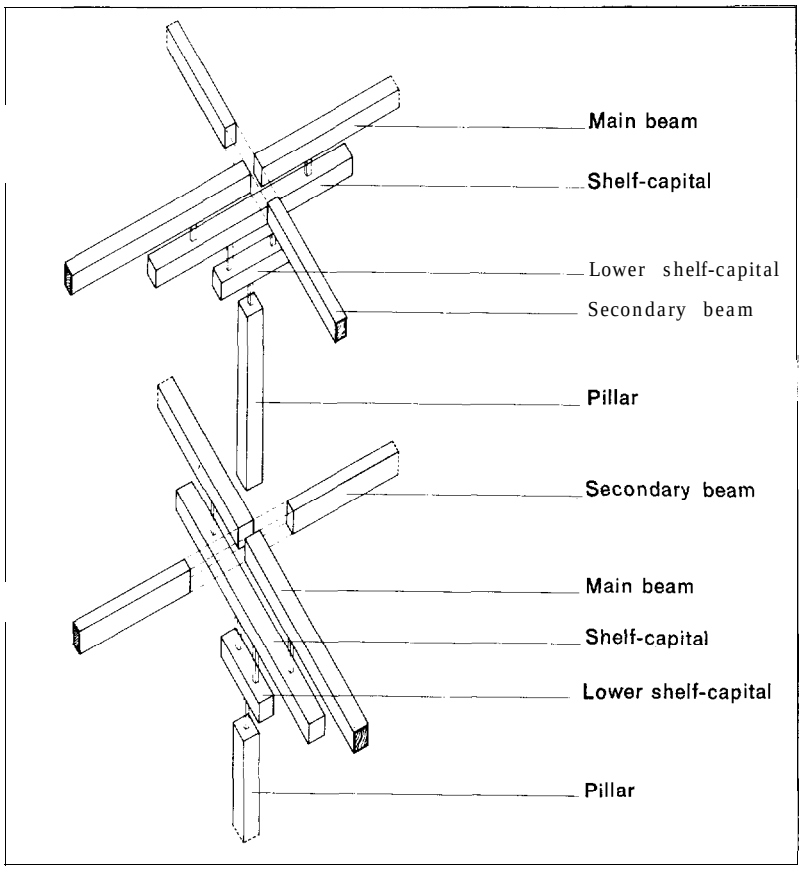


***Fig. 14***
Framework of a Sherpa dwelling-house.

to them and to the outer stone walls enclosing the framework. The vertical supporting framework of the porticoes, which consists of pillars standing in two parallel rows, and which encloses the forecourt in front of monasteries on three sides, is built separately from that of the main building.

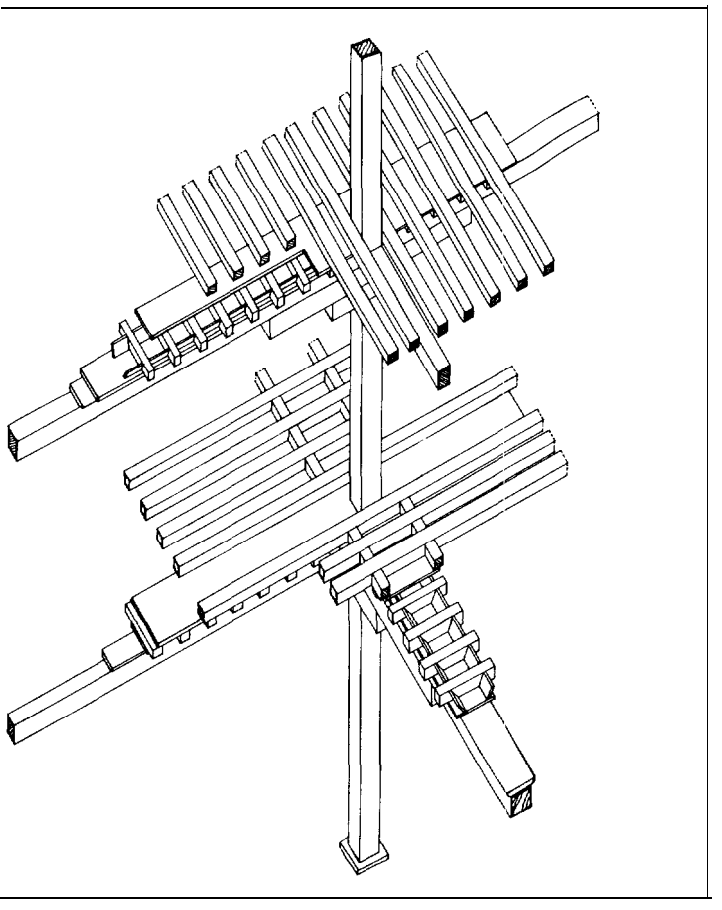
As has already been explained in an earlier chapter, Sherpa dwelling-houses are nearly always rectangular in shape, two-storeyed, with a ridge roof. The horizontal part of the inner supporting framework consists of three beams running lengthwise, that is, parallel to the longest sides of the rectangle (Fig. 14). The beams supporting the upper floor rest on pillars which vary in number according to the length and width of the beams. The shape and arrangement of both beams and pillars in no way detracts from the overall appearance of the house as the rooms on the ground floor are always used as a




***Figs. 15 and 16***
Position of main beams and shelf-capitals in a *gompa.*

byre for cattle and as storage space. The arrangement of three beams supporting the rafters of the ridge or sloping roof is similar to that supporting the upper floor, with the exception of the central ridge beam or purlin which is naturally raised above the other two on either side. Compared with that in the rooms on the upper and ground floors below, roofing timber is better finished and carefully joined together.

In the inner framework of *gompa*, the supporting pillars do not stand on the bare ground, but on large square slabs of stone which function as a base or plinth. As a rule, pillars are uniform in shape, though occasionally the head or upper part is carved so as to vaguely resemble a capital. Main beams are never placed on top of the pillars, but rest on double shelf-capitals which, in addition to facilitating the positioning of beams, increase the resistance between



beams and upper shelf-capitals, and diminish the clear span or space in between capitals (Figs. 15 and 16). These three elements-pillar, shelf-capital and beam-are not fastened together, but rest upon one another, though dowels or headless pegs are fitted into them to facilitate positioning and alignment. Geometrical patterns such as a series of tapering roundels, or animals such as elephants and monkeys, are often carved on shelf-capitals in monasteries.

A secondary framework of joists, the cross-section of each of which is rectangular in shape, is placed on top of the main framework of beams, its purpose being to support the floor above. The joists are placed on the beams edgewise, that is, with the widest face vertical. Although, statically, the resistance between beams and joists is noticeably diminished, there is a definite increase in long-term stability. Boards, placed to fill in the space between the joists, function

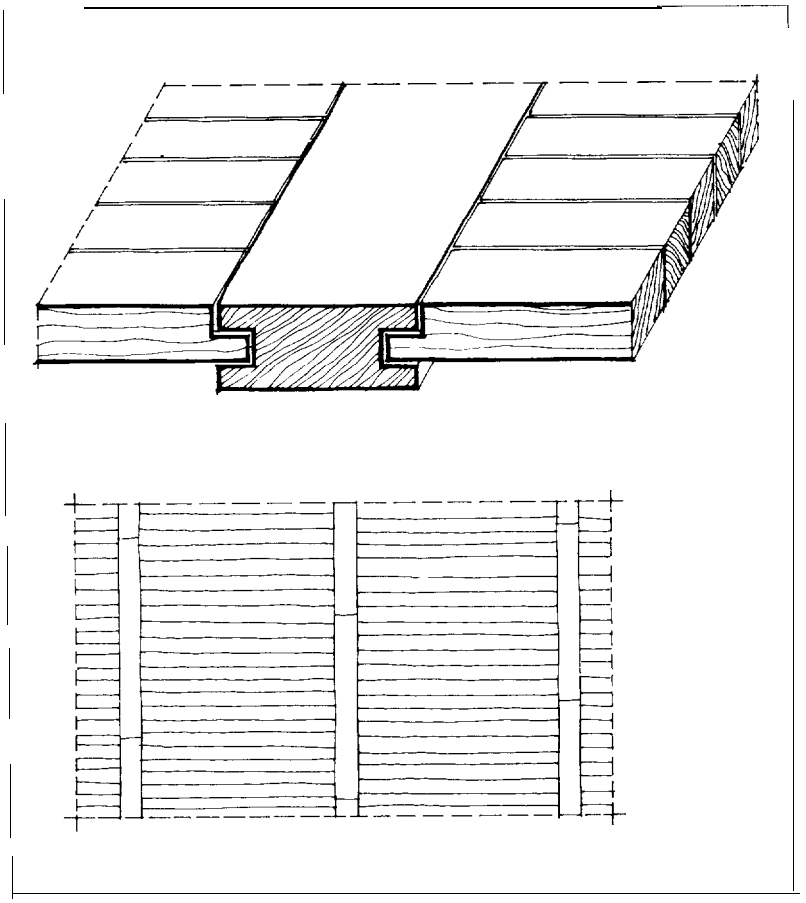


*Fig. 17*
Method of building floors in dwelling-houses and *gompa* .

as the ceiling of rooms on the ground floor below, and not as the floor of the rooms above. This method is mainly used in religious buildings such as monasteries. In dwelling-houses, since the ground floor is generally used as a byre for cattle and as storage space, and there is consequently little need for a proper ceiling, the secondary framework of joists with boards in between supporting the floor above is far more rudimentary and barely finished: instead of boards being placed in between them, the joists are in fact covered with rough pieces of wood. In huts at summer pastures on higher-lying ground, where a finished board floor is unnecessary, and, moreover, where timber is hard to come by, saplings or bushes found on the spot are used instead of boards.

The method of building floors in both dwelling-houses and *gompa* is ingenious. In both cases a number of long battens, approxi-

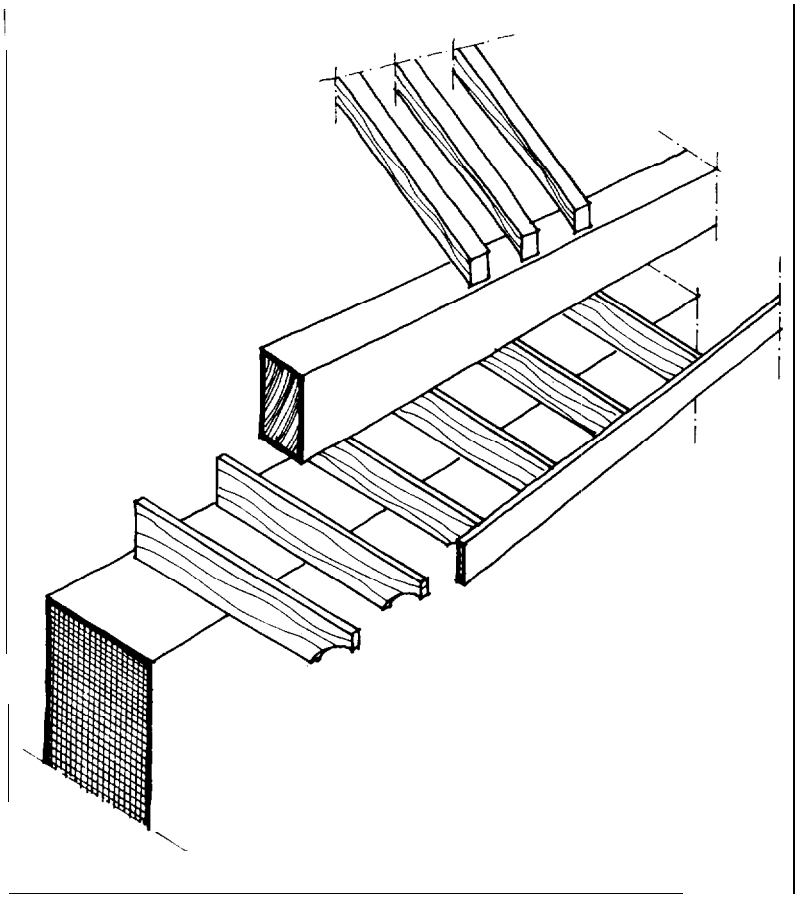


***Fig. 18***
In *gompa*, eaves are built independently from the supporting framework of rafters.

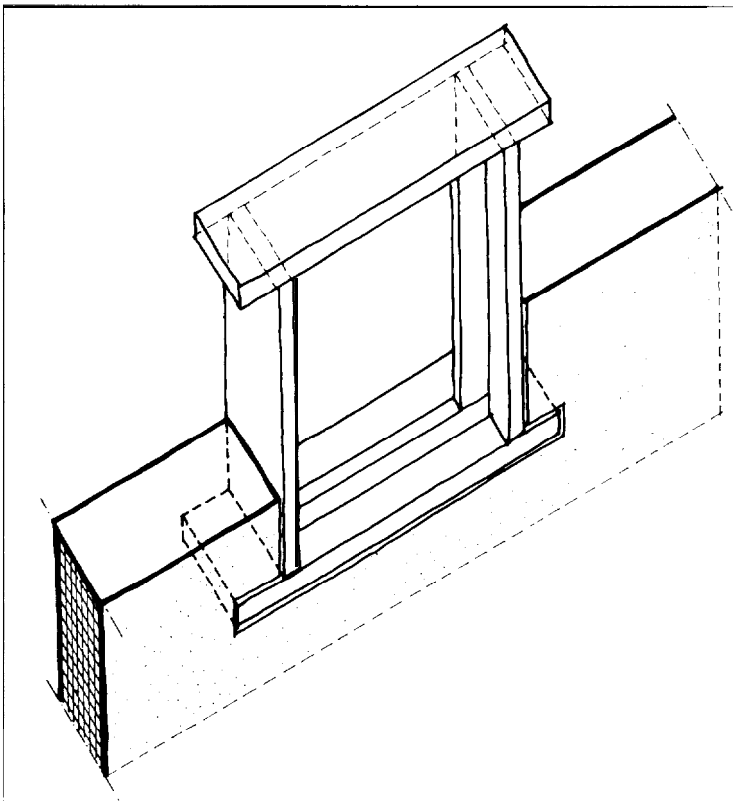


***Fig. 19***
Window-frames are secured in the walls by tenons or projecting tongues of wood.

mately 20 cm broad and 10 cm thick, are fitted into the framework of joists, the distance between battens varying from 1.50 to 2 m. A groove is cut in either edge of each batten, into which the floorboards are inserted to hold them in place (Fig. 17).

The supporting framework of the roof, which is always of the ridge or sloping type, consists of numerous rafters laid close together on the main beams without projecting beyond the walls to form eaves. In dwelling-houses, eaves are simple and are formed by causing the roofing material to project beyond the walls. On the other hand, in *gompa* or monasteries, eaves are an independent structure built separately from the supporting framework of rafters (Fig. 18).[1]

1. Rafters in the supporting framework of eaves in *gompa* or monasteries are arranged like radii. Several of the rafters, usually the thicker ones, are fastened to the beams in the main structure supporting the roof with big wooden dowels or headless pegs, so as to prevent thrust from the eaves being concentrated on the walls of the building.

Wood is much used as roofing material. Square or oblong roofing-tiles, similar in shape to shingles on the roofs of houses in the Italian Alps and Dolomites, are laid on the rafters in line with the hip or slope of the roof. Heavy stones are placed on top to prevent them from being blown off.'

Wood is also much used to make partitions between rooms in dwelling-houses and monasteries. Allegorical scenes or geometrical patterns are painted in vivid colours on partitions in the latter. Partitions consist of a number of battens forming a stout framework able to withstand stress in such areas as doorways and corners. Boards are placed in between the battens and are held in place by being inserted into grooves cut in the edges of the latter. Door frames in partitions are also made of wood.[2]

Mention must be made of methods of building window-frames and doorways in the walls of houses. Both of these consist of a large, stout frame which is fitted into the walls during the building of the latter. An interesting feature of window-frame construction is that the various parts-lintel, jambs and the sill-are joined together without nails. In order to secure the frames firmly in the window-openings in the walls, tenons or projecting tongues of wood are attached to the upper and lower edges of the jambs, which fit into slots in the reveals or internal side surfaces of the window-openings (Fig. 19). The upper horizontal piece of wood in the window-frame, when fitted into the opening, becomes the lintel, the lower horizontal piece the sill. Projecting shoulders or overhangs are often built in the wall above window-openings and doorways, their purpose being both decorative and to provide protection against the weather. A counter-frame, varying in size according to the opening, and consisting of battens or a grille subdivided into squares and oblongs which form decorative geometrical patterns, fits into the main frame.

Doorways, too, are made of wood in the same way as window-frames, that is, with a counter-frame fitted into a main frame. As with windows, so shoulders or overhangs are often built in the wall above doorways; made partly of wood, the shoulders support one or more layers of stone slabs. The door itself turns on pins fitted in holes in the door-frame.

1. Flexible bamboo matting weighted down with heavy stones is frequently used as a cap to cover the ridge of roofs.
2. Wood is often used to panel the interior of rooms and so provide a base for brightly painted decorations. As regards simple exterior decoration on a clay plaster base in the monasteries of Khumbu, only broad surfaces such as walls and bands and friezes under eaves are painted in subdued shades of reddish brown, white and black, whereas more elaborate exterior decorations are always painted in bright colours on a wood base.

## New trends in building materials and methods

A budding tourist industry and improved educational facilities in the villages of Khumbu have brought about changes in building materials and methods in recent years. Such changes have been boosted further by modern- means of transportation-as, for example, the transport of building materials by air in light aircraft and helicopters-which now link up the remote, high valleys of the region, isolated for centuries, with technologically advanced centres of supply in the south.

Among new building materials imported from the south, glass is now much used to glaze windows, having to a great extent replaced traditional white rice-paper, which however still occasionally continues to be used.

Another innovation in building materials is corrugated zinc-plated sheeting as roofing for *gompa* instead of stone or wood. Rather than a new trend in building materials, the use of zinc sheeting arises from a practical need to provide temporary roofing for more important buildings such as monasteries until proper restoration with materials in greater harmony with the environment can be carried out.

In addition to new building materials replacing traditional materials in renovated houses, new trends in building methods emerge from a survey of houses of recent construction. It must however be pointed out that traditional building materials and methods have not entirely been replaced by new trends, and that they still continue to be used.

In the first place, far greater care is taken to build houses than in the past. Whereas previously walls were built with stones obtained during land reclamation or else gathered from screes or by rivers, they are now built with quarried stone. Slabs and blocks cut from quarried stone are partly dressed before being laid so as to fit more perfectly, the joins between them having been reduced to a minimum. As in houses built earlier, so the inner supporting framework of pillars, beams, joists and other elements in new houses is still made of wood as a structure separate from the outer protective walls. Window-frames and doorways tend to be less decorative, though are still made and fitted using traditional methods.

As for new roofing methods, boards have to a large extent replaced slabs and wooden shingles; simple timber joints between the boards make the roof weatherproof.

Among buildings made with methods foreign to Sherpa tradition recently introduced into the Khumbu region, prefabricated houses are

worthy of mention. Apart from the foundations which are built on the spot with local material, all parts of the house-supporting framework of pillars and beams, walls, roof and fitments-are transported by helicopter and then assembled. The role of the local population is secondary, being limited to such simple operations as gathering stone for the foundations and carrying building materials from helicopters to the building site.

A number of prefabricated schools have recently been built in the more important villages of Khumbu.' The first village school was built at Khumjung in 1954 by an English party led by Sir Edmund Hillary.2 The school was donated by the Indian Aluminium Company and the various parts transported by air with the help of the International Red Cross.

A new trend is to make better use of local materials and combine modern building methods with traditional Sherpa methods, and so keep them within a strictly local economy.[3] The local population, by not being relegated to a role of secondary importance, thus takes an active part in building operations. Results are twofold : traditional building methods are kept alive and local resources are exploited to the full. This enables the local population to remain more or less independent of large-scale external aid.

In conclusion, mention must be made of the hospital at Khumde and the Everest View Hotel at Khumjung, both of which were built recently. Entirely foreign to Sherpa culture, these two new buildings have in a sense upset the age-long equilibrium of traditional Sherpa architecture.

Both the hospital and the hotel were built using to a great extend imported modern methods. Nevertheless, credit must be given to the architects for having tried to adapt the buildings to the immediate surroundings by employing wherever possible local building materials and methods. Despite attempts to respect the environment, it cannot be denied that these two buildings have created a dangerous precedent, and that others will soon follow suit unchecked, in total defiance of the noble culture and traditions of the Sherpa people.

I. From an architectural point of view, schools are new to Sherpa tradition. It is perhaps for this reason that they are built some distance from villages in order not to break up the harmony of layout.

2. E. Hillary, 'We Build a School for Sherpa Children', *National Geographic* Magazine (Washington), October 1962.

3. 'Constructions Scolaires', *Architecture d'Aujourd'hui* (Unesco, Paris), March-June 1973.

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