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**PLANNING FOR:**

# **INTERPRETATION**



**SAGARMATHA NATIONAL PARK**

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**M. N. SHERPA**

PLANNING FOR INTERPRETATION

A PLANNING GUIDELINE FOR  
SAGARMATHA NATIONAL PARK  
IN PREPARING AN INTERPRETATIVE MASTER PLAN

A dissertation presented to the  
Department of Horticulture,  
Landscape and Parks, Lincoln College  
(Canterbury University)  
in part fulfilment of the  
Diploma in Parks and Recreation  
(Ranger option)

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December 1979

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COVER PHOTO - Tengboche Monastery with Mt Sagarmatha and  
Mt Lhotse in the background.

# Why Interpretation in Sagarmatha National Park?

Because:

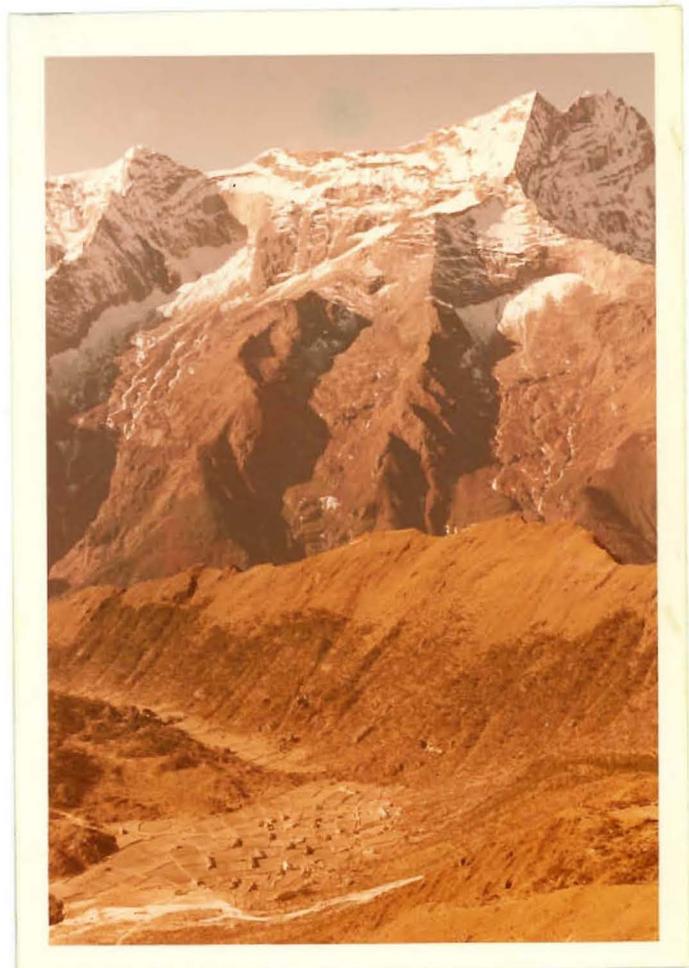


1. The physical features of the Park include the highest peak in the world, Mt Sagarmatha (Mt Everest), which draws 4,000 visitors per annum who require attention.



2.

The Sherpa people's adaptation to life in extreme altitudes, their civic sense, and their spirit of independence make them distinct. These values must be preserved.



3.



4.

The lives of Sherpa people are interwoven with the concept of Buddhism. The various festivities, religious structures and customs of the people adds fascination and interest for the visitors. This creates a need for interpretation in order to help visitors, to respect these values.



5.



6.

The growth of tourism in the solitude of the Khumbu valley requires hospitable people, clean air, water and mountains. Tourists can help maintain an environmental quality if they are well-informed.



7.



8.

The protection and conservation of flora and fauna in Sagarmatha National Park is best achieved through interpretation.



9.

## CHAPTER 1

## INTRODUCTION

'Broken by deep and rocky gorges with majestic peaks rising, often in isolation, above the surrounding country and with the fascination of a people who have established a way of life in a beautiful but often harsh environment, the Khumbu region must rank as one of the most attractive and interesting Parks in the world to visit especially as its complete absence of roads is in marked contrast with more-developed areas of the world'.<sup>1</sup>

The uniqueness of the area is described in the report prepared by the 1974 New Zealand mission to Sagarmatha National Park, Nepal.

Khumbu is a region of 1,243 km<sup>2</sup> and is the home of 3,500 Sherpas. Similarly, it is the habitat for many wildlife species such as Muskdeer, Snowleopard, Tahr<sup>2</sup>, and many bird species including blood pigeons. The resource managers have a big responsibility to preserve its natural, cultural, historical and landscape values for the enjoyment, education, inspiration and peace of mankind. In order to achieve these objectives, I feel that management requires an interpretative plan to be developed as soon as possible. The importance of having this in the Park is best expressed by William Carr when he said "Not having an interpreter in a Park is like inviting a guest to your house, opening the door and then disappearing." Sagarmatha National Park, established in Khumbu, had 4,000 visitors in 1978 and it is the Park Manager's job to make the visitors' time enjoyable by providing facilities for interpretation. At the same time, the impact on the local people's way of life and the resources will have to be minimized.

<sup>1</sup> Lucas et al., 1974, p. 10.

<sup>2</sup> Spelling of Tahr may be also Thar.

Hence the purpose of my dissertation is to prepare guidelines for an interpretative plan which relates and explains the cultural/historical and natural values of the Park and the surrounding mountains, in ways which will make them more meaningful and enjoyable.

The guidelines consist of a statement of needs, goals and objectives from which the interpretative programme will evolve. The resources to be interpreted are then investigated and assessed. The final stage outlines possible media through which to present the information. The aim of the guidelines discussed is to help Park Managers and interpreters to achieve the following goals:

- i) resource protection by increasing people's awareness of their impact on nature,
- ii) increased enjoyment and fulfilment of people's experiences by providing opportunities for greater understanding of what they see.

#### Background for the Sagarmatha National Park.

Sagarmatha National Park (Mother of Universe in Nepali language) lies in the north-eastern region of Nepal in the Solu Khumbu district of Sagarmatha zone east number 3. The Park boundary extends from the confluence of Dudhkoshi and Bhotekoshi in the south to the international border between Nepal and Republic of China in the north (map appendix B). The Park is named after the highest peak of the world, Mt Sagarmatha, 8,848 m, also locally known as Chomo-longmu. There are other massive snowclad peaks such as Cho-oyu, Lhotse, Nuptse, Pumori and Gyajung-Khang rising in excess of 7,000 m within its boundaries. To the east and west of Khumbu the Park boundaries are made up by a chain of mountains exceeding 5,000 m. Khumbu thus forms a unique and beautiful valley enclosed on all sides by formidable peaks and mountain ranges.

There is a walking access route from the south, a seasonal trade route between Tibet and Nepal via Nangpa-La (pass) at an altitude of 5,716 m and a snowbound pass to the west of Thame village called Tashi Laptsa leading to Rolwaling

valley. This pass and other mountain cols in the east leading to Hongu valley are accessible only to experienced mountaineers. There is an airstrip at Lucklha (2,800 m) within two walking days distance from Park Headquarters at Namche Bazaar. The nearest road from the Park is approximately 260 kms away.

The internationally accepted criteria for National Park status were approved at the 11th general assembly of the International Union for Conservation of Nature and Natural Resources (I.U.C.N.), in Canada, 1972<sup>1</sup>. From these criteria, recognition of human occupation, traditional land-use practices, and unique cultural activities were given consideration. In 1973 Sagarmatha National Park, comprising an area of 1,243 km<sup>2</sup> and a human population of approximately 3,500 living within the area, received the blessings and approval of His Royal Highness Prince Gyanendra. The justification for the establishment of Sagarmatha National Park was summed up in his speech to the World Wildlife Fund Congress held at Bonn, 5 October 1973, when he said "Since it was first discovered in 1852, Mt Everest - - - has been attributed special status as the highest mountain in the world. We sincerely believe that this region and its surroundings in the grandeur of the Khumbu Valley are of major significance not only to us, but to the whole world as an ecological, cultural and geographical treasure which, we hope, should provide peace and tranquility and be a significant contribution to a better world heritage."<sup>2</sup> As a result, Khumbu was formally gazetted on the 19th of July 1976 as a National Park in accordance to the provision of the National Parks and Wildlife Conservation Act 2029 (1973). The Act is defined on the page (13). Like all other Parks and wildlife reserves of Nepal, it is administered by the National Parks and Wildlife Conservation Office of His Majesty's Government Department of Forests. The Head Office is in Kathmandu.

New Zealand assistance under her Bilateral Aid Programme has enabled His Majesty's Government of Nepal to establish Sagarmatha National Park, and to initiate the Park's early development. The work so far achieved has resulted in defining Park boundaries, gazetting of Park bylaws, setting up of a management system and the construction of administration buildings and a visitor centre in Namche Bazaar.

<sup>1</sup> Lucas, P.H.C., et al., p. 2.

<sup>2</sup> Lucas, P.H.C., et al., p. 9.

## CHAPTER 2

## NEED FOR INTERPRETATIVE PLANNING

The promotion of tourism in Nepal by His Majesty's Government of Nepal and the establishment of Sagarmatha National Park has encouraged more visitors to the area. This trend presents a challenge of considerable effort to those involved in the administration of the area and suggests the need for interpretation as an essential part of management. An interpretative plan is needed as this would enable the visitors to appreciate much more the natural and cultural heritage of the Khumbu region. The benefit would not only be to the individual visitor but to the Khumbu region in that appreciation and understanding of the environment and the people who live in it may lead to greater concern and care for it. In my mind the following quote from the United States Park Service Administrative Manual says it all, "Through interpretation, understanding, through understanding, appreciation; through appreciation, protection."<sup>1</sup> This profound quotation points out why interpretation is so important in resource protection management.

By increasing the visitor's interest, understanding and appreciation of the Park, their co-operation will be gained and this is essential for the management of the Khumbu region. Before looking in depth at the need for interpretation, I would like to examine the meaning of interpretation. The Oxford dictionary defines interpret as to "expound the meaning of" or to 'bring out the meaning of' by artistic representation or performance." Freeman Tilden defines interpretation in his book 'Interpreting our Heritage' as "An educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information." Don Aldridge of Scotland at the Second World Park Conference in Grand Teton National Park defined interpretation as ". . . the art of explaining the place of man in his environment, to increase visitor or public awareness of the importance of this

<sup>1</sup> Lucas, P.H.C., p. 32.

relationship, and to awaken a desire to contribute to environmental conservation."<sup>1</sup> Thus interpretation in a purist sense should be to bridge the gap between "ecosystem people and biosphere people. Ecosystem people are those who practice their way of life in natural environments and live off the land. They are closer to nature than biosphere people who live in a highly technological and 'urban' world.<sup>2</sup> My experiences and observations in the western world allow me to comment that both worlds can benefit from each other's experiences. A child born in an urban environment living in an urban area does not appreciate his dependence upon nature. For example, because of prepackaging and the 'middleman', they often do not see the source of their food. Hence the cow which supplies their milk is rarely seen and milk 'appears' to just arrive in bottles.

Sagarmatha National Park offers a unique experience to the visitors in appreciating a living culture which is virtually unmodified by western technology. This is one of the main reasons why people visit Khumbu. The second reason is to experience high altitude climbing and viewing of the big mountains including the highest peak Mt Sagarmatha (8,848 m) in the world. Khumbu people have equally much to learn from the mistakes made by visitors in their own countries. Thus, the need to conserve, and respect nature is currently receiving much attention in the western world. Therefore, there is a need to develop an interpretative plan to suit the Khumbu region which discusses approaches and themes necessary for local people as well as considering the needs of visitors from outside the Park.

Park interpretation should be educational and recreational but should not be entertaining in a sense of amusement.<sup>3</sup> It should add interest and pleasure to the visitor's desire to know and find out more about the Park. However, the living cultures of the Sherpa people and the religious sites should not be interpreted for the sake of interpretation, but should be considered as interpretative opportunities requiring sensi-

<sup>1</sup> Sharpe, G.W., p. 4.

<sup>2</sup> O'Connor, K.F., 1979, pers. comm.

<sup>3</sup> Tilden, F., p. 8.

tivity and care. This is one of the reasons why planning for interpretation is essential in Khumbu.

Not every feature of the Park needs interpreting, but many people who visit the area know little about it and want to learn and those who already know the area would like to know more. Thus interpretation in the Khumbu context needs to be simple yet rewarding. Such interpretation should arouse curiosity leading to an enrichment of the human mind and spirit. Interpretative planning is needed to educate both the local people and visitors to understand the fragile ecological communities of the highest region in the world.

Khumbu people, prior to the 1960's, maintained a reasonable balance between preservation and use and respected the communal use of land system. During the early occupation of the Khumbu, resources were adequate to sustain the population without damage to the resource. Predators and diseases helped in keeping both herds and tribal population constant. But since then, exploitation of the land has occurred because of influences from the western world among other factors. For example, the trekkers and expeditions provided locals with the opportunity of a supplementary income to the detriment of the land i.e. selling of firewood, timber to the visitors. This, as well as their own personal needs for fuel and timber has increased the consumption of wood which is resulting in the rapid deforestation in the Khumbu. This is also due to the fact that control of forest by local people was taken away and put in the hands of central government. This generated the idea that 'what belongs to everyone, belong to no one'<sup>1</sup> (Moncrief) and the 'tragedy of the commons' occurred. Garrett Hardin, in his essay 'The tragedy of the commons', discusses the rational decision of an individual which leads to a collectively irrational outcome.<sup>2</sup> This is best portrayed in the Khumbu example where the selling of one extra load of firewood to the visitors gave the individual wood-seller a positive benefit while negative impact on the forest was shared by all other Khumbu people. Therefore, there is need for an interpretative plan to counteract the tendency of local people

<sup>1</sup> Moncrief, L., p. 511.

<sup>2</sup> Hardin, G., p.174.

and tourists or agencies to do the wrong thing. Khumbu forest is the local people's vital source of fuel and building material. Its aesthetic value, its role in soil fertility, water catchment, habitat for wildlife and its conservation for economic purposes are concepts which must be re-stressed and explained.

Interpretative exhibits, displays, signs and other media should serve as a guide to the experience of those visiting the area. Face to face contact with a live interpreter (ranger) should be made available as often as possible since live experiences are more successful and interesting means of communication. Therefore, an effective interpretative plan is needed to cater for the wellbeing of the Khumbu resources and the people who use them.

## CHAPTER 3

## STATEMENT OF GOALS AND OBJECTIVES

Goals.

The interpretative plan for Sagarmatha National Park should achieve the following goals:

1. It should reflect the spirit of the National Parks and Wildlife Conservation Act 2029 (1972/73) which defines a National Park as "an area set aside for conservation, management, and utilization of animals, birds, vegetation or landscape together with the natural environment." This may be best achieved by making the users of the Park aware of the importance of Sagarmatha National Park for all mankind.
2. Achieve maximum protection of natural/historical features of the Park. By providing information and increasing understanding, minimum damage to the Park resource by visitors should be achieved.
3. Visitors' time in the Park must be enhanced through an interpretative plan. The plan should emphasize the cultural, spiritual and physical resources of the Park which makes Sagarmatha National Park unique in the world.
4. Interpretation in the Park as part of a management tool should, if necessary, control visitor numbers in order to achieve the goal (3) above.
5. Involvement and cooperation of the guides, local concessionaires, trekking agencies, government Tourist departments and other government agencies should be sought. Local people should be heavily involved in the interpretative planning so that interpretation becomes part and parcel of the Khumbu management. It should not be developed in isolation.
6. Selection of information and making this available to the visitor by means of Park handbooks, information leaflets, and other media such as personal contacts.
7. To convey to the visitors the role which the Park plays in the management of the Khumbu ecosystem.

## Objectives.

The role of interpretation to promote an awareness and understanding of the surrounding environment and to achieve Park management objectives which are conservation and use. Thus general statements of objectives for an interpretative plan can be seen as:

1. To help local people and visitors increase their enjoyment of the Park through a better understanding and appreciation of its purposes and resources. Interpretation should help to enrich visitor's experience.
2. To promote and maintain tourism in Khumbu by helping the visitors to develop an interest in the indigenous human culture and natural history of the area.
3. To achieve management goals of resource protection by helping the visitor to develop a sense of responsibility for their surroundings. Interpretation should help to minimise visitor impact on both the resource and the local people's way of life. It may be achieved by helping visitors to understand, enjoy, appreciate and develop respect for the unique culture of the Sherpa people.
4. To promote wise use of the Park's resources and other natural resources by making provision for 'environmental education' in local schools, other schools in the country, and for the public in general.
5. To develop an interpretative plan which is flexible enough to meet the needs of different people. It should cater for people from different backgrounds, who speak and write different languages, of all ages, literate and illiterate people, armchair mountaineers, and those from different socio-economic backgrounds.
6. To develop a knowledge and understanding of the relationship of different communities and their place in the total environment.
7. To co-operate, help, encourage and provide opportunities for any scientific research programmes.

## CHAPTER 4

## AN INVENTORY OF THE PARK'S INTERPRETATIVE RESOURCES

A complete inventory of the Park's interpretative resources must be accomplished. This involves a survey of the features of natural and human history which are present inside and outside the Park and which are directly and indirectly interacting on the Park. The identification as well as location of these resources and amenities both natural and modified which make up the physical, biological and cultural environment of the Park are vitally important in the planning. It is particularly important to identify those features which are fragile. Namely, the rare and unique species of plant and animal life, for example, the Musk-deer habitat in the Khumbu region.

After the inventory, the resources can be classified as what opportunities they can offer to an interpretative plan. The collection of data will involve many people of varied knowledge and expertise. It may be necessary to seek assistance from pioneer visitors to Khumbu in getting certain documented data since much of the literature on the Khumbu region is written by visitors and is not available locally. A guideline for gathering data is provided in the appendix (A) of this dissertation. The objectives behind collection of data is to help determine the Park's interpretative resources such as:

1. Indigenous human history of the area.
2. Culture and religion of the people.
3. Geological history of the area.
4. Flora and fauna of the area.
5. Mountaineering and trekking.

## CHAPTER 5

## ASSESSMENT AND LOCATION OF THE RESOURCES

5.1 Assessment of their significance.

Having determined the inventory of the Park's resources, it is then necessary to assess their importance for interpretation. The planner must choose the most appropriate resources to suit the objectives and the people for whom the plan is being developed. The importance of the outstanding features and their uniqueness in the Park should be assessed relative to the rest of the world.

The characteristic features of the Park must be determined and the ease with which they can be interpreted assessed. The highly suitable features would be given special priority over other features. The suitability assessment is based on the ease of access and scope of the features to be articulated into a certain interpretative theme or story. The resource inventory outlined in Chapter 4 should serve to identify and locate those notable features which are significant for interpretation.

Interpretative planning must recognize the areas of scientific, cultural, historical or aesthetic value as well as modified environments such as a burned area or a heavily grazed area, which can be compared with the areas still in their natural state. Considerations should be given as to how well these features could withstand visitor wear and tear. It may be wise to seek<sup>4</sup> expert advice on the protection of fragile environments and the feasibility of continuing to use these.

A wide range of features should be assessed for interpretation. For example, the scope may range from small things, such as microscopic organisms, to giant mountains of the world, to cloud formations and the sky at night. Thus in an assessment of interpretative opportunities, the planner should consider the total system. Interpretation should present a whole rather than a part story.<sup>1</sup>

<sup>1</sup> Tilden, F., p. 40.

## 5.2 Location of key areas for interpretation.

Once the assessment of interpretative resources has been made, it is important to locate these resources strategically relative to their location near main trekking routes, camping sites, stopping areas along the path, permanent and temporary settlements, developed areas such as teashops, hotels, Park buildings and other facility areas.

The relationship of one feature to another in the Park, in relation to access, facility, time, distance should be determined and illustrated on a map. It may be feasible to include all information on one map to show the location of each particular category of the interpretative resource. However, it may be an even more convenient and efficient method to demonstrate it with the use of multiple overlays. For instance, a planimetric basemap which shows main access routes, facility areas, development areas, Park boundaries and other key features is prepared, and a series of overlays can be used for each particular purpose. It may include an overlay for showing -

- i) location of plant communities,
- ii) plant and animal associations,
- iii) animal communities,
- iv) geological features,
- v) historical/religious sites,
- vi) rock types.

The use of aerial photographs to gather information on geological materials, plant cover types and to get an overview of the land forms are not only useful but should be regarded as essential to the process of gathering data for interpretative purposes.

## CHAPTER 6

## THE USERS

The ultimate test of the success of an interpretative plan is its ability to satisfy and support the needs and values of its users. The present users in Sagarmatha National Park context are indigenous people; government employees, trekkers (organised or freedom walkers), climbing parties, scientists, religious groups, and others. The background of each group or individual differs from the other and everyone has their own objectives to achieve during their stay in the Park. Thus it becomes important to gather information on user characteristics prior to the formulation of an interpretative plan. User characteristics may help determine the approaches made in selection of interpretative themes and media. This information may be collected from the Department of Tourism, His Majesty's Government, Kathmandu, trekking agencies, travel agencies, police checkpoints, health posts and other sources. The following type of information would be helpful for an initial development of a plan:

- i) visitation numbers, ii) number of visitors coming from outside the Park, iii) country of origin, iv) size of the party, v) duration of stay, vi) arrival time, vii) age class distribution, viii) places they plan to visit during their time in the Park, ix) activities, x) frequency of visits - past/present/future trends.

The understanding and consideration of the people factor can answer many questions needed for the planners to achieve their goals and objectives, e.g.

- 1) What is the visitor's interest in the area?
- 2) Where, when and how the Park story can be best related to the visitor's experience.
- 3) How to involve visitors in interpretative planning.
- 4) How to orient visitors to the Park in order to make them feel at home.
- 5) How to promote experiences, and provoke questions needing further explanations.

Consideration should be given to the varied nature of the users and their interests.

Sagarmatha National Park has two distinct user groups whose needs and interests are distinctly different from each other. Provision should be made where possible to meet these diverse interests. This may involve designing flexible programmes to cater for local people as well as visitors. To do this, it may be necessary for the Park or other interested bodies to carry out an extensive survey of Park Users.

A. Visitors. The tourist survey conducted during the two month period 15th October - 4th November 1978 in Khumbu by Inger Marie Bjønness provides useful information on visitors. Bjønness interviewed 483 tourists during the peak season, which was 75% of the total number of visitors in Khumbu during the survey period and 13% of the total tourists who came in that year.<sup>1</sup> The survey was carried out basically to find out i) what the tourist was doing inside the Park, ii) the impact of tourism on the natural environment, including the mapping of tourist movement patterns with the Park, iii) general information concerning trekking which was needed for the management plan (which was being prepared at the time of this survey). This information provided interesting facts and figures for the planners if used with care. However, the above information needs to be supported by more extensive surveys to get a better idea of the visitors' needs. An extensive study of visitor characteristics and motivations should be carried out to provide additional planning information. The percentage of trekkers coming to Khumbu from one country differs from year to year and visitors' interests differ accordingly. Therefore, interpreters should ask questions that will assist them to develop an effective interpretative programme, e.g. what would the visitors like to see in the Park? What group uses the visitor centre most? Do the visitors achieve what they came for? What form of interpretative methods do they prefer most? How many people actually revisit the area and in what form? e.g. do they come back again as a trip leader or

<sup>1</sup> Based on figure of  $\frac{483}{4000}$  visitors p.a.

as an independent trekker? What questions do they ask that the existing interpretative media do not answer?

B. Local people. The interests of the 3,500 local people of Khumbu are entirely different from those of the visitors. Though the main permanent settlement areas have been excluded, the Park itself contains numerous subsidiary settlements with houses which are occupied seasonally for such activities as pasturing Nak, yak and other livestock, cultivating barley and potatoes. It has the only land suitable for agriculture, fuel sources, building materials for houses, grazing, guiding and other land use practices. The needs of the local people must therefore be satisfied and in doing so the conservation concept must be reinforced. Therefore the plan should consider developing programmes that are most suitable to local needs. It may, for example, need to develop environmental education programmes which will fit into the relaxed and informal way of life of the Sherpas. An informal talk or conversation concerning Khumbu resources and its people in an understandable language may prove most efficient in communicating with the locals. Interpretative media such as well erected and designed signs with clearly written messages in both Nepali and English may be efficient means for controlling many of the visitors and thus achieving management goals, but it may mean nothing to most of the locals who can not read the signs. However, the planner must not forget that more people are being educated in schools and as a result their future needs particularly if leisure time increases, may also change. Additionally, planners must not forget the government employees who have been assigned to different jobs in Khumbu, plus visitors from Solu and other nearby areas of the Park, all of whom require attention in a comprehensive approach to interpretative planning.

## CHAPTER 7

## DETERMINATION OF CONSTRAINTS

It is important to note the extreme climatic factors affecting the visitor pattern. The visitors to Khumbu come mainly in two seasons (autumn and spring), to avoid harsh winters and monsoon rain.

The sensitive nature of plant and animal communities and the fragile ecosystem in the area must be taken into consideration.

Consideration should be given to such factors as direct and indirect impact upon local people. The display of artifacts, visits to monasteries, private gombas, sacred places and cultural interpretation must have approval from the people concerned.

Access to the Park must be considered. All trekkers (visitors) travel to the Park either by plane to Lucklha (40 min from Kathmandu) or walk from Lamsangu (nearest road) 10-14 days. The number of visitors at one time depends to a large extent on the Royal Nepal Airline Corpo's (R.N.A.C.) ability to fly the tourist in and out of Lucklha. The total number of days spent in the Park by the visitor depends on i) whether they walk or take the plane, ii) party intentions - whether climbing or trekking, etc.

The availability of funds, trained personnel to carry out the job and materials, technological aids to carry out the interpretative programme.



## CHAPTER 8

## PROVISION FOR THEIR INTERPRETATION

8.1 Selection of 'Interpretative Themes'.

This section is aimed at developing a brief conceptual structure to accompany each of the major physical, natural and cultural resources of the Park. They are not exclusive but must present a simple yet accurate concept for the visitor or resident. The resources which are most relevant to the Park story as a whole are chosen from the data collected.

Geology.

Geology is the science of composition, history and structure of the earth's crust and can, with an understanding of plate tectonic processes, explain the Khumbu landscape. Mt Sagarmatha, the highest mountain in the world, will feature in any interpretation plan. Its origin, rate of uplift and its foreboding nature should be portrayed.

The avalanche-fed glaciers of the Park are unique in relation to the rest of the world. Their rapid movement and boulder-carrying icicles are characteristics of these which lend themselves to interpretation.

Climate.

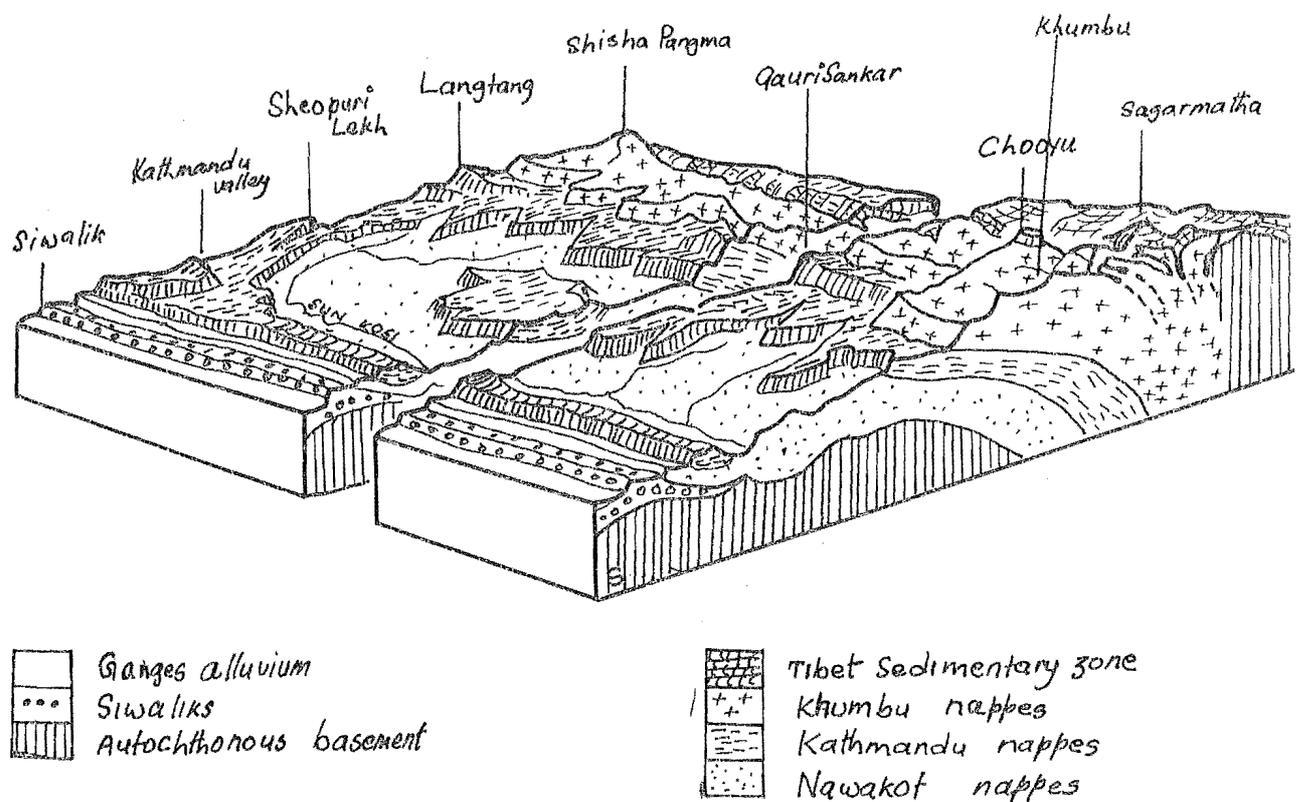
The main theme here may be to illustrate the importance, and influence of, monsoon rains and the extreme cold of the winters on the local way of life. For example, the movement of livestock from higher summer settlements to the lower main villages for the winter.

The effect of past erosion, flooding and avalanches, on the present landscape offers scope for interpretative programmes.

The higher altitude, resulting in thin air, affects plant-life, animal life and people. The latter should be emphasised as visitors find themselves having to make adjustments for this

**FIGURE 1:** The geological history of the area is best portrayed by this model.

### TECTONIC BLOCK DIAGRAM OF EASTERN NEPAL



SOURCE: Toni Hagen, Nepal.

Similarly, a topographic relief model of the Khumbu region can be constructed from topographic maps - using plaster, plywood, cardboard, composition of boards and local clay. As an interpretative aid this will illustrate the terrain of Khumbu landscape.

change in altitude.

### Indigenous Human History

Many people visit Sagarmatha to meet the Sherpa people and to experience their life-style. The Sherpa people are a unique race of highland people, originating from Tibet. It is important that interpretation of their traditional life-style helps the visitors to respect as well as admire the tradition and customs of the people. Aspects of life-style which may be considered for interpretation are:

- The social and political organisation of the past which determined the traditional land use patterns. These can be illustrated by means of stories involving early pioneers and civic leaders of Khumbu.
- The influence of the introduction of the potato on the population. The potato was a means of a guaranteed food source and influenced an increase in the population.
- The traditional pattern of animal husbandry in the Khumbu region.

The socio-economic importance of livestock for food, transport and clothing should be incorporated with the above.

### Architecture.

The design and workmanship of the Sherpa houses are unique and therefore have potential as a theme in the Park story.

### Religion and culture of the people.

"The village, with its inhabitants engrossed in the pursuit of husbandry and trade, represents only one side of Sherpa life. The other side is represented by monasteries and nunneries - - - Sherpa society embraces the laity as well as the many men and women who choose the religious life, and the one part is incomplete and incomprehensible without the other."<sup>1</sup>

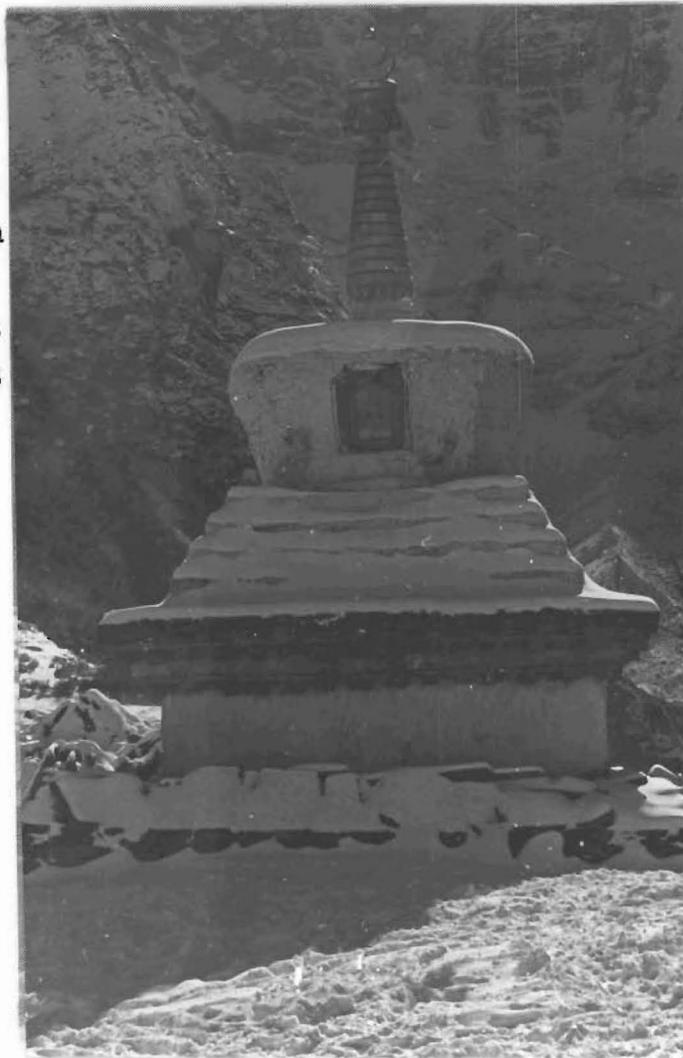
The above concepts may be best presented by the following themes:

<sup>1</sup> Haimendorf, p. 126.



10. Tengboche, the highest monastery in the world and the centre of religion offers a good opportunity for interpretation.

11. Chorten (Stupa), such as this, fascinates many visitors, yet it is highly significant in protecting the village in the Buddhist faith.



- The significant religious areas in the Park and the origins, purposes and importance of these features on the Sherpa way of life provide scope for interpretation. For example, the monasteries, Mani walls (Buddhist prayers carved into stone slates), prayer flags on the top of a hill, and the mountains.
- An understanding of the cultural and religious festivals which are part of the Sherpa life-style helps in understanding the people.
- The legendary tales of the area related to certain physical features such as mountain tops, plants and animals, should be regarded as an important interpretative opportunity. For example, there are many landmarks in the area believed to have been left (performed) by miraculous feats of Lama Sanga Dorje, the sixth reincarnation of Vajra Pani. He is also the founder of Pangboche monastery.

#### Flora.

Interpretation of the vegetation may involve such topics as:

- the natural history of dominant plant associations and their uniqueness to the rest of the world along with their ability to adapt to a habitat of extremes in altitude, temperature, monsoonal rains, and ultraviolet light are aspects visitors would find fascinating. An example of two plants which grow in two different altitudinal environments is the rhododendron (Rhododendron nivale) which grows at an elevation of 5,200 m and the Blue pine (Pinus excelsa) which grows around 2,800 m.<sup>1</sup>
- The ecological role of plants in the soil and their adaptations to conserve water.

#### Fauna.

The concept of wildlife communities is an important theme for interpretation, these can be presented in the following ways:

By creating an awareness of the wildlife through interpreting their natural history.

<sup>1</sup> Lucas et al., p. 11.

By determining and illustrating the effect of man on wildlife habitats.

By explaining how these rare, endangered and threatened species of international importance are being rescued and managed.

### Mountaineering and Trekking

The unique mountaineering and trekking opportunities available in the Park and the management of these activities can be presented in developing various themes. For example -

The history of mountaineering expeditions and exploitations which have taken place in Khumbu since the early 1950's. The influence of these on local people for example the switch from barter trade to trekking and mountaineering as a means of income.

Provide information and interpretation of the high peaks in the Park which provide unique snow, ice and rock-climbing opportunities relative to world standards.

Visitors to the Park should be informed of the health hazards that may be encountered during their stay such as frostbite and high altitude sickness. Thus the Park visitors should be informed of the need for acclimatization at high altitude areas.

Finally, the selection of interpretative themes must consider the many resources which have a potential for interpretation. The basic theme may be centered around some significant features such as the glaciers or the mountains, however, it should also seek to have a broader scope such as the reasons for creating Sagarmatha National Park in Khumbu.

#### 8.2 Selection of the interpretative 'Media/Method'.

Once the potential interpretative themes are selected, the most suitable media or method to interpret these themes should be identified. The media selection is a process of choosing the means, devices, ways, artifacts and appropriate methods for communicating the theme. It is also important to make sure whether the media selected is suitable to the job. Therefore, those involved in media selection should consider a

whole range of possible alternative choices of action and options to meet the circumstances that arise from time to time. The following should be considered prior to the media selection.

A guide to the interpretative media selection may be to seek a medium which will -

- arouse the visitor's curiosity to seek and find out more about the Park,
- be capable of communicating the message better than the existing media.

Also the possible effects of the medium on the environment in which it is to be used should be assessed as well as the possible effects of the medium on the local culture and vice versa.

The following points are important factors influencing the choice of media:

- what group/audience the medium is designed for?  
Most of all the influencing factor, people must be considered in depth (see Chapter 6) in selection process,
- the capability of the medium to orientate visitors to the Park,
- the limiting factors operating on the medium, for example: personnel, power (electricity), approximate cost involved, the availability of materials, machines, etc.,
- the reliability of the media used, ease of maintenance, substitution, degree of skills required,
- what effect will the weather have on it, such as heavy snowfall, heavy monsoon rain, cold temperatures, seasonal change, surrounding colouration,
- is it acceptable or intrusive on their locations?  
For example signs used in the Park,
- how susceptible to vandalism?
- Safety of visitors through media used.

Along with the above influencing factors, the planner must consider these issues.

Extensive care must be taken in displaying rare and fragile objects, interpreting fragile ecosystems, architectural/

religious artifacts. An alternative means of interpretation may be undertaken in such cases. For example, by means of paintings, models or photographs.

- The media selection process should consider the possible long-term human impact upon the environment in which the interpretation is carried out.

Having considered the above influencing factors of media selection, the following techniques of interpretation are proposed. These techniques discussed in the next Chapter are practised widely in many National Parks of the world especially in North America and to some extent in New Zealand National Parks. However, the techniques suggested here are modified to suit Sagarmatha National Park interpretation programme.

## CHAPTER 9

## TECHNIQUES FOR INTERPRETATING PARK RESOURCES

9.1 Information points.

The direct person-to-person communication is regarded as the most successful interpretative method in many Parks of the world. The visitors in the Park find it much more rewarding to talk to live personnel, especially in Khumbu where most of the visitors come to meet and experience the unique life-style of people in their natural environment. Two-way communication makes it possible to have a degree of informality which depicts the Sherpa way of life. It has many advantages over other interpretative methods. Some of them are mentioned here:

- 1) an alive conversation which takes place between two persons or a group has the advantage of discussion matters informally,
- 2) it makes it possible to achieve a better and deeper understanding of subject matter and feedback,
- 3) it enhances visitor enjoyment by making their time memorable through live experiences.

Therefore, I believe the planner must consider the importance of this and should consider other interpretative media such as audio-visual as only an aid to it. But there is no doubt that personal services such as this has its faults and disadvantages. The personnel involved will have to have certain qualities, to be able to do the job. There is a large expense involved employing and training staff. However, an efficient personnel who can communicate effectively with visitors is vital to resource management and protection. With the above principles in mind, I see the need to man the following locations with trained personnel, who may be Park staff, a receptionist, duty guard, a ranger, an interpreter, or a concessionaire.

Locations of information points:

- Monjo - Park entrance
- Namche - visitor centre
- Thame, Phunki tengka, Pheriche - Ranger Stations
- Kathmandu - Park Head Office.

Possible future seasonal information points may be located at Gokyo, Gorakshap, Lucklha and Thamo. They should have the ability to perform the following duties:

- Park entrance - i) To welcome and create a good impression for the visitor,
- ii) to have information available,
  - iii) to collect fees, check permits.

Visitor Centre - Receptionist work of welcoming visitors to the Park and providing information. Information the visitors seek may be about facilities, such as a tenting site, lodges, trekking routes, safety measures such as climatization.

Other functions the visitors' centre can perform are giving talks, providing displays, taking guided tours, showing films and slides. Thus illustrating educational, natural and human history of the area.

Ranger Stations - Rangers should be able to:

- give talks,
- run camp-ground programmes if in demand,
- take guided nature walks,
- provide displays/demonstrations.

Objectives: to acquaint the visitors to the Park and enhance their enjoyment through live experiences. Personnel responsible should be warm and receptive to visitors. It is important they possess such qualities and attributes as politeness, tidy appearance, and a personality capable of handling the duties. It is also important that they have an adequate overall knowledge of the Park.

## 9.2 Concessionaire interpretation.

Many needs of the visitors are met by the local people who operate commercial enterprises within and outside the Park boundaries. These people have a good knowledge of the area, which they pass on to parties of passing visitors.

Khumbu Sherpas have been well known for their guiding abilities as early as the 1950's. The visitors to Khumbu, whether it be an organised trekking group, climbing expeditions or individual trekker, all heavily depend on local guides, and other services that are available. I.M. Bjønness' Tourist Survey 1978 showed that 70% of the total visitors to Khumbu during the survey period participated in an organised group whose trek was organised by one of the many trekking agencies in Kathmandu. These trekking agencies look after the visitors while they are on the trek. The guides and porters are usually from Khumbu. The individual trekkers (30%) showed they depend entirely on local people's supplies and facilities. Similarly the climbing expeditions depend heavily on man-power assistance and to some extent supplies from Khumbu. Visitors to Khumbu therefore rely heavily on local guides, porters, and facilities. There are a number of hotels, motels, lodges, teashops, craftshops, travel agencies and camp grounds which operate within the Park to meet the visitors' demands. The increasing visitor numbers will necessitate further services and facilities.

The interpretative plan should consider these opportunities for interpretation by helping concessionaires with their interpretation methods. At the same time, the plan must make sure that the concession facilities are consistent with the Park regulations. The developments should be in harmony with the surroundings and Park regulations should determine that these facilities are enjoyed by the visitors without damage to the Park values. This could be achieved by controlling concession facilities through concession permits. The planner must consider that the guides, experts, porters, and other concessionaires are always in contact with the visitors. For instance, a proprietor of a teashop along the trek hosts the visitor and tells the story of the area they are familiar with. The guides and porters are not necessarily experts on the

features they are interpreting or the scientific side of the plant and animal life but they can point out the main points of interest, provide for the visitors' comfort and thus make their clientele's time enjoyable. The love and life-long knowledge of the local people, for their land, is what makes their natural interpretation of the area a valuable sub-conscious action. Concessionaire interpretation, if effectively operated, is most useful to the visitors and beneficial for the Park.

For an effective concessionaire interpretation, the following points must be put into practice by Park managers, interpreters, or planners:

- i) make information available to the concessionaires prior to visitors' arrival,
- ii) provide technical advice on how to increase visitor satisfaction and enhance enjoyment,
- iii) involve local concessionaires in interpretative walks and talks conducted by the Park so that they can pick up some tips on how to make their clientele's time more enjoyable,
- iv) make provision for short-course training for the guides on interpretative techniques,

e.g. Training for concessionaires: Every year prior to trekking season, the main trekking agencies should be made to select a minimum of 10 guides, who may be sirders, or cooks, to attend a 2-5 day short-course training. The training could be received from an expert, or an interpreter/Park Ranger, from the Head Office in Kathmandu, or Sagarmatha National Park. An alternative place could be Namche Bazaar (Park Headquarters) which is central to most people in Khumbu. The expenses of the participants in the course should be paid by the agency responsible since staff training is for the benefit of the agency. These trained staff in turn should teach to the other staff members working for the agency.

Objectives of the training -

To provide hints on planning their nature-orientated trips and to make the visitor's time more enjoyable and rewarding.

Techniques of teaching may include:

- i) How to interpret significant features along the trek and camping sites.
- ii) How to be receptive to clientele's questions and provide information more than a factual answer.
- iii) How to enhance the use and enjoyment of the Park or the area they are trekking by making provision for concession operated facilities and services.
- iv) How to make these facilities and developments consistent with the Park policy of preservation and conservation.

These suggested techniques should be treated as an example only, and should not be considered as a complete technique.

### 9.3 Signs/labels.

Signs and labels are the basic method of conveying the administrative and interpretative messages to the people. The selection of a sign in planning should consider the following factors:

The purpose and objectives of a sign programme.

What message (theme) is to be conveyed?

Who is the audience? How many will appreciate the sign being there?

Its location is important, is it in harmony with the surroundings or obtrusive? If properly placed it may even become photogenic. Sign layout must be planned. Seek an alternative means of choosing media, if signs and labels do not serve the purpose.

Make sure they are easy to maintain, operate and inexpensive to replace or reproduce.

Colour - appropriate to blend with the surroundings yet easy to see.

Message - should be brief and simple,

- attract visitors' attention,

- concise and appealing words should be used.

Materials for sign - wood, stone, metal, plastic, paper, hardware.

Making signs - Local craftsmen can be approached for carving



12. An example of a sign worded both in Nepali and English.



13. An example of a sign, where the message is carved on stone slates.

signs. Locally available timber may be used for the purpose. Wooden signs appeal most to people. The best wood for carving or routing is birch or pine wood. Lettering can be done by using stencils, machines, and other simple methods. The local people and Park staff knowledge should be used here.

A more expensive, laborious method is carving on stone slates which are locally found. The indigenous people have in the past extensively used these for religious purposes and craftsmen are available. It would be a shame to put a wooden sign up to interpret a mile-long maniwalls - maniwalls are Tibetan words inscribed on stone slates for religious purposes and are scattered in villages and on many tracks.

Metal signs can be made in Kathmandu. This method is extensively practised in many countries e.g. New Zealand and the U.S.A. Sheets of anadized aluminium are used and make a very durable sign or label. Prints of the desired illustration are made on aluminium from black and white negatives in a dark room. A plastic sheet can be mounted over a metal sign to protect it from scratches and seal it to keep the moisture out. Signs routed or cast on aluminium or bronze, are durable and are in practice in many parts of the world.

Paper - Printing signs and labels on paper is the less expensive method. By laminating it between two bits of plastic, fibreglass or glass it will be protected.

Hardware - Signs require rigid holders and bracings - these may be used to join more than one sign. The required number of wooden planks to accomodate the messages can be joined with tongue and groove and then braced from the back. The posts should have a plate or anchor at the bottom to keep them from being pulled out, as well as cross arms below the ground surface, to prevent them from being worked back and forth and loosened. The alternative may be to use rocks and ram them down with earth.

All hardware, bolts, nuts, washers, brackets should be galvanised to prevent rusting. Painting the hardware to make it less obtrusive is a good idea.

Note of Caution: Mount every sign on its own - avoid putting signs on trees, natural boulders or rock formations, walls of

houses or monasteries.

Maintenance - Where possible, place the sign in a secure spot, protect the site by paving stones, slate etc. where necessary. Repainting, repairing, replacement, checking clarity, legibility and visibility must be carried out.

Wording/lettering - Visitors to Khumbu are of varied nationalities and speak and write different languages. However, large numbers of them can read and write English, and Nepali is spoken and read by many people. Therefore, any lettering should be either entirely in Nepali or in Nepali and English alternately. An alternative is to have a graphic symbol.

Symbols - People who don't read and write have a greater understanding of visual things. Khumbu is typical in the sense that only a few people can speak and write Nepali and English. Visitors from overseas do not understand Nepali. English is understood by only a few visitors out of the total number. Therefore, graphic symbols may be used to convey the essential messages which can be understood by commonsense. It can convey explicit messages in a short time. Colours may be used to make it more clear, e.g. picture of a tent with a red line through it means no camping.

#### 9.4 Publications.

Publications are one of the many tools of communication practised in Parks to convey messages. The printed words have a great potential for offering interpretative depth and detail, unlike other medias, this method can be used to treat the same subject on different levels to serve different needs. For example, a brief summary of Khumbu culture can be written in a leaflet form or a book or an extensive study can be undertaken. Information publications in several different languages should be made freely available to orientate visitors to the area. These brochures and leaflets should be brief, to the point and easily understood by all. They may be written to provide information on trekking routes, camping sites, services and facilities, what there is to see and do, how best to spend their time, rules and regulations of the Park, etc. Interpretative

publications may include:

- 1) Park handbooks
- 2) Brochures
- 3) Descriptive leaflets
- 4) Theme books
- 5) Self-guiding pamphlets
- 6) Reports, scientific papers, checklists, etc.
- 7) Maps
- 8) Reference libraries

1. Park handbooks. A series of handbooks in a small volume may be prepared to meet the demand of the visitors. Visitors could buy one or a whole set of booklets and keep them in a plastic cover designed to fit them. The different volumes will cover the whole Park story under different titles. For example a handbook on -
  - i) land,
  - ii) life,
  - iii) man,
  - iv) culture,
  - v) recreation.

- The booklet titled land may cover the following topics,  
e.g.
- 1) Locality map
  - 2) Introduction
  - 3) The mountain land
  - 4) Geological history of the area
  - 5) A guide to the location of rock types
  - 6) Faults, glaciation, etc.

2. Brochures. General information freely available from trekking agencies, travel agencies etc. prior to their visit to the Park. It should contain locality map, points of interest, what to expect, etc. as discussed above.

4. Theme books. Visitors can be selective in their reading by making theme books available. The theme book deals only in one subject in detail e.g. Mani rimdu (the annual festival of Khumbu people), alpine plants of Khumbu, climbing in the Park, etc.
5. Self-guiding pamphlets. Description of some features that are worth interpreting along the trek, or features that can be viewed from a spot of a resting area on the trek. It should be keyed to a marker planted along the trek or a sign with a number etc. Pamphlets should be either free, inexpensive or returnable to the information duty points.
8. Reference libraries. Establish a reference library to aid those who seek further detail information.

#### 9.5 Environmental education programme.

Environmental education programmes should be an integral part of the Park interpretative programme. They should be designed for local people and the schools in relating them to their changing environment. The aim should be to develop programmes for schools using the Park's resources as their class-rooms. In doing so, the interpreters should assist teachers in developing environmental study programmes in schools with the help of government education departments. The Park should provide an informal learning experience for schools and local communities by making resource facilities, information, staff and technical advice freely available. The sharing of knowledge of the natural surroundings in an outdoor setting should be a big part of environmental interpretation. The teaching method will involve using all the senses of people, in learning about nature in nature. However, the interpreter may make use of other interpretative media such as displays, exhibits, publications etc. in the visitor centre to satisfy the curiosity generated and to give a deeper understanding of the subject.

The local people, because of their life-style and religious faith, have been aware of nature being sacred to them. However, the younger generations have a marked influence

from the western world. Thus environmental education programmes should be a constant reminder of their natural surroundings. It must point out the positive and negative effects of environmental modifications by interpreting relationships within a developed area and contrasting them with a natural area. It should not, however, become a formal education in which one has to learn in a class-room. It differs from formal education as illustrated by William Brown in his book 'Islands of Hope', in that environmental interpretation acts as catalyst for the resource to be explored, the thinking is done and conclusions are made by the visitor.<sup>1</sup> The interpretative programme thus should increase their perception of natural surroundings. School teachers, parents, and religious leaders play a major role in achieving the success of environmental education programmes in schools.

Environmental education programmes in Khumbu thus should be to - enhance environmental awareness by helping the indigenous people and visitors to the Park increase their perception of the immediate surroundings,

- communicate the importance of man's dependence upon the finite resources of the earth,
- explain the ecological processes responsible for the life cycle of organisms e.g. man being part and parcel of the environment in which one lives. The need of mother earth for our survival, etc.
- therefore develop a sense of responsibility for all to respect the environment in which one lives.

## 9.6 Visitor Centres.

### 9.6.1 Sagarmatha National Park.

The visitor centre is a focal point for 'visitors' to the Park, if located properly and treated as a main interpretative media. A visitor centre must be planned and designed around its function as an information and interpretation point. The whole management of the Park is carried out on a daily basis from the building. The building can also be used for occasional community activities.

The criteria for architectural design should be to design

<sup>1</sup> Brown, W., p.89.

FIGURE 2:

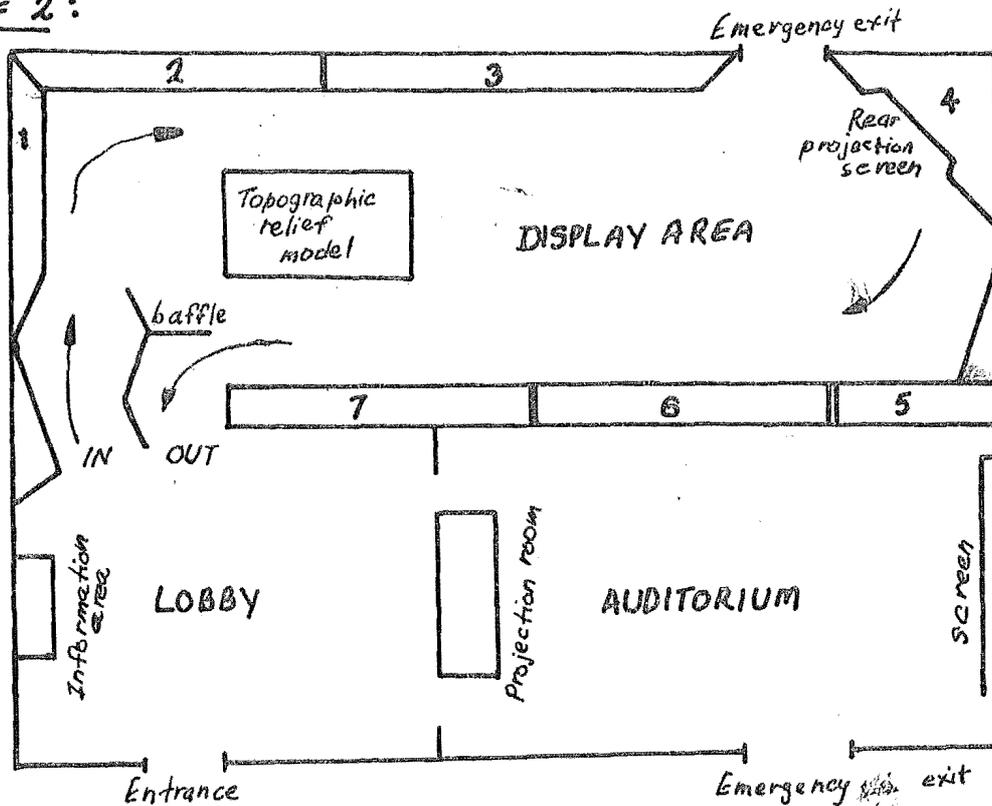


Fig.2a

A simple floor plan showing the exhibit room, auditorium, and lobby. Note the exhibit sequence showing the clockwise direction of the preferred flow pattern (in countries where people read from left to right).

SOURCE: Sharpe, G. Interpreting the Environment.

Fig.2b

A schematic sketch of a visitor centre. Solid arrows indicate the circulation of visitors in, out, and within the building. Key features of the site are shown in their approximate location.

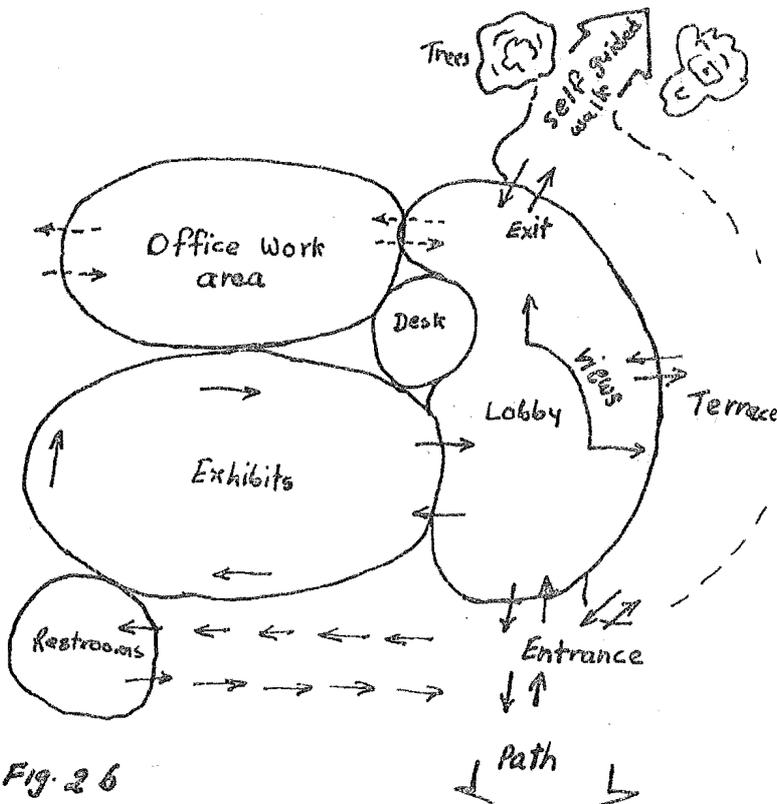


Fig. 2 b

the building so it looks part of the surrounding landforms without dominating the landscape. It should be built in traditional Sherpa style using local materials to create unity with the surrounding buildings. If possible, the visitor centre should be in the village itself to become a part of the community setting but it should not, however, be built in isolation and off trekking routes.

Internal design - A controlled circulation pattern inside the building is essential to ensure that the flow of visitors is predictable and obvious. The visitors should find and experience what they came for without any difficulty. The administration section should be separate from the interpretation section of the building. The sharing of the administrative block and visitor services in one building minimises the costs to the Park, however, the circulation pattern of the visitors should be as much as possible separate from the staff. The layout of the rooms for a combined headquarters and visitor centre is listed in the following -

Entrances and exits: a separate entrance for the visitors and Park staff is ideal to minimise distraction to both parties.

Reception area: location of an information desk which is easily approached by the visitors. The receptionist acts as a mediator between Park staff and visitors. The location of the information area in the lobby, supplies of literature for handouts, placement of maps, etc. must be considered. The reception area should be large enough for people to move around and also contain seating facilities.

Audio visual room: the auditorium is designed for giving talks to a large group, to hold community functions such as meetings and socials, showing films and slides etc. This meeting area should be separate from the display area. The interpreter must consider the noise level, ventilation, possible distraction, lighting, storage area for slides and other gadgets.

Display area: the display area is an important part of the visitor centre, therefore its proper planning is essential. The displays must not be repetitive and should concentrate on a theme that is unique to the Park (see Section

Displays/exhibits).

Library room: the library room should contain a herbarium and references for research. These may be made accessible to the public.

Research room: a small room for research work and laboratory purposes.

Toilet facilities.

Concessionaire sales room: an area set aside for the purposes of the following activities - i) sales of the cultural artifacts, ii) handcraft materials, iii) paintings, daphne paper prints, iv) souvenirs, v) booklets, postcards, etc.

Teashop: an area where visitors and staff of the Park can buy cups of tea, coffee, etc. It should be located within the building so that visitors can come and relax in-between seeing interpretative displays. The overall pricing and the quality of the service should be determined by the Park.

The concessionaire may be a local person operating the shop on a seasonal or permanent basis depending on the visitor flow. Such a programme should be operated on a trial basis for a few years to determine its advantages and disadvantages. As soon as the Park interpreters start interpretation of the living culture, the handcraft sales may be stopped as these would be sold in conjunction with the living culture programme.

Other rooms within the visitor centre are -

Administration office.

Rangers' offices.

Storage rooms.

Dark room.

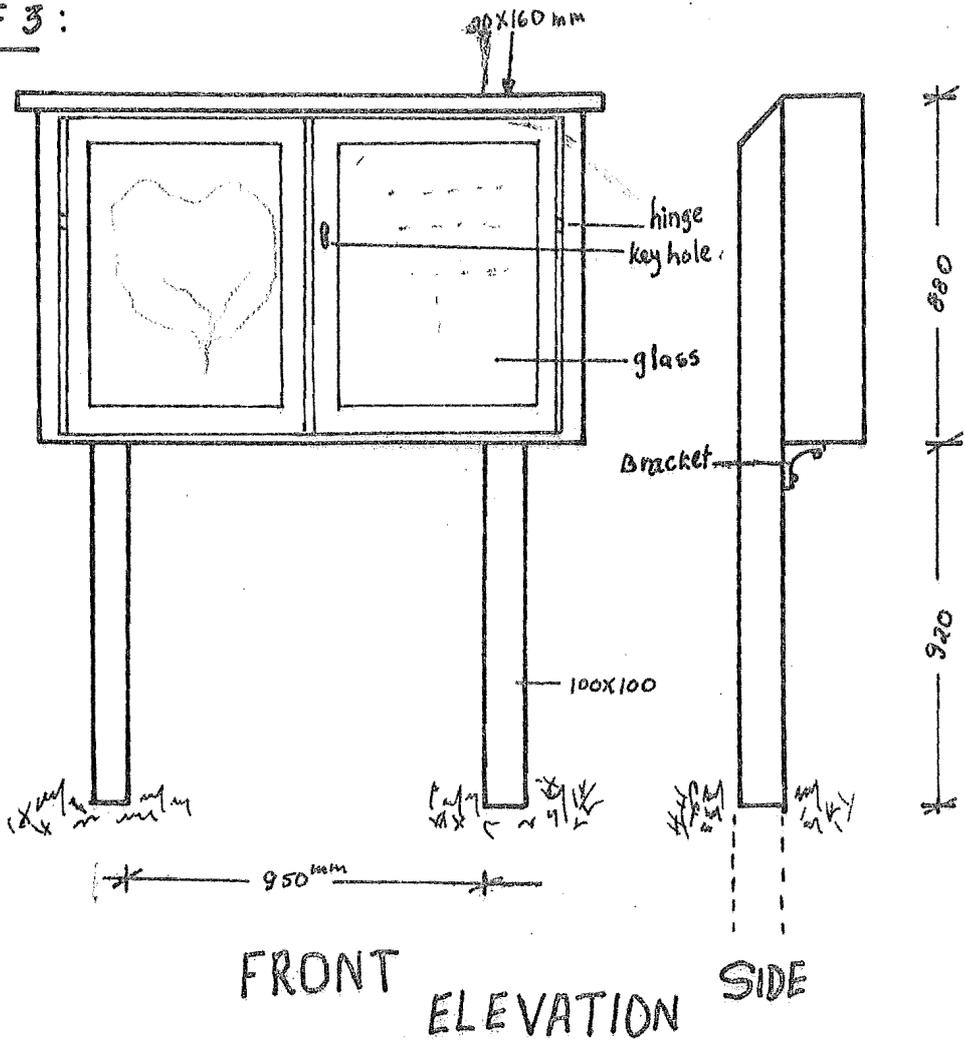
Staff room.

Search and Rescue and first-aid room - within easy access and large enough to store equipment and treat the injured people.

Radio area - may be located near receptionist's desk.

The external design of the centre should be to minimise the visual impact. The landscape around the building can be made visually pleasing and inviting to the visitor if an alpine garden or similar landscape work is carried out.

FIGURE 3:



FRONT ELEVATION SIDE

scale 1:20

DISPLAY BOARD

### 9.6.2 Kathmandu.

As Kathmandu is central to the whole of Nepal geographically and administratively, and the existing National Parks and wildlife reserves are evenly spread throughout the country, it seems it would be an ideal place for a combined visitors' centre for all the National Parks and wildlife reserves.

How it is to be achieved? - The long-term aim is to set up a building near Park Headquarters in Kathmandu. Its function will be to provide information and displays of the natural and cultural values of the different Parks. The building could be shared by the National Parks and the wildlife conservation office, which is already established in Kathmandu. The visitors' centre will have interpretative displays and other media such as paintings and photographs with texts from both the National Parks and the wildlife reserves. The involvement of other agencies will be essential and should be encouraged. For example, the 'Department of Tourism', mountaineering/trekking agencies, travel agencies, Department of Forests, Department of Education, and other concerned bodies.

The design of the visitor centre - see 'Visitors Centre-Sagarmatha National Park'. The only additional requirement is a car park for the visitors and staff of the Park.

What to present - Each Park and Reserve should select a theme which illustrates the value of the area and the exhibits used should be simple.

Justification - Kathmandu Valley schools and the general public do not get the opportunity to visit their National Parks because of the distance they have to travel. Therefore a visitors' centre will help to increase the environmental awareness of the school-children and the many people who never get a chance to visit the Parks. Such a centre will make the public proud of their national heritage and will also help to produce responsible citizens of Nepal.

The centre should:-

Provide a place where school groups can receive environmental education and ideas on conservation.

It should be treated as a source of information for the visitors prior to their visits to the Park. This way informed visitors will experience and appreciate the area they are visiting.

Help the public to understand the Park's and Reserve's philosophy of preservation, conservation and management.

Promote the Department's role in land management and therefore achieve greater public support for the Department's objectives.

Finally, the visitor centre (Park museum) should be staffed by a Park personnel who is knowledgeable, can carry out good public relations work, has a good knowledge of conservation and ability to convey conservation messages and environmental matters to a wide range of people, especially to school-children.

#### 9.7 Exhibits/displays.

The exhibits/displays of real objects in a visitor centre or at an information point conveys to visitors total impressions of the object, associated meanings - details beyond power of words or pictures. It makes long-lasting visual impressions of things they have no chance to see elsewhere or a rare chance to see in the Park, e.g. display of a yeti (abominable snowman) skull. An appealing piece of display can tell much of its own story without verbal or written words. It can provide something for everybody to look at, to feel, to take pride in, and to provide a sense of reality. The messages you want to convey through displays/exhibits must be clear and understood.

The objectives of displaying natural, cultural, archeological artifacts must be clearly defined. It may well be that your objective is to stimulate visitors by displaying original objects and illustrating with other medias as well, such as photographs, movies, etc. However, your main objective should be to make visitors aware of the potential resource of the Park through the display and doing so protect valuable artifacts from destruction. Examples of possible exhibits in a visitor centre are:

1. Two-dimensional exhibits - the utilisation of art, traditional paintings (Tangka), photographs - black



14. An example of a two-dimensional exhibit.



15. An example of a three-dimensional exhibit.

and white/colour, sketches, diagrams, graphs, maps, etc.

2. Three-dimensional exhibits - artifacts of cultural, archeological, religious value, example a prayer wheel, handcrafts, costume, rocks, plant species, animal, etc. Display of earlier climbing expedition equipment, photos, text and modern-day climbing equipment.

3. Models - a detailed topographic relief model to illustrate the terrain of the Park, elevations, tracks, lakes, villages, streams, rivers, glaciers, etc. Models can be made from wood, plastic, metal, etc. Large aerial photographs serve as an alternative to this.

4. Dioramas - a three-dimensional exhibit, e.g. an animal, life-size, mounted in a habitat scene, historical scenes, audio-visual devices can be used if available to add reality.

Planning of exhibits/displays should consider:-

- the expense, construction and design should be well planned prior to collection of a purchase of the display material,
- the availability of materials and craftsmanship,
- the importance of and suitability for display,
- its size, shape, location, style, colour should be looked at,
- the titles to call attention to the display,
- labels - brief, to the point, e.g. size of lettering depends on the distance of viewer from the display,
- maintenance - cleaning, repairing, storage,
- vandalism and theft, how it is arranged, designed, and constructed so that vandalism is discouraged.

9.8 Interpretation of the living culture.

Sagarmatha National Park was established in part to protect the cultural and religious heritage of the indigenous people. The unique life-style of the Sherpas in Khumbu has attracted many visitors to the area. The friendly tradition of the local people has been to treat visitors as members of a family by involving them in family affairs. Thus many of the visitors get a good chance to observe a Sherpa house, what kind of food is eaten, what type of clothes are worn, the

inside decoration of a house, the architectural design of a house, purpose, general workmanship and ritual performances. These kind of experiences provide long-lasting memories of the place they have visited.

However, there are other visitors, who never get a chance to enter a Sherpa house due to their travel arrangements. For example an organised trekker, the agency responsible provides all the essentials for the trek such as tents, food and equipment. The increasing number of tourists to the area is making it impossible for the indigenous people to carry on their traditional life-style. The secluded life of the people in Khumbu and their sacred religious performances are in jeopardy.

Therefore, interpretation of the living culture should be considered in the development of an interpretative plan. Through this, the visitors should be able to learn and experience Sherpa culture but on the other hand it should minimise the impact on the peaceful co-existence of the indigenous people.

The interpreter should aim to be able to give a deeper understanding of Sherpa culture and society to the visitors. To educate and interest visitors in the cultural history of Khumbu and its people. The participation of local people in the interpretation of their own cultural history should be encouraged. However, any features, sites, religious artifacts, ceremonies and other cultural matters should be interpreted only after consultation with and approval of those concerned, that is the indigenous people of Khumbu.

Interpretation of the living culture must be simple, presented in an easily understood medium, which is natural and blends in with the surrounding environment.

What can be illustrated/interpreted?

e.g. A genuine Sherpa house containing:-

general furniture, layout, utensils, storage rooms, movement patterns, seating patterns, private gomba (altar), water storage vessels, and other necessary house equipments.

Also employees preparing Sherpa rugs, clothes such as blankets, aprons, leather shoes, spinning, weaving, rockwork, woodwork, bamboo basket-making

etc. could be included. Provision should be made for a handcraft buy-and-sell room.

Depending on the finance and willingness to sell, the Park could purchase a typical house, possibly in Namche Bazaar (see map) where it would be close to the visitors' centre and the visitors would have easy access. The programme would be carried out by a local person who is a trained employee of the Park. The employee could be a weaver, carpenter, or artist by trade.

An alternative:- the whole programme could be run by a local concessionaire within Park supervision. The concessionaire would receive a certain amount of finance from the Park for his/her time involved in talking to the visitors. The concessionaire may charge the visitors a small amount to cover wear and tear of the display materials and the time. The programme should be run in close association with the visitors' centre. Further interested visitors can approach the visitors' centre for detailed information, where audio-visual shows, publications and personal services as discussed elsewhere would be available.

#### 9.9 Audio-visual programmes.

Audio-visual (A.V.) devices are effective means of interpreting many subjects which otherwise would require long explanations. The audience could be a group of school children, local people or visitors in general. The interpretative plan must point out how the material can be best presented, where and with what methods. The plan must consider the audiences characteristics and their receptivity of such a programme. Such information on audiences will assist interpreters to select an appropriate media for the presentation. The possible A.V. programmes suitable to Khumbu are discussed here.

Slide programmes - slides are relatively inexpensive and can be easily operated by Park staff. If properly presented, they can convey complex explanations in a simple sequential form which may not have been possible to achieve by a display or a printed label. An effective slide talk can generate lively discussions afterwards which is good feedback from the

audience. The person involved in giving a slide talk should plan the subject well and present it in an efficient manner. Slide talk programmes may be presented in the outdoors, weather permitting, or indoors. The size of the audience, the capacity of the auditorium, the suitable slides for the talk, time available, and the equipment must be checked prior to slide presentation.

Movie films - motion pictures offer a wide scope of opportunities. A good film can tell a narrative, sequential story better than any other medias available. It has a powerful and long-lasting impact on the audience if it is a high quality film. Interpreters therefore should choose films that are most suitable to the Park story and will help visitors to understand the subject matter well. The use of films to demonstrate ceremonies, festivals and geomorphological processes are important.

The following considerations should be given in the plan:

- availability of the quality films,
- reliability of the automated motion picture equipment,
- trained staff to run the programme,
- the effective use of film in introducing the Park to the visitors inside and outside of the Park.

### Conclusion.

Audio devices such as slide and movie films provide an opportunity to enhance a message with dramatic impact. However, A.V. programmes should be carried out only as an aid to the interpreters. Excessive dependence on mechanised automated programmes for example automated slide programmes, A.V. presentation, press button displays etc. should be discouraged.

### 9.10 Self-guided walks.

Self-guided walks are administered by a marker and a leaflet. Information is presented in the leaflet which is carried by the visitor, and is keyed to numbered or letters markers along the path. The marker can be a treated timber (100 x 100 mm) post, 300-600 mm high above the ground level. The sloped face end of the post should have on it a carved, routed or painted



16. The interpreter should utilise any village activity as an opportunity to illustrate Sherpa culture to the visitors; such as building a dry rock wall.



17. An example of an entrance sign for a self-guided walk.

letter, number or symbol. An alternative method is to write an interpretative story on a fixed sign along the path at the selected stations.

Whenever possible the walk should be designed as a closed loop which begins and ends at or nearby the location of the campground, village, ranger stations or information points (see information points). Leaflets should be made available either at the entrance of the walk or collected from information points. An entrance sign with a schematic drawing of the walk and other information concerning the walk should be erected. These walks should be short and safe for the visitors.

The interpretative planner must choose sites which provide plenty of scope for interpretation. Examples of what the area could contain are: flowers, birds, animal habitats, geological features such as mountains, waterfalls, caves, wells, plant succession, grazed areas, historical features and folklores. The walk should lead visitors to interesting areas which they can explore in their own time. The organised trekkers and climbers generally have some free time available on top of their daily walk, since the daily travel distance is determined by their porters who take longer. Therefore, such an interpretative walk will make their free afternoon time much more enjoyable and rewarding.

## CHAPTER 10

## PROGRAMME DEVELOPMENT

The interpreter's job is to develop a programme which is well received by the authorities and realistic enough to be put into practice. The plan must, as discussed in the previous chapters, provide information on the -

- i) personnel required,
- ii) time needed to carry out the programme,
- iii) estimated funding requirements. It must be understood that each programme once started, is to be continued over the following years. It may be thus necessary to present the programme on an expanding scale, until the full scope of the plan is in action.

An example of time schedule which illustrates the continuity of the project over several years is as follows:-

- 1980 - preparation of an interpretative plan,
- inventory of the Park resources (also user statistics),
- installation of some signs,
- collection of materials for Park handbook,
- preparation of brochures, slide collection,
- collection of references (seeking assistance from various sources such as individuals who have visited Khumbu and carried out scientific research, made films, written books, collected artifacts, tested climbing equipment and simply participated in treks/climbs),
- visitor centre construction completed,
- training of staff in other regions.
  
- 1981 - Park handbook preparation,
- instruction of the concessionaires in interpretation methods,
- manned information points,
- public relations work carried out,
- exhibits/displays, signs,
- evening talks/campground talks.

- 1982 - audio visual programmes,  
 - environmental education programmes,  
 - self-guided walks,  
 - more exhibits/displays.
- 1983 - purchase of a traditional Sherpa house,  
 - begin interpreting the living culture,  
 - more self-guided walks and sites,  
 - revise Park handbooks,  
 - review the interpretative plan.

The plan is reviewed critically to ensure that the programme is meeting the objectives of the plan. The plan may be evaluated to ascertain any constraints and to assess the impact of the programme on the users and on the Park resources.

The number of skilled or unskilled staff required to carry out the programme should be clearly understood, example the number required to staff information points. An estimate is: one at the entrance station, one receptionist and maybe two rangers in the visitor centre, one ranger each to the ranger stations and two guards at the guard posts. Therefore, the planner should consider:- the existing staff,

- seasonal staff requirement, number of positions and level of skill required and length of appointment,
- specialists required - when and for what purposes?
- how many staff needed each year to supervise construction and installation of facilities,
- man hours required for developing and running the programme.

An estimate of costs should be prepared for each item in the proposed interpretative programme. In other words -

- the personnel costs,
- facility construction costs,
- operational costs including maintenance and administration costs.

Example - a breakdown of expenditure for a self-guided walk.

	Cost in Rupee (NRs)
Number of markers	-
Production of leaflets	-
Path construction plus resting points	-
Maintenance costs	-
Administrative costs	-
Entrance sign installation	-
Costs of man hour	-

### Discussion and conclusion.

During implementation, cost effectiveness analysis must be undertaken at periodic intervals, so as to determine programme efficiency. For this a criterion must be defined which can be used in assessing the effects of the programme. (The effects are synonymous with the outputs of the planning process). Effects may be fulfilment of demands and needs and it is important that we distinguish between the two. As well, effects can be desirable, i.e. the promotion of environmental awareness, and possibly the detrimental i.e. the promotion of environmental apathy. In doing so, the interpreter (planner) may need to modify the programme or even change the objectives.

Public (local persons and visitors) involvement in the initial stages of the planning is essential for various reasons.<sup>1</sup> The public can provide a valuable source of information for inventory of resources, and also for determining programmes. Should the public participate early in the planning process, then these persons have opportunities to voice opinions on decision matters, seek alternatives and influence changes before firm decisions are made. This is overlooked in Khumbu in many cases, where decisions are made at high management levels away from 'grass-roots' reality.

<sup>1</sup> Wade, B., 1976.

Communication with public can be achieved in a number of ways, of which the public meeting has been shown to be one of the most inefficient. Other processes suggested by Wade include:

- information in local or regional news media of intent to perform an action, or to announce public meetings (of all types) and/or to solicit views on a proposed action,
- workshops (small group discussion),
- presentation to special groups,
- Ad-hoc committees,
- advisory groups,
- key contacts with locals,
- formation of a local group of concerned citizens.

Thus contacting with locals and listening to them is more effective communication than holding a public meeting.

As a final note, it is worth remembering that the decision quality is often a function of the planning process inputs.

## SUMMARY

The interpretative master plan is a management document which functions to guide the development and operation of an interpretative programme. The master plan should be prepared in conjunction with the Park management plan, and interpretation as a management tool caters for the well-being of the Khumbu resources and the people who use them.

The most important features should be given priority over other features. The assessed features should relate to the objectives and the people for whom the plan is being developed and emphasis may be placed on features located near main trekking routes.

Once the potential interpretative features, the environment, and the constraints upon them are fully assessed, provision should be made for interpreting these. The method of interpretation could be to develop a brief conceptual structure to accompany each of the major physical, natural and cultural resources. However, one must measure the 'effects' that the techniques used may incur upon the resource and the people of Khumbu. The need for expert advice, trained staff and skilled craftsmen is an important consideration.

It can be helpful to outline a work schedule which shows the projects which can be planned in the next four years. At the same time, an estimate of personnel requirements and costs should be prepared for all scheduled project work.

I strongly recommend that the programme scheduled for 1980 and 1981 in Chapter 10 is essential and must be put into practice. This will be helpful in explaining to the Khumbu residents and visitors the role Khumbu Park plays in conservation. Many Khumbu residents misunderstand the meaning or objectives of the Park.

To assist in achieving the aims of the interpretative programme, the following points should be considered:

- Park managers and interpreters have a responsibility to inform the public that the Park is more than just man-made buildings.
- If the finance and personnel permit the interpretation of living culture and a visitor centre in

Kathmandu will greatly assist in achieving Park objectives.

- Involvement of local persons and visitors in initial and progressive planning stages is important. The best method of communication I can suggest is to listen to the local people and discuss the proposals with them informally.

- Finally, cost effectiveness analysis must be undertaken at periodic intervals, so as to determine programme efficiency.

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## BIBLIOGRAPHY

- Björnness, I.M., 1979: Impacts on a High Mountain Ecosystem - Recommendations for Action in Sagarmatha (Mt Everest) National Park, pp 1-38. Unpublished.
- Brown, W.E., 1971: Islands of Hope, National Recreation and Park Association, Inc., Washington, D.C.
- Fogg, G.E., 1975: Park Planning Guidelines, National Society for Park Resources, a branch of the National Recreation and Park Association.
- Groom, T., 1977: "The American Example", Quarterly JI. of the Australian Institute of Parks and Recreation, pp. 15-17.
- Hagen, T., Wahlen, F.T., Corti, W.R., <sup>1960:</sup> NEPAL, a cultural and physical geography. *Uni. Kentucky press.*
- Haimendorf, Furer c. von, 1964: The Sherpas of Nepal, John Murray, London, pp. 126-174.
- Hardin, Garrett, Dec. 1968: "Tragedy of the Commons", Science, vol. 162, pp. 1243-1248.
- Interpretation: the urban imperative, Ranger 3, Lincoln College, N.Z. 1978. Unpublished.
- Interpretative planning handbook, 1965: A preliminary draft prepared by Chief, Division of Interpretation and Visitor Services, U.S.A. Unpublished.
- Jacobsen, A.B., 1978: Guidelines for Interpretative Planning, The National Parks Authority, Wellington, N.Z.
- Jest, Corneille, 1977: "The Himalayas: Their rational use and conservation", Conference on Conservation of High Mountain Resources, Lincoln College (9-15 Nov. 1977), pp. 11.
- Lucas, P.H.C. et al., 1974: Report of New Zealand mission on Sagarmatha (Mt Everest) National Park, Nepal. Unpublished.
- Lucas, P.H.C., 1970: Conserving New Zealand's Heritage, (Report on a study tour of National Park and allied areas in Canada and the United States), Govt. printer, Wellington, New Zealand, pp. 32-40.
- Lucas, P.H.C., 1973: Report on "Second World Conference on National Parks", held at Yellowstone and Grand Teton National Parks, Wyoming, U.S.A. 18-27 Sept. 1972, published by the Department of Lands and Survey, Wellington, N.Z., pp. 28-31.

- Mason, B., et al., 1977: 'Visitor Centres', Rangers 2, Lincoln College, Canterbury, N.Z. Unpublished.
- Miles, C.W.N. and Seabrooke, W., 1977: Recreation Land Management, E. & F.N. Spon Ltd, London.
- Moncrief, L.W.: "The cultural basis for our environmental crisis", Science Vol. 170, pp. 508-511.
- Resource Basic Inventory, (RBI), Handbook May 1974, U.S. Park Service. Unpublished.
- Sharpe, G.W., 1976: Interpreting the Environment, John Wiley & Sons, Inc., New York, Canada, pp. 3-285.
- Stainton, J.D.A., 1972: Forests of Nepal, J. Murray.
- Tilden, Freeman, 1977: Interpreting our Heritage, third edition, The University of North Carolina Press, Chapel Hill, pp. 3-47.
- Trends April/May/June 1975: "Trends in Environmental Education", Park practice program, pp. 2-19.
- Wade, Bill, 1976: "Public Involvement in Park Management", paper prepared for: The Department of Lands and Survey, Wellington, N.Z., p.9.
- Wager, J.A., and Putney, A.D., 1973: "Objectives and evaluation in interpretive planning", Jl. Environmental Education, Vol. 5(1), pp. 43-44.

## APPENDIX A

Guidelines for data collection of  
interpretative resources in Sagarmatha National Park

## 1. INDIGENOUS HUMAN HISTORY OF THE AREA.

### Origin of Sherpa people -

- approximate time of arrival from Tibet
- place of settlement
- population distribution
- sedetary way of life
- mixed farming
- subsidiary settlement

### Agriculture -

- use of spades
- ploughing by men/draught animal
- storage method, hay-making, etc.

### Introduction of potatoes -

- its effect on population growth
- its effect on the religion

### Animal husbandry -

- nak, yak and their importance
- adaptation to high altitude, extreme weather
- migration pattern, trade, etc.

### Trade -

- products, goods, ritual objects
- trading areas
- winter movement to tarai (lower altitude)
- changes in trading and its causes

### Crafts -

- domestic purposes/souvenir purposes
- types of loom, spinning, weaving
- leather work, wood/stone work
- arts such as paintings, etc.

### Mountaineering -

- change of occupation

### Glossary of place names

### The organisation of village/family -

- village guardians
- rotation of civic duties
- collection of revenue
- forest guards

## 2. RELIGION AND CULTURE OF THE PEOPLE.

The origin and type of Buddhism in Khumbu

Gomba (monasteries) establishments

Reincarnate lama responsible

Legendary tales - record of miracles performed by reputed  
reincarnate lamas. The sacred peaks, lakes, wells,  
forests and animals

General practice of religion -

ritual performances - private and communal

seasonal rites, e.g. the rite of protecting village land

Festivals - e.g. annual festival of the village (Dumji)

annual festival of Khumbu Mani rimdu

## 3. GEOLOGICAL HISTORY OF THE AREA.

a. Geological processes responsible for the formation of  
the Khumbu region:

- mountain building period
- plate tectonic processes
- geological activities: erosion, avalanche zones,  
cirque areas, lakes, valley floor, glaciation,  
moraines, icefalls, neve
- geology: bedrock, type, orientation (strikes and  
dip), faults, strata, etc.
- evidence of life: determined by evolutionary  
development, topography, slope, aspect;  
soil: types, classification, permeability of  
water, drainage, wells, etc.
- values: unique geological features,  
fossils, mineral deposits,  
sacred features such as mountain tops,  
caves
- clay mineralogy: types and location

b. Glaciation activities:

- past/present glacial actions  
moraines, rock benches, rock basins, lakes,  
U-shaped valleys

c. Water:

- snow and ice; springs, wells, groundwater, river  
and other aquatic areas

d. Climate:

- general weather pattern:  
continental influences, altitudinal influences,  
latitudinal influences, monsoon effect, seasonal  
distribution
- temperature: range, extremes
- precipitation: mean rainfall, intensity, duration,  
snow depth, etc.
- wind
- solar radiation, mean; prevailing cloud type,  
fog, atmospheric moisture: relative humidity.

4. FLORA AND FAUNA.

Flora:

- record of vegetation communities
- a complete record of all plant species (endemic  
and exotic)
- plant association, community type
- susceptibility to grazing and fire
- habitat value for wildlife
- data on: rare species, endangered species, edible  
plants, medicinal plants, toxic species, exotic  
plants and their history of establishment and  
invasion
- recent trend of reforestation programme

- unique ecological features such as rare plant and animal communities
- superlative species such as largest trees of species in grotesquely grown form around monasteries and main catchment area
- traditional use of forests by local people
- the use pattern and control system

Fauna:

- I. Wildlife
- checklists of mammals, birds, reptiles, fish, insects and other invertebrates of the area
  - endemic species
  - record of rare, endangered, threatened species
  - exotic species, including history of introduction and spread, and their effects on natural ecosystem. Migratory species of birds and mammals.
  - natural history of the fauna:
    - physiological characteristics
    - morphological characteristics
    - intraspecific and interspecific interactions including competition
    - prey and predator relationship, example snow leopard vs tahr, yak population
  - relation of species to man
  - cultural and religious significance of species to man
    - habitat modification by man
    - population modification by man
  - population sizes and dynamics
  - distribution: altitudinal adaptation
  - food source: availability
  - record of extinct species and the causes

- species protected in the Park
- constraints: poaching problems
- sensitivity and adaptability to man's activities

## II. Domesticated animals -

- nak, yak and their crossbreed, sheep, goat herding pattern
- viable economic pursuit of the people
- history of introduction and their qualities for adaptation
- the effect of pastoralism on plant communities
- the uniqueness of the domesticated animals
- the use patterns, such as plough, transport, basic living source example recreation value, commercial value and primary food and clothing production value
- a checklist of wildlife and domesticated animal species should be compiled

## 5. MOUNTAINEERING AND TREKKING.

### History -

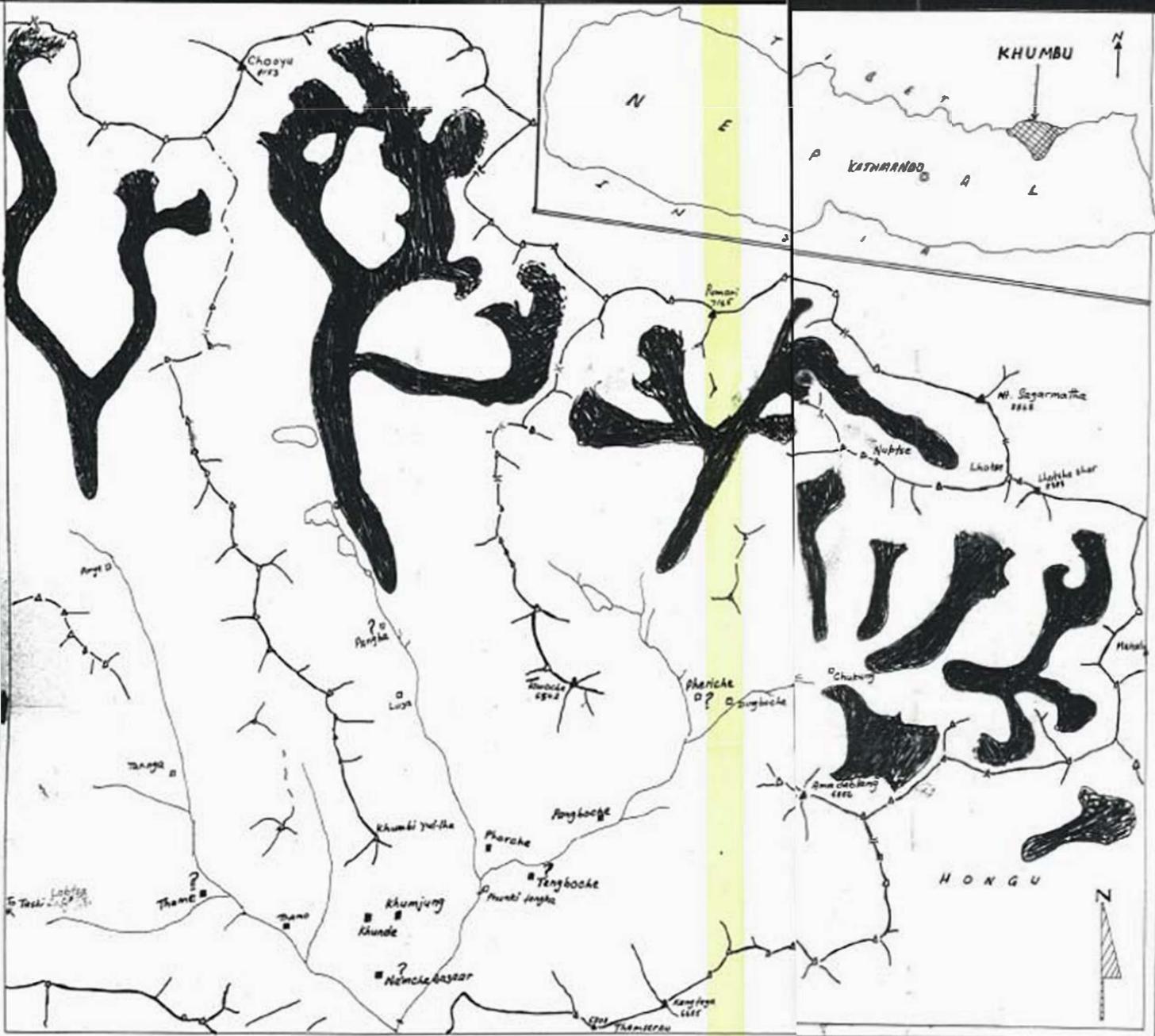
- early history of exploration by local people and visitors
- record of all climbing expeditions, time, country of origin of climbers
- route attempted
- successful rate, other events of time such as tragedy
- mountaineering equipment used
- expedition types: past/present/future
- record of all peaks and their heights
- trekking routes within the Park
- places of interest and scenery

Concession services -

- guided trekking
- accomodation
- food availability
- equipment hire
- hotels, campgrounds, lodges, teashops
- Park-operated visitor facilities

Safety -

- health centres, shelters
- high altitude diseases, exposure
- safety procedures and measures taken



# KHUMBU

Map - Scale 1:100,000

## LEGEND

-  Peak and Ridge
-  Pass
-  Glacier
-  Lake and River
-  Main Village
-  Summer Settlement
-  Proposed Location of Interpretative Facility

### NOTE

The area shown in the map of Khumbu is within Sagarmatha National Park apart from the main villages.

Entry point is not covered by the map. It is located at Monjo, south of Namche Bazaar.

Adapted from René de Millewile 1974  
by Mingma N. Sherpa 1979