

Museum

Vol XXXI, n° 4, 1979

**Four museums: thoughts on
theory and practice, Nepal,
Vatican City, Spain,
Australia**

museum

Vol. XXXI, No 4, 1979

Museum, successor to *Museion*, is published by the United Nations Educational, Scientific and Cultural Organization in Paris. *Museum* serves as a quarterly survey of activities and means of research in the field of muscography. Opinions expressed by individual contributors are not necessarily those of Unesco.

EDITOR-IN-CHIEF

Anne Erdős

EDITOR, ENGLISH EDITION

Iris Bettembourg

EDITORIAL ADVISORY BOARD

Om Prakash Agrawal, India

Fernanda Camargo de Almeida, Brazil

Chira Chongkol, Thailand

Joseph-Marie Essomba, President of
OMMSA

Raymonde Frin, France

Saleheddin Hasan Sury, Libyan Arab
Jamahiriya

Jan Jelinek, Czechoslovakia

Grace L. McCann Morley, Adviser, ICOM
Regional Agency in Asia

Luis Monreal, Secretary-General of ICOM,
ex-officio

Paul Perrot, United States of America

Georges Henri Rivière, Permanent Adviser
of ICOM

Vitali Souslov, Union of Soviet Socialist
Republics

Each issue: 24 F. Subscription rates
(4 issues or corresponding double issues per
year): 72 F (1 year); 120 F (2 years).

Editorial and publishing offices:
United Nations Educational, Scientific
and Cultural Organization,
7 Place de Fontenoy, 75700 Paris, France

© Unesco 1979

Printed in France

Imp. Maury S.A., 45330 Malesherbes

ERRATUM

MUSEUM, Vol. XXXI, No. 1, 1979.

Page 67, photo credit 2,
should read:

'Institut d'Archéologie de l'Université
des Sciences Humaines de
Strasbourg', and not
'Collection Gallimard'

Four museums: thoughts on theory and practice (Nepal, Vatican City, Spain, Australia)

	<i>Editorial</i>	218
Shailesh C. Singh	<i>The Natural History Museum of Nepal, Katmandu</i>	219
Walter Persegati	<i>The Vatican Museums, Vatican City: a choice of controlled circuits</i>	229
José Luis Sert	<i>The Joan Miró Foundation: Centre for the Study of Contemporary Art in Barcelona</i>	244
Robert Hodge and Wilfred D'Souza	<i>The museum as a communicator: a semiotic analysis of the Western Australian Museum Aboriginal Gallery, Perth</i>	251

Editorial

The three previous issues of *Museum* were devoted to special themes: restitution and return of cultural property, museum programming, and museums and children respectively. The next number, Vol. XXXII, No. 1/2, will be a double issue that will cover interdisciplinarity in the museum context. So the time has come for a pause.

The journal's balance depends on the alternation of thematic issues and more diversified coverage. Alongside the international treatment of topical problem areas in museology, *Museum* needs also simply to inform its readers about new museums and particular museum initiatives.

Thus the present issue contains various descriptions and viewpoints. Although it would be paradoxical to find thematic unity where none is intended, this issue does appear to reflect the lively, changing and often controversial nature of the museum field itself. Its contributors raise a cross-section of some of the basic questions that occur to any museologist deeply concerned with the role of his institution in contemporary society.

The museum's partnership with other institutions and disciplines, for better educational and cultural development, is implicit in the description of the growth of a natural history museum at Katmandu, Nepal. Increasing public interest in some museums creates difficult problems of scale: how best to communicate with a mass of visitors, facilitate their easy flow through the building and ensure their comfort and security as well as that of the collections? The description of certain innovative approaches in the Vatican's Museums adds usefully to the discussion of these problems. A three-cornered partnership between architect, painter and museologist marked the planning and creation of the Joan Miró Foundation in Barcelona. An account of that process continues the discussion on architectural programming in Vol. XXXI, No. 2.

The museum can also be an agent of social change, especially when it is caught up in a web of social communication. An analysis by two communications researchers of an ethnographic museum presentation in Perth could be a revelation—or a provocation—to the museologist. Communication is so dependent on inbuilt ways of thinking, feeling and seeing, say the two social scientists, that communication breakdown 'will be the rule not the exception', particularly when presentation of a minority culture is involved.

The questions thus raised will no doubt arouse diverging comments and opinions.

The Natural History Museum of Nepal, Katmandu

Shailesh C. Singh

The Himalayan Kingdom of Nepal, situated on the northern frontier of India, lies between 80°15' and 88°10' E. longitude and between 26°20' and 30°10' N. latitude. Ranging from the subtropical forests of the southern plains to the great peaks of the Himalayas in the north, Nepal, with a land area of 140,367 km² and a population of 11.5 million, has rich and diversified flora, fauna and geology. Attracted by this unique natural environment, foreign scientists have been collecting and studying specimens of Nepal's natural history from every nook and corner of the kingdom for over a century.

In the absence of a natural history museum in Nepal, and of any suitable repository where material could be preserved and used for research and exhibition, specimens collected by foreign scientific missions in the past have been exported by those missions and preserved and studied abroad. Local scientists were even unable to have access to reports or other publications based on the specimens, and so the growth of scientific knowledge and of public education was brought to a standstill—a very serious matter, as we have at last come to realize. Further, textbooks available to students of natural history in Nepal were mostly based on the species and environmental conditions of other parts of the world, with few or no references to indigenous material, so that the knowledge gained by Nepalese students was mainly theoretical and alien to their own experience. In view of these facts and after the implementation of the plan for the new education system in accordance with the wishes of His Majesty the King, the Natural History Museum of Nepal, the only one of its kind in the country, was created on 17 July 1975, under the aegis of Tribhuvan University, for the preservation of our country's natural heritage.

History

After the closing of the Anandakuti Science College in 1974 by decision of the college management committee, the Tribhuvan University Institute of Science decided to establish a museum of natural history in the hostel buildings of the college. As a preparatory step, the Institute of Science under its dean, Dr S. P. Pradhan, brought together specimens preserved in two of the university colleges, and butterfly specimens collected by C. Smith, working under contract in the central campus; it also purchased bird specimens collected by H. S. Nepali (Fig. 1). The Institute of Science then organized an exhibition of birds and butterflies on the occasion of His Majesty's coronation on 8 February 1975. On 17 July

1975, the Natural History Museum came into being. Since that date the museum has launched museum programmes, enriched its collection, and educated the public by organizing exhibitions and mobile displays, and by publishing educational materials.

Objectives

The Natural History Museum and government bodies concerned with the maintenance and preservation of our natural heritage have an important contribution to make to our rapidly developing country. In particular, our people should be informed about nature, and the reasons for conserving and protecting wild life and preserving the environment should be explained to them. They should be informed about the country's natural resources by way of specific examples collected for the purpose.

Our aim, therefore, is to create a museum that will serve as a research and educational centre and will thus spread knowledge among the people. The principal objective is to collect and preserve specimens of our flora, fauna and geology. The maintenance of a reference collection of Nepalese specimens in the country itself rather than in foreign countries, as has been the case so far, will help foster research and education in the field of natural history. To this end we have sought the co-operation of foreign visitors, tourists, trekkers and organized expeditions and groups, who previously dispersed many valuable specimens to places or countries where no immediate benefit could be gained by the nation; whereas in Nepal such a collection would be absolutely essential as an aid to studies, including scientific projects of national importance.

The second objective is to study and carry out research on the specimens. A major contribution to this effect has, and will continue to be, made by the museum staff and other people working in scientific fields in Nepal. Research programmes will also be undertaken in co-operation with government research organizations or foreign museums, educational and research institutions.

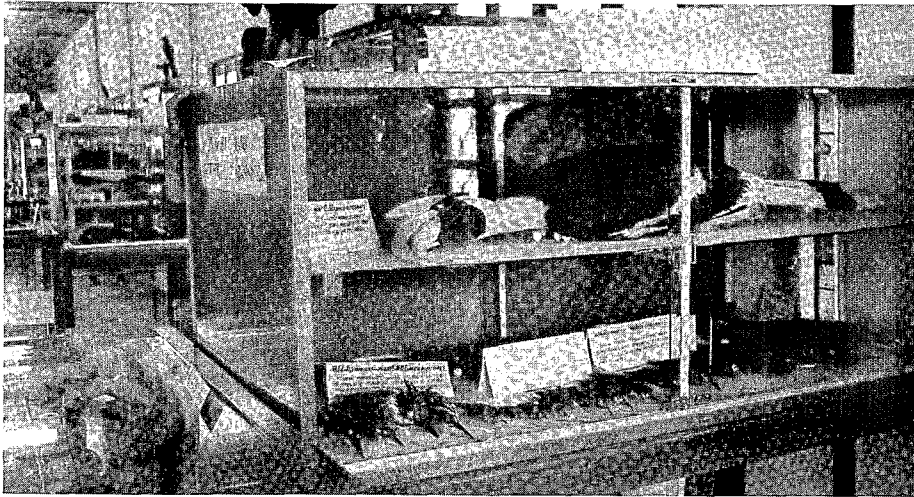
Education. The knowledge gained through study and research should be disseminated to students, and the people, whether educated or illiterate. Thus, the third but important objective is to educate people regarding our country's natural wealth in the hope that, by arousing their curiosity, they will be made aware of the need to protect it.

Documentation. Since we aim at combining facilities for research and education with data and specimens of a purely informative nature, we have to maintain a comprehensive record of published literature on our natural history. Therefore the last, but nevertheless important, objective is to collect documentation on the literature and on specimens of Nepalese natural history.

Programmes to attain these objectives

Collection and preservation

In order to preserve and maintain a record of our flora, fauna and geology, specimens are acquired by organized field surveys, exchanges, gifts from individuals or institutions, purchases from private collections or museums, the co-operation of researchers and research institutions and government bodies, the co-operation of students, and the control, according to predetermined principles, of the export of specimens, especially rare ones, for commercial purposes or by foreign study teams.



1
MUSEUM OF NATURAL HISTORY,
KATMANDU. Show-cases of birds.

Field surveys

The museum's acquisition policy is based on the state of scientific knowledge and the needs of the public.

As a preliminary plan, owing to the lack of even common specimens, the museum adopted a policy of broad-spectrum field studies. As the collection is enriched and the state of scientific knowledge improves, the museum will concentrate on specimens not represented in its collection. At a later stage, highly experienced teams will be organized to find specimens that, owing to their rarity, size, or inaccessibility, have not previously been collected.

The framework for future field studies will be based on the climatology, ecology and geography of the area it is proposed to survey. For a systematic survey on a long-term basis, the Kingdom of Nepal may be divided into three theoretical sections: eastern, central and western Nepal. Each section may be further divided into three regions based upon their edaphic and climatic conditions. Running from south to north, these are the Terai, which has a tropical climate; the midlands, which have a subtropical temperate or subclimate; and the highlands, which have an alpine climate.

The survey routes follow existing paths along a north/south transect of successive ecological zones within each section. Thus one year will be given to each major route, allowing a seasonal as well as spatial distribution to be determined for the flora and fauna.

To obtain a general picture on a short-term basis, at least one route in each section will be explored each year; this will give a broad impression of the biota, which, it is hoped, will accelerate the sample programme by indicating places of lesser or greater abundance.

The survey of national parks, because of their unique or very special beauty and interest, will be considered as a separate project combining the facilities and personnel made available by the authorities involved, so that the common interests of all concerned may be satisfied. We are collaborating with the Mount Everest National Park in a programme of research on butterflies of that area.

First, specimens in the designated study areas that differ greatly from those already available or described in the museum's collection and other national institutions will be collected. At the same time the survey team should note the distribution and abundance of specimens already collected with a view to studying them more intensively at a later date; this refers especially to species requiring more specialized survey techniques that could not be provided by the general survey—for example, rare specimens. As the general survey begins to cover the length and breadth of the country, and is finally completed, a mosaic of the distribution, abundance and diversity of all wild life and geological structures will be obtained, on which will depend the policy for the specialized surveying of vital key areas.

The present collections in the museum

Birds

The collection already includes 1,068 specimens representing 545 species, and we are collecting specimens not so far represented: 918 birds were purchased from a private collection. In all, forty out of the seventy-five political districts are now represented. By making a systematic survey, it is hoped that a more complete collection, at least down to species level, will be built up. Emphasis will be placed on the collection of duplicate specimens for the research collections and for display purposes. Young birds and nests will be included so as to show a full life cycle. For 1977-78 it was proposed to start a programme to record bird songs for specific species, beginning with the Katmandu Valley and spreading to other parts of the country, with the aim of including some recordings in the exhibition section. Later, it is hoped to build up a complete photographic record of bird species *in vivo*, which would be of great importance for educational purposes.

Butterflies

At present, duplicate specimens are being collected for exhibition as well as for the reference collection. At the same time the butterfly collection is being enriched: about 80 per cent of all described Nepali species are now in the museum. Twenty-one out of the seventy-five districts are represented, but much work has yet to be done on high-altitude Lepidoptera. Because of the difficulties involved, but keeping in mind the twelve-year plan, preference will be given to areas within the three sections that have so far not been investigated.

Other insects are also being collected, and the Odonata have been given priority. The collection plan will work along the same lines as that for birds.

Reptiles, amphibians and mammals

A new programme was being started in 1979 that will follow a similar searching pattern to that for birds, in the hope that the present collection, composed of only incidental specimens provided by earlier survey terms, will be greatly enriched.

Plants

We have already collected a broad spectrum of plants of very different types. Now it will be our policy to collect specimens of a more specific nature: for example, edible and medicinal plants, and plants of economic importance such as those from which oil is extracted or trees used for timber, plants for the manufacture of paper, and spices. The collection routes will be the same as those mentioned above. The main times for collecting are spring, pre-monsoon and post-monsoon. A survey will be carried out on the use made by the Nepali people in general of fungi (Myxomycetes, fleshy fungi and parasites of plants of economic importance), lichens, bryophytes, pteridophytes, and others.

Geology and palaeobiology

Since the collection in the Department of Mining and Geology is nearly complete, only specific samples will be sought and collected in conjunction with other

survey teams. The Department of Mining and Geology will be requested to provide duplicate samples to represent Nepal's rocks and minerals.

Planning for the future

Starting in 1979-80 collection plans will concentrate on the sedimentary siwaliks, for plant and animal fossils.

The different groups in the initial and the present collections (formed between July 1975 and March 1978) are shown in Table 1.

TABLE 1. Specimens in the Natural History Museum of Nepal

Group	Specimens in initial collection	Specimens in present collection	Species
Butterflies	2,256	6,188	549
Other insects	50	783	250
Invertebrates	79	225	101
Protochordates	5	5	5
Fishes	17	273	85
Amphibians	3	39	3
Reptiles	12	128	38
Birds	130	1,068	545
Mammals	10	125	35
Skeletons	16	16	
Models	40	48	
Plants (different groups)		2,756	1,135
Rocks and minerals		74	
Fossils		475	51

Exchanges. At present the museum does not have enough duplicate specimens to meet requests for exchanges. However, it receives relevant literature from different countries in exchange for its *Journal* and other publications. In the near future, the museum's improved facilities and collections will enable it to carry out exchanges or loans with institutions in other countries.

Gifts. The museum receives from individuals a few gift specimens, books and collecting aids. As the museum develops, it is hoped that more specimens and materials will be donated. To encourage people to make donations and for those who seek the sanction of the museum for their own collections, it has been our policy, as a token of our esteem, and in lieu of payment, to give the donor's name to a collection or to its location in the museum.

Purchases. Purchases from private collections and other museums will be made according to certain criteria: the variety of the specimens, whether they are represented in the existing collection, etc. We may also purchase exhibition specimens lacking in the vertebrates collection which would require the specialist skill of a taxidermist.

The price is set by the decision of a committee, so as to control the flow of funds from the museum. The maximum amount obviously depends on the budget provided for such acquisitions and on the contribution the specimen can make to the department and the museum as a whole.

The co-operation of researchers, research institutions and government bodies has been sought for enriching the museum collection. Responses are encouraging; the museum has received rock and mineral samples, fossils and a few other specimens, and it is hoped that more help will be offered.

Co-operation of graduate students. The museum has also sought the co-operation of graduate students who participate in village development activities in different parts of the kingdom under the National Development service programme, since they can collect specimens from remote areas. Despite their limited collecting facilities, these students respond enthusiastically to our requests.

Regulations. To prevent the export of irrecoverable materials from the country, attempts are being made to ensure that duplicate specimens collected by foreign scientific missions and copies of their reports are donated to the museum, and that strict control is exercised over the establishment and running of businesses for the purpose of exporting specimens and valuable texts for monetary gains.

Research

In the museum, the staff make a systematic study of and carry out research on specimens collected from different parts of the kingdom. The routine work of the museum includes the registration, preservation, classification, description and cataloguing of specimens collected in the field or acquired by other means. Apart from this routine work and planned research studies, short-term research projects are also being planned and will be started according to the country's financial and academic commitments. Preference will be given to research on topics concerned with the conservation and preservation of natural resources within the economy. It is hoped that these studies may be carried out with the co-operation of national and international research institutions. It will not be out of place to mention here that a research programme on butterflies of the Mount Everest National Park has been carried on since May 1978 with the co-operation of the New Zealand Project on Park Development. Study of various flora and fauna of other national parks in Nepal is under serious consideration, and it is hoped that foreign organizations will be interested in co-operating with the museum in launching such programmes. With a view to improving research facilities, it should be our policy to seek foreign co-operation in projects beyond the immediate resources of the museum, but of such importance as to necessitate their immediate implementation: for example, construction of buildings, motorized mobile museums, specialized projects, travelling and living expenses of foreign advisors and payment of museum staff undergoing training.

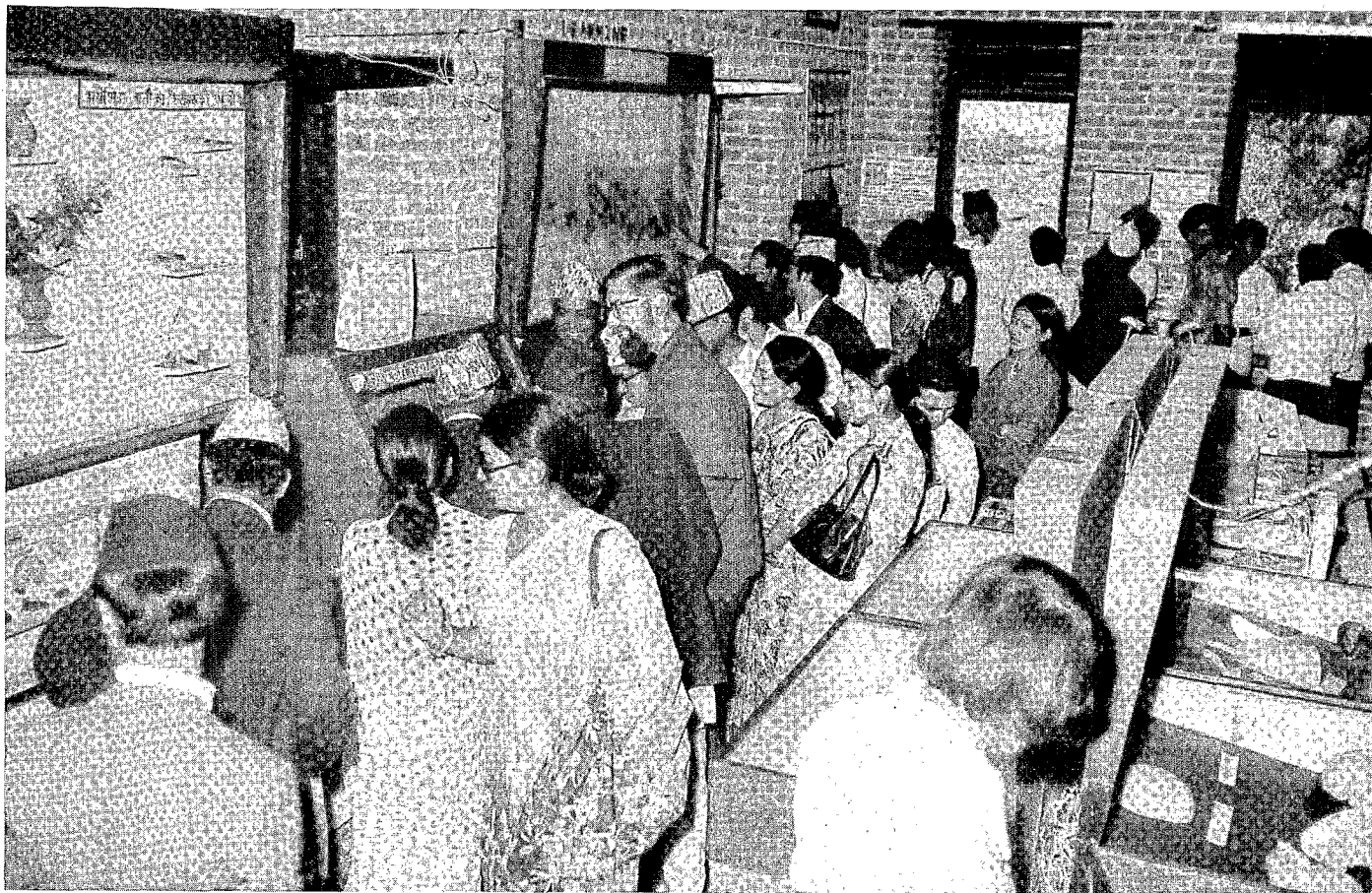
Education

In addition to its function as a data bank of the country's natural wealth, the museum, through the efforts of its staff, should facilitate and encourage the dissemination of information. It has to become a source of inspiration to town and country folk alike, increasing awareness of national identity. Although the policy will be to provide a general education for all the people, separate programmes have and will be drawn up for those with higher academic experience (university and college students, teachers and research workers), and those with little or no previous experience, namely, the general public, among whom the literate and illiterate must be treated separately. For the higher academic bodies, the museum will organize lectures and seminars with the assistance of the museum's own staff members, visiting foreign personnel or Nepalese specialists.

It should also provide teaching aids such as practical demonstrations, which would facilitate a better understanding of the theoretical principles put forward in the lectures and seminars.

Educational activities are organized in two ways: first, by launching educational displays in outlying districts with the active participation of museum staff, either voluntarily or by remuneration or on a pro-rata basis according to their time and effort (this activity will later be carried out by a separate department headed by the public-relations officer); and secondly, by the specimens in the museum in such a way as to play a critical role in captivating and holding the interest and imagination of the visiting public.

Teaching in the schools in the provinces is still very theoretical, with little or no regard for the more practical aspects of the natural sciences. The implementa-



tion of an 'education for schools' programme has proved a valuable teaching tool, which gives the student a personal experience rather than an impersonal one through the exclusive use of the written word.

Exhibitions of syllabus-related specimens for students and of a general interest for the illiterate public with no schooling have been organized, with the following objectives in mind: (a) to give a general introduction to the natural heritage of Nepal to primary and secondary students, as well as to the local people; (b) to combine the theoretical studies with practical examples provided by the museum; and (c) to encourage a general interest in the natural history of Nepal and the functions, aims and objectives of the museum itself.

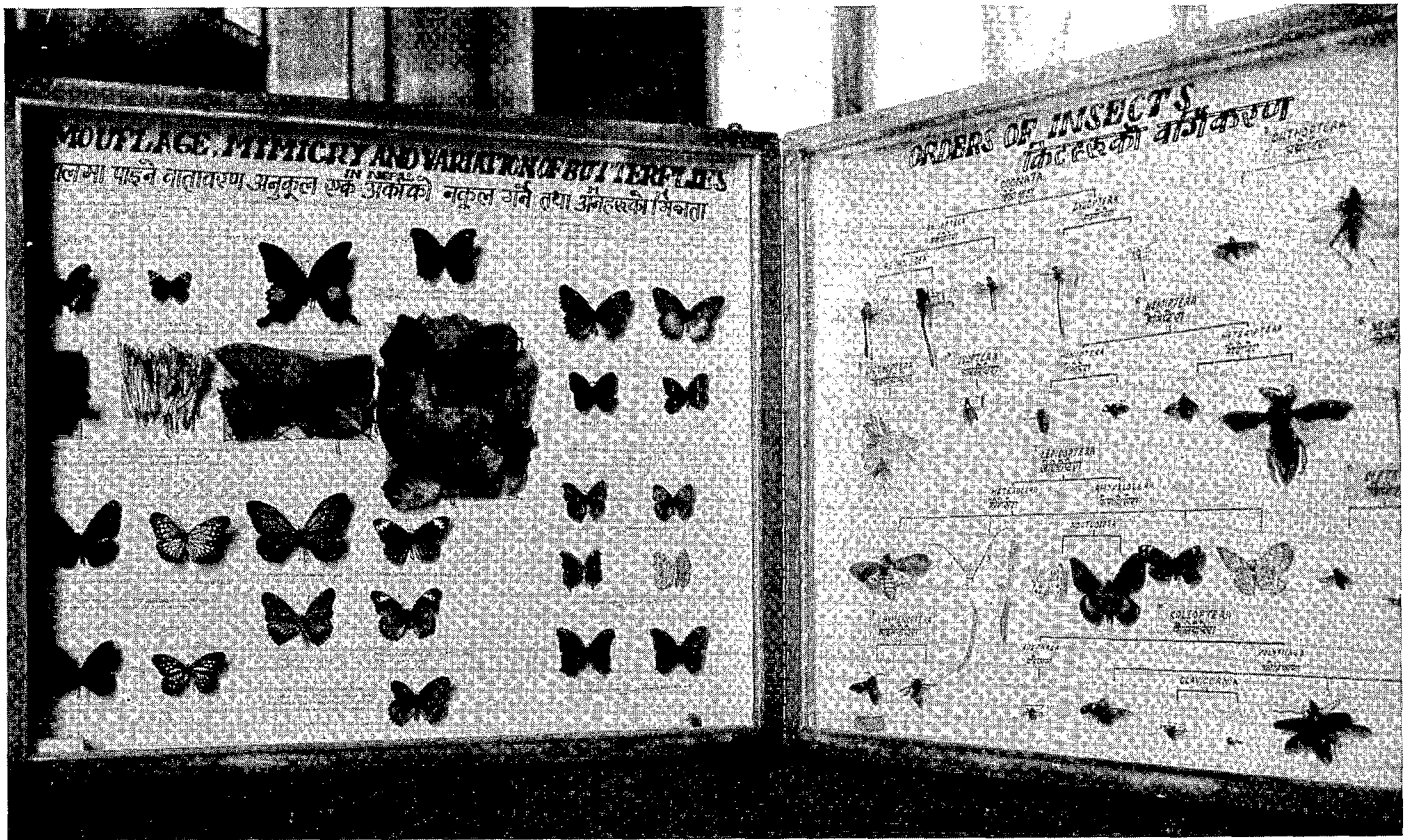
In the past exhibitions have been held in Bhakupur, Dhulikhel and Banepa. In each case two days' preparation was needed and the exhibition stayed open to the public for three full days; 404 exhibits were presented. The number of students and teaching staff who attended was respectively 1,062 and 43 for Bhakpur, 1,331 and 58 for Dhulikhel, and 1,404 and 40 for Banepa. An average staff-student ratio of 1 : 27 can be concluded. Whilst the response was good, it was felt by the museum that more teaching staff from the schools should be present to take some of the burden from the shoulders of the museum staff, who on occasion were overwhelmed by enthusiastic students.

The questionnaires distributed showed that school organizers would have liked more time to prepare for the display visits, so as to ensure a better response from the more remote villages. It was also the general opinion that visits in the provinces should last at least one week and should be held, if possible, in larger halls, which at the moment are not available.

In 1978 exhibitions were held in the outlying districts of Hetauda, Birgunj, Narayanghat and Janakpur. The mobile display programme was started on 29 December 1977 to mark the King of Nepal's birthday (Figs. 2, 3). Within the valley, exhibitions and films on the wild life of Nepal were presented at Trichandra Campus from 22 February to 5 March 1978 to mark the occasion of National Education Day. In co-operation with the National Education Commission, the museum is launching a programme of training for schoolteachers in out-

2

Visitors at a travelling exhibition held in a secondary school.



3
Portable show-cases for travelling exhibitions.

lying and remote areas of the kingdom, with a view to improving science teaching through the use of local resources and organizing museum activities in schools and science fairs for the general public.

Locally, the education section of the expanded museum will be responsible for this sector, comprising the following main activities: (a) instructing teachers and professors on the use of museum exhibits as practical adjuncts to classroom teaching; (b) preparing visits by school groups and offering guidance and assistance to the accompanying teachers; (c) organizing short courses on various natural-science subjects during school holidays for primary and secondary school children; and (d) assisting in the maintenance and improvement of the library, the scientific collections and the publication of educational pamphlets and scientific works of reference.

To carry out the proposed development of the museum, its displays of specimens and its library, a purpose-built structure will be required. A competition for the best design could be held and a reward given, quite apart from any question of financing. Financial aid will also be sought for the construction of the new museum, in which the following themes have been proposed:

Hall 1, Hall of the Universe (9 × 6 × 3.5 m). The theme here would be the evolution of our galaxy and the solar planetary system with respect to the other star systems. (A small planetarium could be incorporated to show the star systems as seen from Nepal.)

Hall 2, Hall of our Earth. This would contain displays, models and charts showing the origins of the planet earth. It could be subdivided to show the geological evolution, volcanology, river systems, and the process of fossilization of early life forms.

Hall 3, The Origins of Life. Here the public would be brought, by way of models and charts, to the time when the earliest life forms had evolved as a result of a series of inorganic and organic chemical reactions. The evolution of simple, self-replicating proteins and nucleic acids would be shown, and their subsequent evolution into unicellular and multicellular plant and animal organisms. Of particular importance would be a visual display of the process of photosynthesis showing how it was the antecedent and is now the counter-balance to the consumptive process of animal respiration.

Hall 4, Diversity of Animal Life. Here the evolution of the animal kingdom into taxa, and the display of different life forms according to their systematics would be the theme. The process of collection and preservation of such specimens would also be shown in a separate subsection.

Hall 5, Reptiles, Birds and Mammals. Many species would be arranged in dioramas, showing the animal either in relation to its natural surroundings, or according to its behaviour (mating, feeding, hunting). Again the collecting aids and preservation techniques would be shown in a separate subsection.

Hall 6, Economic Zoology. Emphasis would be on the importance of all animal life to man's aesthetic well-being and economic prosperity.

Hall 7, Economic Botany. The arrangement would be similar to that of Hall 6 but there would be a separate section for plants of social and industrial importance, such as those used in the manufacture of drugs.

Hall 8, Forest of Nepal. This would contain charts and display specimens of biological and geological interest, aimed particularly at overseas visitors, to give the relevant information on the natural wealth and beauty of the country, sites, ease of access, trekking routes and views of exceptional beauty.

Hall 9, Agriculture in Nepal. As in Hall 8, information for foreign visitors would include charts, for example, on productivity data, distribution of agronomy, evolution of tools and equipment. The importance of various missions in Nepal for instance, that of Unesco, will be stressed and their mode of operation explained.

Hall 10, Ecology. Information here would include relevant data, with examples, on every aspect of the environment of Nepal, and its subsequent pollution and evolution.

Hall 11, Hall of Biology. It would be aimed at students and schoolchildren and contain display specimens raising simple questions in biology. It would include simple yes/no games and use illuminated displays to give the correct answer. This system has been used in the Museum of Natural History in New York.

Hall 12, Man's Evolution in Nepal. This section would trace the evolution of class structures, politics, history and the origins of the basic Nepali stock to the present complex race mixture.

Hall 13, Temporary Exhibitions Hall. This would be used for specific displays, e.g. on public occasions (festival of flowers) arranged by the department concerned, for private collections, etc.

TABLE 2. Organization of the Natural History Museum

<i>Present sections</i>	<i>Staff</i>
Botany	
Cryptogams I	3 assistant curators
Cryptogams II	1 laboratory assistant
Phanerogams	1 laboratory boy
Zoology	
Invertebrate I	
Invertebrate II	
Fishes, amphibians and reptiles	4 assistant curators
Birds and mammals	(2 on contractual service)
Geology	
Rock and minerals	No curatorial staff. The section is looked after by staff of the other sections
Fossils (palaeobotany and palaeozoology)	
Library and documentation	No curatorial staff
Exhibition, education and mobile displays	No curatorial staff
Administration, accounts and storerooms	Seven people, including junior supporting staff. 3 watchmen, 3 peons and 1 driver

Documentation

The museum will aim at providing a comprehensive reference collection of all available works, produced either by the museum itself or by outside research centres. The library will act as a reference centre notably for published texts but also for data provided through the research work of various institutions both national and international. With a view to collecting the scattered literature on Nepalese natural history, a bibliography on the fungi of Nepal has been compiled and published in the second issue of the *Journal of Natural History Museum*. Bibliographies on other areas are also being compiled, and a list of periodicals available in various libraries in Nepal is in preparation. In the future the museum hopes to be able to supply research workers, at their request, with photocopies or microfilms of articles on Nepalese natural history.

The results of research programmes will be published in various specialized reviews under the direction of the documentation section, together with a list of specimens stored in the institution.

The library's collection will be constantly enriched so as to provide coverage of all fields within the scope of the museum: zoology, botany, geology, astronomy, physics, biology, chemistry and mathematics.

Publications

To date, the Natural History Museum of Nepal has issued publications on the following subjects: collecting and preserving plants; insect collection; collecting butterflies in Nepal; collecting and preserving birds and animals for study; and common butterflies of Nepal. There have been two issues of the *Journal of Natural History Museum*. It is hoped that more books and booklets will be published in due course.

Present exhibition area and halls

At present 360 m² of floor area are used for displays. One large room and seven small rooms are arranged as follows: (a) diversity of plant life; (b) economic botany; (c) diversity of animal life; (d) economic zoology; (e) butterflies and insects; (f) fossils; (g) mammals; and (h) fishes; amphibians, reptiles and birds.

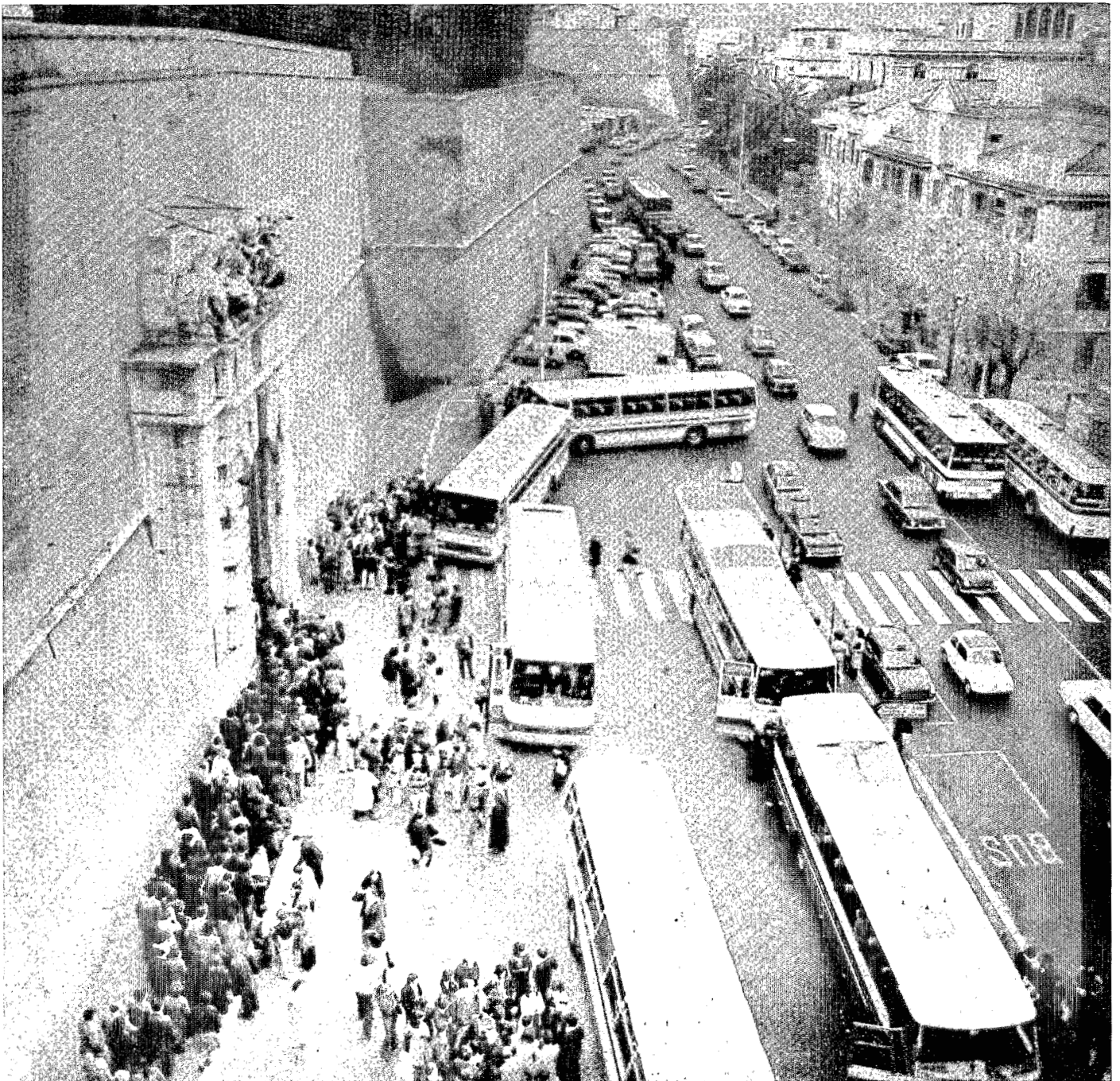
4

MONUMENTI, MUSEI E GALLERIE
PONTIFICIE, CITTÀ DEL VATICANO. ►

The daily routine starts with the arrival of individual visitors or large coach parties, who are usually accompanied by guides with strident voices.

*The Vatican Museums,
Vatican City: a choice
of controlled circuits*

Walter Persegati



Curators and administrators of all museums have fundamentally the same responsibilities : to conserve, study and exhibit. Essentially it is the responsibility of delivering a message, of making works of art talk to people, to-day and for centuries to come.

However, every museum is different, for curators give different interpretations to these fundamental duties and a different degree of importance to each of them.

For one curator conservation may be the main object of his work, and there is a lot to say for this: there is no way of interpreting a destroyed piece of art or document of history. Another may concentrate all his efforts on studying and making his museum communicate through books, lectures, and documentation of all kinds. Finally, exhibition is the main concern of others. In fact, exhibiting is a form of expression, and if well conceived it is the easiest way to make objects tell a story, which is communicated through the arrangement of the exhibits, the sequence in which they are displayed and the explanatory notes that accompany them.

Above all, each museum differs from all the others with regard to problems arising from building structures, contents, climatic conditions, conservation and restoration.

This article will deal with these problems primarily as they relate to the visitors, who are conditioned by them and at the same time create them. Hence in this article visitors are considered the key to a museum's performance.

Buildings can be historically important and thus untouchable. Narrow passages cannot be enlarged, doors widened, new windows added, or staircases altered.

They can be modern, functional, studied to house a museum in ideal conditions; or they can be simply old, unimportant, outdated as far as displaying, or movement of visitors, or lighting, or public facilities are concerned.

They may not have been planned as a museum, and new structures may have been added without concern for the unity of the various wings. Finally, the buildings of a museological complex may be of mixed origin, age and design, an unfortunate combination as regards circulation of visitors.

Different problems also arise from the variety of works exhibited and the material of which they are made. Small objects neatly displayed in glass cases, or a room full of machines, have very little in common with frescoes or walls lined with tapestries, or with statues or paintings.

Air-conditioning has no doubt lessened the differences in climatic conditions, although many museums cannot rely on temperature and humidity control by mechanical means.

Conservation and restoration requirements and facilities make for a great variety of situations: climate and pollution have different effects on stone, bronze, wood, canvas, mortar, ceramics, fabrics, gold, etc.

Often visitors are, however, the main element of comparisons—the element that stresses and influences the differences between one museum and another.

Let us consider visitors in different museums. They may or may not be homogeneous as regards language, average age and category. They may be cosmopolitan, as happens in large museums in a big European city, or belong entirely to the local population, as in a small provincial town with a high cultural level. Schoolchildren, tourists or scholars may form the main nucleus of a museum's visitors. The number also is important: indeed perhaps the most important conditioning factor of a museum's activities. It is certainly a very important element in the Vatican Museums.

The Vatican Museums

The structures of the Vatican Museums were built in different periods. Some are of great historic value, others are modern; many sections were never meant to be used as museums, and finally some, though planned to be visited, are not ideal for today's mass of visitors.

These buildings house all categories of art and material, displayed over the centuries according to the tenets of so many methods that the museums could be considered a permanent exhibition on the history of the art of exhibiting art.

Fairly stable climatic conditions help conservation, which is hampered, however, in some instances by air pollution and dust.

The restoration facilities are good, even though we share with many other institutions the problem of insufficient personnel when compared with the huge number of pieces of art that must be cared for. We then come to the visitors. Our visitors are mixed in age, language, background and concept of visiting. Some come to the museums well prepared, eager and educated. Others come as members of agency-organized tours, accompanied by loud-voiced guides (Fig. 4). Schools often come with an inadequate number of supervisors, and the children—not always well prepared—look forward to the event more as an outing than a cultural experience. Of course, scholars are also among our visitors, and are often bewildered, just as they are in all well frequented museums, by the hustle and bustle that goes on around them. The number of people who visit our museums is considerable: one and a half million a year. This may not represent a problem for some museums, but it certainly does for ours.

To assist the visitor

Our main difficulties are due not only to the number of our visitors but also, as we have seen, to their great variety, to the diversity of languages and to the structural characteristics of the museums. Furthermore, these difficulties are compounded by our determination to pursue the objectives that are the common aim of every museum. In fact, we do not want our visitors simply to pass through the Vatican Museums as if these were a railroad station. We want to help them to have a meaningful visit, whatever their number, protecting them and instructing them no less than protecting the works of art all along the way.

This means enabling our visitor to choose what he wants to see in the limited time at his disposal; he should be able to enjoy a selective visit. But how? Reading pertinent material before coming would be the ideal solution, but unfortunately few do that, and even those who do may be unable to make sensible choices once inside the museums, bewildered as they are by the great variety and number of things they want to see.

Some purchase a guidebook, which is good only if one has the time to sit down, study it and understand its concept at the outset of the visit, and then proceed slowly. Even this presents a drawback, for have you ever tried to read, look, enjoy, absorb and look where you are going all at the same time? Deciding on what to see, reading and re-reading multilingual signs at every crossroad, is also a hopeless endeavour. Asking is much simpler and is done by so many. However, being understood and understanding the answer is another matter.

We certainly want our visitors to be able to find their way once they have chosen the sections they are interested in, but our museums are a maze: there are many sections and each one is a museum in itself, created at different periods and often connected in an unpractical fashion. To lose one's way is so easy; doing so results in frustration, loss of interest and a desire to reach the exit as soon as possible.

Of course, to proceed at a regular pace, to stop when tired, to resume the visit at will, to get in and out of the flow of 'traffic', is the ideal way of seeing a museum. This is also what we want for our visitors, but it is not as simple as it sounds. Large, well-lit halls often end in narrow passages causing bottlenecks, and then again large rooms. Some narrow doors have unavoidably to be used by visitors in both directions (Fig. 5). In the Sistine Chapel three narrow doors have to be used: one for entering, one as the exit and one for emergency. All three have some steps and sharp corners. We have to remember that the Raphael

Rooms and the Borgia Apartment were built as living quarters and that the chapels are private places of prayer.

Finding himself suddenly in a modern wing, with ample space to move around in, does not help the visitor; on the contrary, it confuses him.

A visitor should be able to proceed undisturbed while in our museums. By this I mean that he should not be blinded by the recurring flash of cameras,¹ pushed around by turbulent groups, or deafened by noises of all kinds. He has to be protected from pickpockets, maniacs of various degrees, drug addicts and the like. Unfortunately, a big museum may also be considered a meeting place for many dubious activities.

A visitor should be assured a safe visit. This seems elementary, but it is incredible how many dangers threaten him all along the way and of which he is often unaware. For instance, there are many staircases in our museums, some of them steep with high steps. We certainly do not want our visitor to be trapped in a crowd in a narrow passageway, yet the dangers of crowds in a closed-in place are many.

Anything can cause panic: the simple scream of a woman whose foot has been trodden on, or a violently protesting person can cause considerable commotion and the general urge will be to get out quickly; fainting is common in any crowd; a misunderstanding between visitors who barely understand each other can degenerate into a fight; two groups proceeding in opposite directions and crossing each other in a corridor, each claiming the right of way, can cause a difficult situation in which claustrophobia could lead to panic. Hence, our aim and, also our difficulty, is to ensure a regular flow of 'traffic'.

Protecting the works of art

Protecting its works of art is the least a museum can do, but with many visitors in a museum this is no easy task. Works of art have so many enemies these days. Some are traditional enemies, such as professional thieves, who use so efficiently all the sophisticated gadgets the films and television have made known. However, today, museums have sophisticated systems of defence against these professionals. The thieves persist because the market is good and big money is involved. Museums are left with no protection. So stealing and protecting have become more and more complex and costly.

Other enemies are of a new kind, or brought in greater variety to the museums by today's crowds. The occasional thief among the visitors and the souvenir hunter have become more common and are very dangerous: a crowd, unintentionally, protects and shields them.

Visitors in large numbers raise a great deal of dust, which pollutes the air, with great danger to frescoes, statues, etc. Crowds can also easily cause involuntary accidents; with many people in a room, the attendants often cannot even see the works to be protected.

Strangely enough, if crowds are always a threat to the works of art, a few visitors only, wandering at ease in the empty rooms of the museums during the low season, could become even more dangerous. On the one hand, the fact that he is almost completely alone can lead the visitor to be tempted ('no one is watching me'), and on the other, the attendants acquire a false sense of security and become relaxed and very bored.

Vandalism has increased considerably, and with a large number of visitors it becomes very easy. All kinds of potential vandal are found in a museum today: those who hate works of art because they are symbols of beauty form a minority but are extremely determined. Given the occasion, all sick people may become vandals unable to resist the impulse to break off a delicate finger from a statue. If we include among the sick people all those who feel persecuted in some way, suffer from all kinds of frustration, believe they are only a statistical number in an unfriendly society and revolt against it, the magnitude of the problem becomes evident.

1. Throughout our museums there are 'no flash' signs, and many visitors think this rule has been devised to make them purchase the museums' slides and photographs. Others believe that the ban is imposed to avoid damage to the works of art. In fact, the concern of the management is mainly the visitor. Besides, of what use could a flash be in the Sistine Chapel, where the frescoes are at least 20 metres from the camera?



Publicity seekers are, however, the most dangerous, and protection against them is almost impossible because they want to be caught so as to be able to present their cause to the world through the channels of the mass media.

∫ The problem of and the need for circulation control begin at the unavoidable two-way passage doors between the Raphael Rooms.

Everything under glass?

The best way to protect a work of art is, of course, to put it under or behind bullet-proof plate glass or acrylic plates. Most bullet-proof plate glass is, however, slightly tinted, which is detrimental to a painting. Furthermore, it is very heavy. Acrylic plates are more appropriate: the colour distortion is less, and they are not as heavy. They resist ordinary shocks well but not bullets. Both plate glass and acrylic sheets have reflection drawbacks that under some lighting conditions in common use could be disastrous.

We have tested a non-reflecting glass² which has minimum light absorption and a high percentage of non-reflection characteristics. Unfortunately, it is not as shock resistant as we would like it to be. In any case, we cannot put everything under or behind glass. The purpose of a work of art is to give pleasure. To be enjoyed fully a work of art must be able to reach out to the admiring visitors and there should be no physical barrier between them, only some space. In many museums throughout the world works of art have been protected so well that from beautiful living objects they have become very precious, sad, imprisoned and dead things. If this is the price of preserving our art, unenjoyed by the people of our times and by those of the future, then some thought should be given to the advisability of accepting some risks.

2. DESAG (Deutsche Spiegelglas-Aktien Gesellschaft).

The dust problem

Moving crowds also mean dust, that special, dark, sticky dust of today. We have tried one of the many kinds of carpeting available on the market; it works, but only up to a point. Most of our floors are beautiful; some are of ancient mosaic work, others are historically important. It is a pity to cover them up. The alternative would be glass or some other transparent material, but this is out of the question, for nothing can remain transparent under the feet of moving crowds.

Dust may not be visible in the air, but it certainly does not disappear, and statues seem to rejoice in collecting it. Our attendants still use a feather duster for about ten minutes every morning before opening time. I always say that a feather duster is a symbol of the trade, for in using it the attendant observes the works of art and immediately notices if anything is wrong. Its cleaning effectiveness is questionable, for it really only moves dust around. We are considering using mechanical means for every-day use.

Dirty statues have to be washed. Opinions vary as to how, and to what extent, this should be done. Some favour the method of a real bath in a tank and, after twenty-four hours, the result is a very clean, white, naked statue with every single sign of restoration visible. Some scholars like this, but many visitors do not, for it takes too much effort to concentrate on looking at the beautiful form of a head forgetting the ten small or large pieces of different kinds of marble used in restoring the piece throughout the centuries. Therefore, some curators opt for a more time-consuming but controlled cleaning, which is done on the spot and should ensure that the dirt, and only the dirt, is removed. More effort, more time, more skill, more money!

A big museum is indeed faced today with the same problems as railroad stations, but with the difference that visitors must be able to enjoy passing through them.

The visitors

The majority of visitors can be classified as tourists. Tourists are not born; we all become tourists on occasion. A tourist discards many inhibitions, lives in a state of excitement, does things he is not used to doing, gets tired from long hours of standing. Therefore, he is prone to accidents, fainting, even heart trouble. A tourist overcrowds his mind with notions he cannot easily apply to reality. He finds many things that baffle him and he becomes confused and mentally tired. He finds it difficult to understand even the simplest signs. Before visiting a foreign country, the best tourist tries to learn the language, but forgets the words when he has to use them. Tired as he is, he is exposed to pickpockets, becomes overcautious and pays more attention to his hip or breast-pocket than to his surroundings. In fact, as tourists, none of us can easily find our way; so under a huge sign on which the words 'Sistine Chapel' stand out in bold lettering and with a neat arrow (Fig. 6) we may be tempted to ask where the Sistine Chapel is. This is the average visitor we have to deal with.

Implementing a programme

Experience has taught us that ensuring a smooth, regular flow of visitors along the itinerary is the key to easier control, and so we began by imposing a general one-way visit with no alternatives (Fig. 7). Some visitors may resent this, but everyone is aware of the problems that can arise if a person tries to get through a crowd moving in the opposite direction through a narrow door. The one-way visit also helps visitors not to get lost.

It then seemed essential to be able to see where the visitors were, their approxi-

mate number, how they behaved, how smoothly or irregularly they proceeded. For this purpose, we installed closed-circuit television cameras at key points, usually rooms, corridors or staircases, where difficulties may occur, where long queues can form, or where crowds can gather and become impatient. With few exceptions, we do not rely on television cameras for the protection of individual works.

Communications have to be established with the attendants and with the visitors. They have to be rapid, both in transmitting reports and giving directions. Thus, walkie-talkies are used for keeping in contact with the attendants, and a public-address system is used for the visitors.

Direct communications with visitors are hampered by the language problem. A multilingual attendant at the microphone would not be the ideal solution, for a language can never be spoken as clearly as by a person using his mother tongue; neither do loudspeaker distortions help. Furthermore, improvised messages do not guarantee clarity.

Hence, messages for all occasions had to be thought out in advance, read and recorded on cassettes in five languages, each by a person, preferably a woman, in her mother tongue, because the female voice has a higher pitch and carries more easily over the loudspeaker. There are fifteen messages, ranging from closing-time reminders to requests for silence in the Sistine Chapel, invitations to be patient in front of a closed door, reassuring words to prevent a situation of panic and crises of all kinds, and so on.

We must also know what is happening among the visitors in order to spot any trouble-makers, such as the ones we mentioned earlier, before they become dangerous.

It is extremely important to act, if at all possible, so as to prevent things happening, without waiting until a vandal or a maniac takes action. The uniformed attendant is helpful in this, but he is hampered both by his uniform and because he is not authorized to follow people.

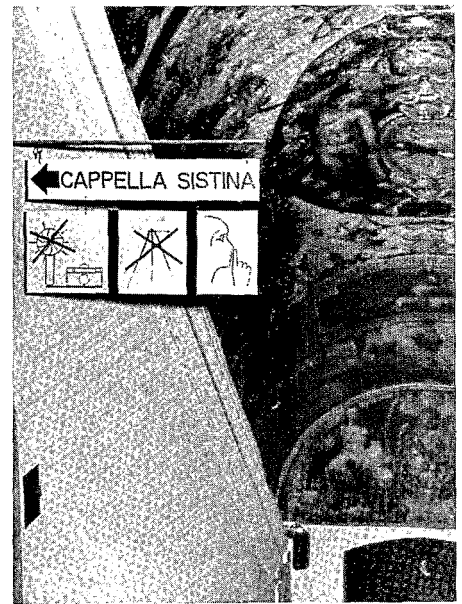
A number of plain-clothes attendants meet this need. We call them *volanti*, in contrast to the uniformed men who do not move from their assigned duty stations. They dress as tourists so as to mingle with them unnoticed. They carry concealed walkie-talkies with which they keep in touch. They follow suspects and constantly report to a central control room on suspects who have been spotted, followed, passed on for follow-up to the next *volante*, and, if necessary, stopped, identified and released or held. The key requirement of a *volante* is being able to recognize a suspect.

Succeeding in following and stopping all suspects is secondary. We know we could not do it. Our fundamental principle is: We do not want to make arrests, but we want potentially dangerous people to leave the premises. It is important therefore that a dangerous person who has not actually been spotted should realize that there is a system working against him. He does not know if he is being followed or by how many attendants, and he may thus decide to give up the idea. Consequently, and in keeping with the same principle, the *volante* may occasionally make himself conspicuous to the would-be wrongdoer.

The control room

The control room is the heart of the system (Fig. 8). It is there that all action is co-ordinated. Two attendants receive all the information—by television, radio, telephone—analyse the situation and direct operations. The control room has power of decision over everybody, including section supervisors, which it is sometimes difficult to make the latter understand. However, hemmed in by a crowd, a section supervisor has only very limited possibilities of appraising the situation in his own section, not to mention in other parts of the museums.

All kinds of situation are handled by the control room. Overcrowding is the most demanding one. This is checked by closing some sections that lead to the



6
Signs at the entrance to the Sistine Chapel.



7 Many visitors do not necessarily make a crowd, as can be seen here, owing to the one-way system.

8 The control room. Through twenty-five television screens mounted in five rows along a wall, the attendants of the control room can monitor the situation at key points of the museums. The signals from the other closed-circuit television cameras can be projected on the screens occasionally, when the circumstances call for it. (No more than one or two screens at a time can usually be monitored efficiently by an attendant. In our case, however, screens are not meant to be monitored attentively and continuously one by one, but all twenty-five have to be checked as one picture, the sequence being arranged in such way that any trouble can be spotted immediately by trained eyes, with no difficulty and limited concentration). The signals from each camera can be switched to a large screen monitor for close scrutiny when needed. On the main console various instruments are assembled. There is a line of seven cassette recorders and fifteen pre-recorded cassettes, which are identified by a letter and listed on a board with their texts typed out in full. Some of the messages run continuously—such as the one transmitted to the staircase leading to the Sistine Chapel requesting silence once inside—while others are transmitted at specific hours or when the need arises. The switches controlling the loudspeakers in all sections of the museums are also there. The museums have been divided into seven public-address sections,

room or rooms involved. We have prepared what we call 'parking areas', which are large halls along the one-way main itinerary, with plenty of air and light. The mechanism of the operation is simple: on an order transmitted by radio, the attendants close the doors and hang up a sign requesting visitors to be patient. At the same time, loudspeakers explain the situation in the usual five languages and help the visitors pass the time with explanations on the surrounding works of art: frescoes, tapestries, sculptures, etc. Of course, the doors are reopened as soon as the overcrowding has cleared.

Accidents to visitors are also reported to the control room; subsequent action involves bringing the person to one of the first-aid posts in the museums, calling a doctor from the nearby Vatican medical centre and, when necessary, a taxi or an ambulance.

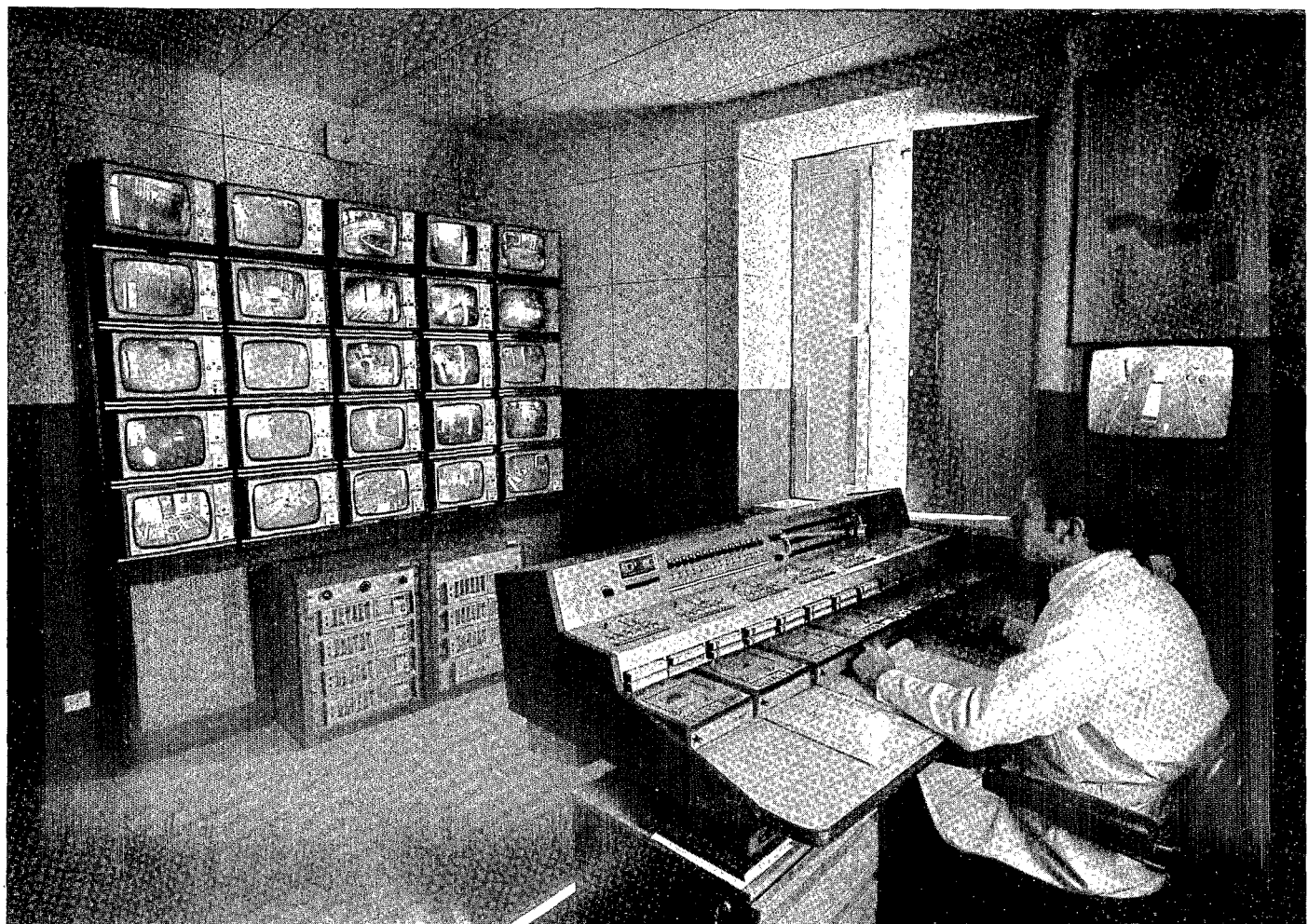
Attempted thefts too have to be reported to the control room. But mostly it is lost children, lost property and emergencies of all sorts that fill the control-room attendants' day.

The four itineraries

We have to remember that visitors come to the museums to see things. We must show them what is available, help them decide what to see and then find the way to see it, without too much wandering about, stopping and asking. This concern led us to our 'four itineraries'.

We chose four itineraries and marked them throughout our museums. They answer to the combined factors of time availability and individual taste, interest and choice (Fig. 9).

One itinerary, lasting one hour and a half, is meant for the visitors who have little time to spare, or want to see mainly the Sistine Chapel. Another is for those who want to see everything.



Two itineraries are selective, each requiring three and a half hours, or more. Some sections are common to both. The problem was how to help the visitor choose; how to explain with words and documentation. A new guidebook, recently published, helps with its two guiding systems: one by styles of art and periods and the other following the four itineraries. Since, however, a minority of visitors buy a guidebook, some other system had to be devised: six large boards are therefore placed at the beginning of the visit (Fig. 10). Displayed on each board is a description of the four itineraries in the form of colour photographs of the most important works of art and interiors along each itinerary, thus avoiding the language barrier.

Each itinerary is clearly identified by a letter A, B, C, D and a colour code: violet, beige, green, yellow. The letters and the colours are the key to the itineraries, and are found at regular intervals throughout the museums, together with a small arrow showing the direction.

Similar smaller boards, with the same information, are placed at various points along the route as reminders.

Fig. 10

Communicating through signs

There are conventional signs to mark places and indicate directions in general, to identify the different museums and important rooms, and also to assist visitors too impatient to choose or follow pre-selected itineraries.

We have placed here and there other signs: 'no flash', 'no tripod', which could cause a person to stumble and fall' and, of course, 'no smoking' and, in the Sistine Chapel, 'silence'.

As regards the last, I wish to add that achieving silence in the Sistine Chapel is a constant battle. In spite of the signs to this effect at the entrance to the Cha-

each serviced by a separate amplifier to allow up to seven messages to be broadcast simultaneously in different parts of the museums. Each section and related switch has a colour code. Other luminous switches on the console control the cameras and the transfer of their signals to different screens. A separate recorder pipes music into the self-service cafeteria. The controls of the two-way radio, the microphone, the telephone and the intercom connecting the control room with the head security office are also lined up on the console. The security manual, the emergency instructions and some checklists are kept handy. Hanging on a wall is a large map of the museums showing the various sections of the public-address system in colour code. The location and the identification numbers of television cameras and loudspeakers, the position of the attendants equipped with radio, and other useful data and references are also noted on the map. Finally, the walkie-talkies' battery rechargers cover another wall.

3. A further reason for prohibiting tripods is that they facilitate the taking of photographs that are not just souvenirs but capable of being used for commercial purposes.—Ed.

pel, and of a pre-recorded message, people gaze up at the vault and begin to talk, sharing admiration, feelings, comments. At first, it is just a whisper which, however, grows and grows to become finally a deep rumbling sound. Hence, once in a while a pre-recorded message requesting 'silence please' in five languages has to be broadcast in the chapel itself; and the whispering starts again and becomes louder and louder. There was an experimental period when Gregorian chant was piped into the Chapel, but people talked even louder in an effort to drown the music. So the battle goes on.

Signs also have to be used to explain things to the visitor who follows his pre-selected itinerary (Fig. 9). Museums must convey a clear message regarding their history—the when, how and what. New museums are planned with this in mind. The old sections of museums have to be adapted, and this is not easy, considering that the display of mainly classical art answered a non-didactical museological need.

Our museums have done something in this respect: a project for identification of all exhibits in five languages is under way; guidebooks, 'slide and cassette' kits to be enjoyed at home, and a 'teleguidage' system, so common everywhere, are some of the means used to convey our message to visitors.

An audio-visual show at the beginning of the visit has also been planned and will operate as soon as some practical difficulties have been overcome.

Our project foresees the use of an existing easily accessible circular room, divided into five sections, each with its own screen for continuous projection of slides with a synchronized amplified message in one of the five languages. Thus, no earphones or other types of removable receiver will be used.

The visitors will move freely along a passageway circling the outer wall of the room and be able to stop at the language section of their choice. The showing will last about fifteen minutes. The text of the first part, which is ready, will introduce the museums to the visitor, informing him about their history, their contents and the best way to see them, preferably by one of the four itineraries.

The groups

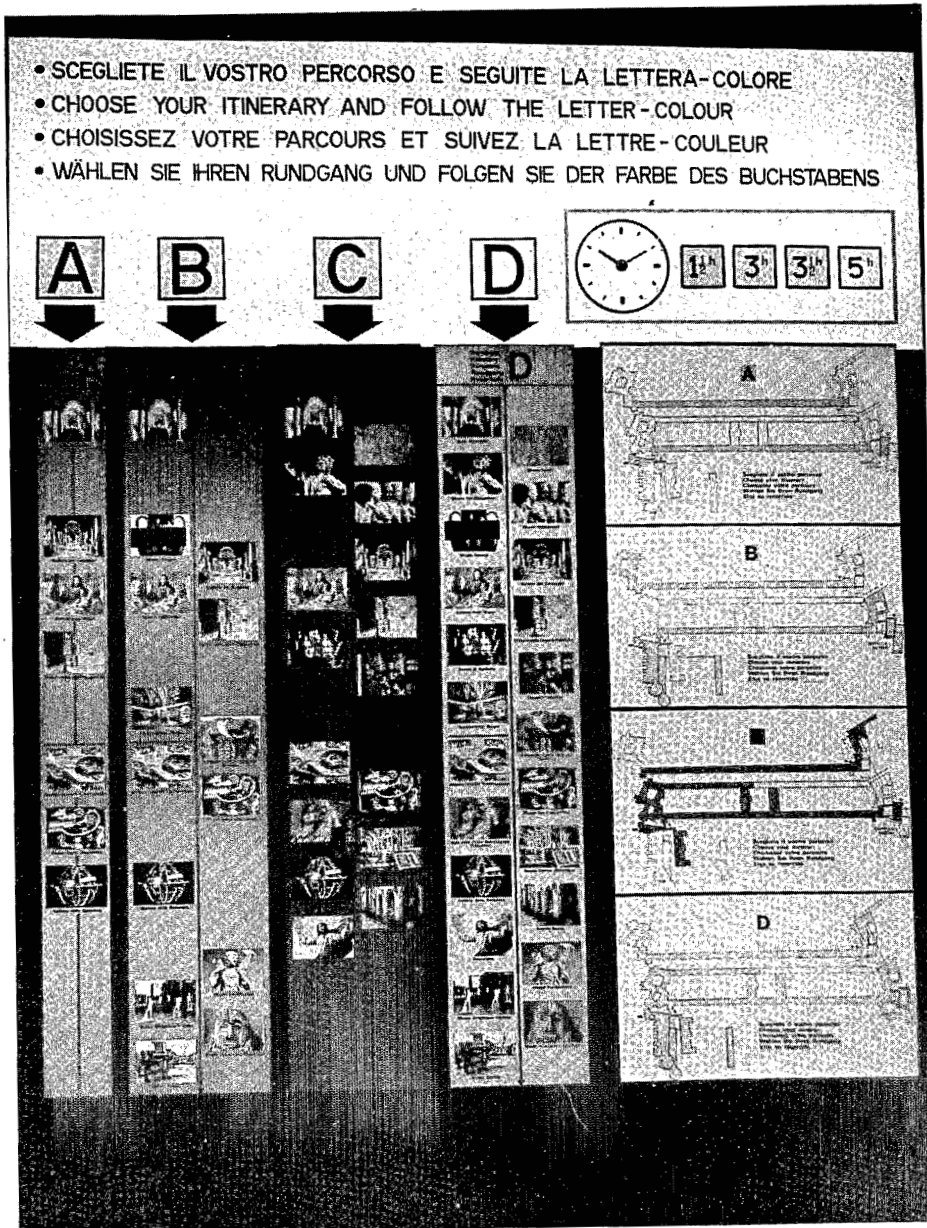
Visitors come to the museums individually or as a family, but mostly in groups.⁴ Groups do not need assistance in choosing itineraries and finding the way, because they are accompanied by professional guides. They do not linger here and there; on the contrary, they proceed at a fast pace. However, groups do create problems. They arrive by plane and coach loads: five or ten loads at a time. They can be a nuisance for individual visitors, and dangerous to the works of art. When they stop to admire some particular piece they block the way; when they move on they are apt to push individual visitors aside. Often they run—for instance, groups of schoolchildren and young people.

A group in front of a showcase or a collection of statues or other objects completely blocks out the attendant's view; he can no longer keep a proper check on what has been entrusted to him. Anything can happen then.

When the guides address their groups they want to be heard by all their customers, that is, some thirty or forty persons (although the rules limit to twenty-five the number allowed to each guide) and the pitch of their voices then becomes annoying to other visitors.

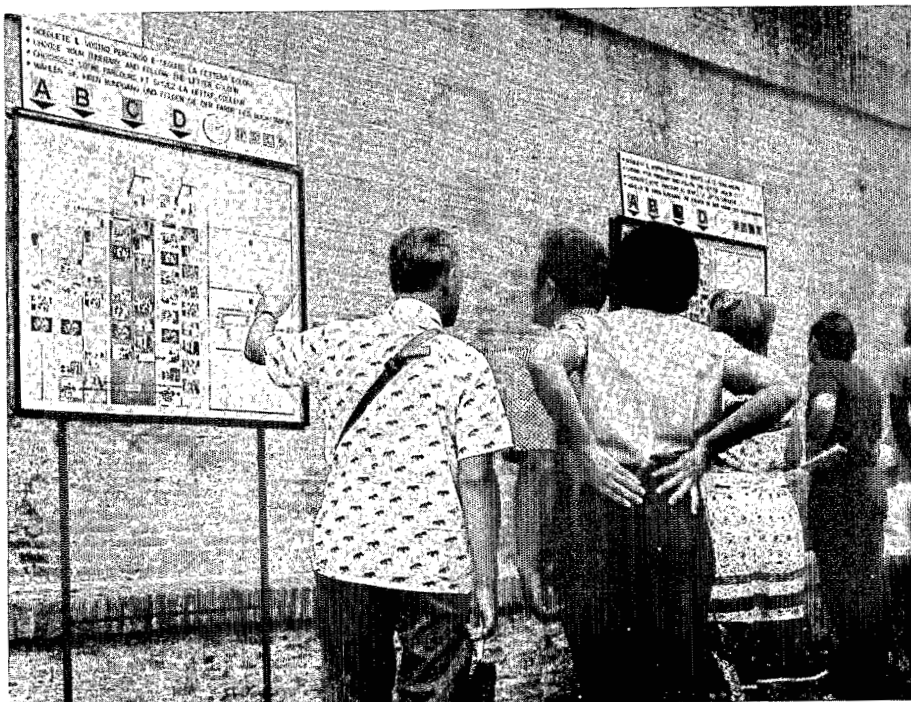
Groups, however, are unavoidable and on the increase, and must therefore be dealt with in the best possible way. We have separate ticket windows exclusively for their use. Parking areas are provided for their coaches; a loudspeaker system connects these areas with the museums' exit, so that the guides can notify their drivers when the group is ready to leave. Also, twenty large poster boards with reproductions of the Sistine Chapel frescoes have been placed in spacious areas along the way to the chapel so that the guides can describe the frescoes before entering the chapel, and then let people enjoy its beauty and atmosphere without

4. Faced with the problems arising from a great number of visitors, a museum curator may question the advisability of accepting, as a matter of course and without further thought, the phenomenon of today's mass invasion of cultural institutions and may be tempted to explore ways and means of limiting access to a selected number of privileged visitors. The trend of mass tourism, however, is irreversible and the advantage of ever increasing numbers of people coming into direct contact with art, historical documents and beauty, however limited their understanding and appreciation may be, cannot be ignored or underestimated.



9
One of the panels explaining the four itineraries with pictures, identifying colour and letter codes, time required and the sections covered.

10
Two of the large panels placed at the beginning of the visit that describe the four itineraries.



10

further explanations and noise. In the meantime, the guides can have a smoke in a small area reserved for them and equipped with coffee and soft-drink machines.

To comply with their wish to move rapidly through the museums, an exit from the Sistine Chapel direct to St Peter's Square is reserved for their use. When it rains we even transfer the group's umbrellas from the cloakroom at the entrance to that particular exit.⁵

As we have seen, with a great number of visitors, in groups or alone, with or without guides, the attendants have their hands full in ensuring a regular circulation. To ensure that the works of art are not left unduly exposed a minimum of electronic protection is necessary.

Electronic protection

In addition to the alarm system that operates at night, we have installed some electronic devices that operate while the public is present.

We have found infra-red beams—commonly called lasers—useful. They are installed in front of some of the exhibits to signal trespassing, about 70 cm inside the physical barrier, which is still needed to keep the visitor at a safe distance and to avoid false alarms.

Magnetic contacts are placed under small objects to signal any attempt to remove them, and on display cases, where the alarm is released if the case is opened. Sensors attached to the glass plates switch on the alarm if the glass is broken or a cutter is being used.

Some microwave movement detectors, mostly installed for night-time security, are also used by day; but their working usefulness is limited to sections visible only from a distance, because it is very difficult to limit detection by such a device to a clearly marked-out area.

Pressure-sensitive mats and various devices to signal any movement of hanging paintings are useful to some degree.

A very useful, practical, and not too costly system is being experimented with. It is a two-piece system designed originally to protect the showcases of the Tutankhamen exhibition in the United States. One piece is an A.C. powered transmitter with back-up batteries, and the other, placed inside the showcase, is a battery-operated receiver which switches on only if the waves penetrate the opened case.

Television cameras are also used to protect works, but not much reliance is placed on them. They are installed on the ceiling and project on to the screen the roped-off sections around the room, thus allowing the control-room attendants to spot immediately any unauthorized action in these areas. These cameras also send signals to local monitors for use by the uniformed attendants.

Alarm systems have their drawbacks. First, a system is good in the measure that the personnel is ready to take quick and effective action in answer to every false alarm. False alarms are unavoidable, and so is a slackening in the reaction instinct of an attendant. Secondly, a system is only useful if it is kept in perfect working order. Thus, to be reliable it must have constant and careful maintenance, which is extremely costly if done professionally.

Hence, when planning an alarm system, the cost of regular sophisticated maintenance should be taken into consideration. In view of the complex layout of our museums and the interlocking elements of security, circulation, assistance to visitors, etc., we have built up a system of our own, as unsophisticated as it may be.

Finally, alarm systems do not prevent incidents; they only signal that something is happening so as to alert the attendant, who therefore remains the key to the protection of the collections.

5. Sometimes individual visitors would also like to use this exit, but we have found out that many of them realize only too late that, in doing so, they have missed important sections of the museums that are on the return itinerary from the chapel to the main exit.

Preventing violent action

Very little can be done in this regard. However, what can be done must be done, so as to prevent situations becoming dangerous and at least to make things as difficult as possible for trouble-makers. The things we do may or may not be effective, but to our knowledge they are the only measures available. Bags, parcels and the like, whether allowed inside the museums or required to be deposited in the cloakroom, must of course be checked. With the great number of visitors entering, often only a sample check is possible.⁶

Since hands searching a personal bag and moving things around are often resented, we felt that checking by a well-dressed attendant, with the appearance of a high-ranking superintendent, would be more easily accepted. Once a bag has been checked, a sticker is affixed for our regular attendants' attention. However, checked bags can be inspected again at any point inside the museums, and a notice to this effect is shown at the entrance.

Above all we trust our *volanti*, who, as we said before, try to spot and follow suspects. Through them and our communication system we try to gain time against any attempts to damage exhibits and harm people. To this effect, the museums can be sealed off, should the need arise, into separate compartments. For all this we need good, well-trained personnel.

Personnel

A museum attendant's lot is really an uninspiring one. All his days are the same. On the one hand, he is pinned to unchangeable surroundings, with works of art that gradually lose all inspirational value for him and become only a serious responsibility. On the other hand, he is pressed on all sides by visitors who, after a while, lose all interest for him as individuals and become inquisitive, arrogant, at times even violent, and always dangerous, enemies.

The visitor does not hold him in high consideration; he does not understand the attendant because of the language barrier; he sees in him the symbol of forbidden things or misplaced authority and resents his apparent lack of interest in the art that fills his working environment.

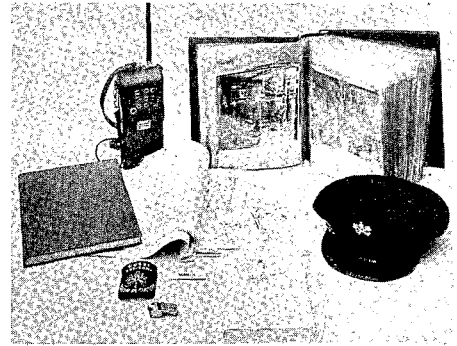
A sign of identity

The attendant surely needs a sign of identity. He must be proud of his job in order to retain his self-esteem, to feel the same importance his superiors attach to his job.⁷

A good uniform certainly helps the guard's morale, and gives him authority in the eyes of the visitor. It is our experience that a police-style uniform is more suited in museums with a great number of visitors than a discreet one, which could be more elegant and more suitable for small museums with a homely atmosphere.

A cap should go with the uniform so that an attendant can be seen in a crowd. Since some attendants object to it or find it painful to wear, they are allowed to hold it or keep it within reach so that it can be donned when necessary. Since a coatless uniform—like our summer one—could be uninspiring and a bit too informal, badges on both sleeves, epaulets on the shirt shoulders and a name tag have been provided (Fig. 11).

A career opportunity would certainly be a great incentive, but so far no more than 10 per cent of our attendants have become section supervisors and only 3 per cent are expected to reach higher posts. Even a supervisor, however, does not have an ideal position: great responsibilities but little difference in administrative benefits.



11

An attendant's equipment: cap, badge, whistle and walkie-talkie; one of the photograph albums showing rooms and show-cases for regular and occasional checking; a superintendent's logbook, handbook and confidential manual.

6. For example, potentially dangerous objects found in one morning in bags carried by visitors included: one Bowie knife, two sheath knives, one jack-knife, one kitchen-knife, one pair of scissors, one saw-bladed kitchen knife, five penknives and a loaded revolver.

7. This topic is dealt with in detail in William A. Bostick, *The Guarding of Cultural Property*, Paris, Unesco, 1978. (Technical Handbooks for Museums and Monuments, 1.)

Every manual recommends that guards or attendants should be called Security Officers. This would be most appropriate for well-paid professionals. We all know, however, that even when the proficiency and goodwill of the employee would warrant the title, the pay does not. And it is the salary that the attendant looks upon as the yardstick in evaluating his job.

Unfortunately, old misconceptions, budget considerations and, last but not least, the still great number of attendants required in a museum, regardless of all up-to-date electronic aids, keep the question of the ideal salary relegated to the museums' administration dream basket. It is a battle that will have to be fought. In the meantime, most guards consider their job as only temporary and aspire to be transferred to office duties.

At this point it may be fitting to say a few words about recruitment. A museum administrator's dream is to be able to screen a great number of applicants, submitting them to psychological and vocational tests, choosing only a few and training them before they start on the job. Under the circumstances, our on-the-job training is the best we can do in the meantime. One day, the high skill required to run and train a security corps and to be an attendant will be appreciated by all.

Training

The training of personnel is the most demanding duty of an administrator and the key to success. It should start with languages. A very difficult field, because there is nothing as damaging as an employee who, believing he knows a language, insists on entering into hopeless discussions with a visitor. Thus we limit our training to the essential words required in most common circumstances. Individual study of a language is encouraged.

Training for attendants includes: how to spot a suspect; how a suspect is supposed to behave; what kind of visitor could become dangerous for the works of art and the public; how to deal with unbalanced people; how to spot potentially explosive objects, and what to do with them; how to remain calm and dignified and, above all, know what to do and show knowledge so as to give confidence. Particularly when in the midst of a crowd, the attendant should know and remember that he is not alone; the whole system under the direction of the control room is with him. Training in first aid and fire-fighting is also essential (Fig. 12).

An attendant must necessarily have a good knowledge of the museums, of the layout of the exhibits and their most sensitive and exposed points, and, of course, of the regulations. He must be taught how to operate a walkie-talkie efficiently, and how to use the right pitch of voice, the right words and inflection, in addition to having a knowledge of the code words to be used for various situations.

To keep alert for many hours in the same environment is an art and has to be taught. Fighting boredom is essential and possible. There are special ways and means, which could be called the tricks of the trade, that have to be learnt.

Training should also include drills for emergencies. I have found it to be the most complex part of training, because it requires the co-operation of all personnel at every level.

Knowing the rules

The personnel must be able to spot immediately the slightest change in display arrangements, structures and fixtures, at any time during duty hours. To make this possible, every section of the museums has photographic records of whole walls and showcases. It is thus easier to spot quickly the disappearance of a small object, or damage to one, or a hasty rearrangement of them.



12
Fire drill.

Rules regarding inspection at opening and closing time had to be made simple, clear and as thorough as possible, so as to be easily memorized and become a sort of checklist. These rules have been listed in a 160-page handbook, now being printed.

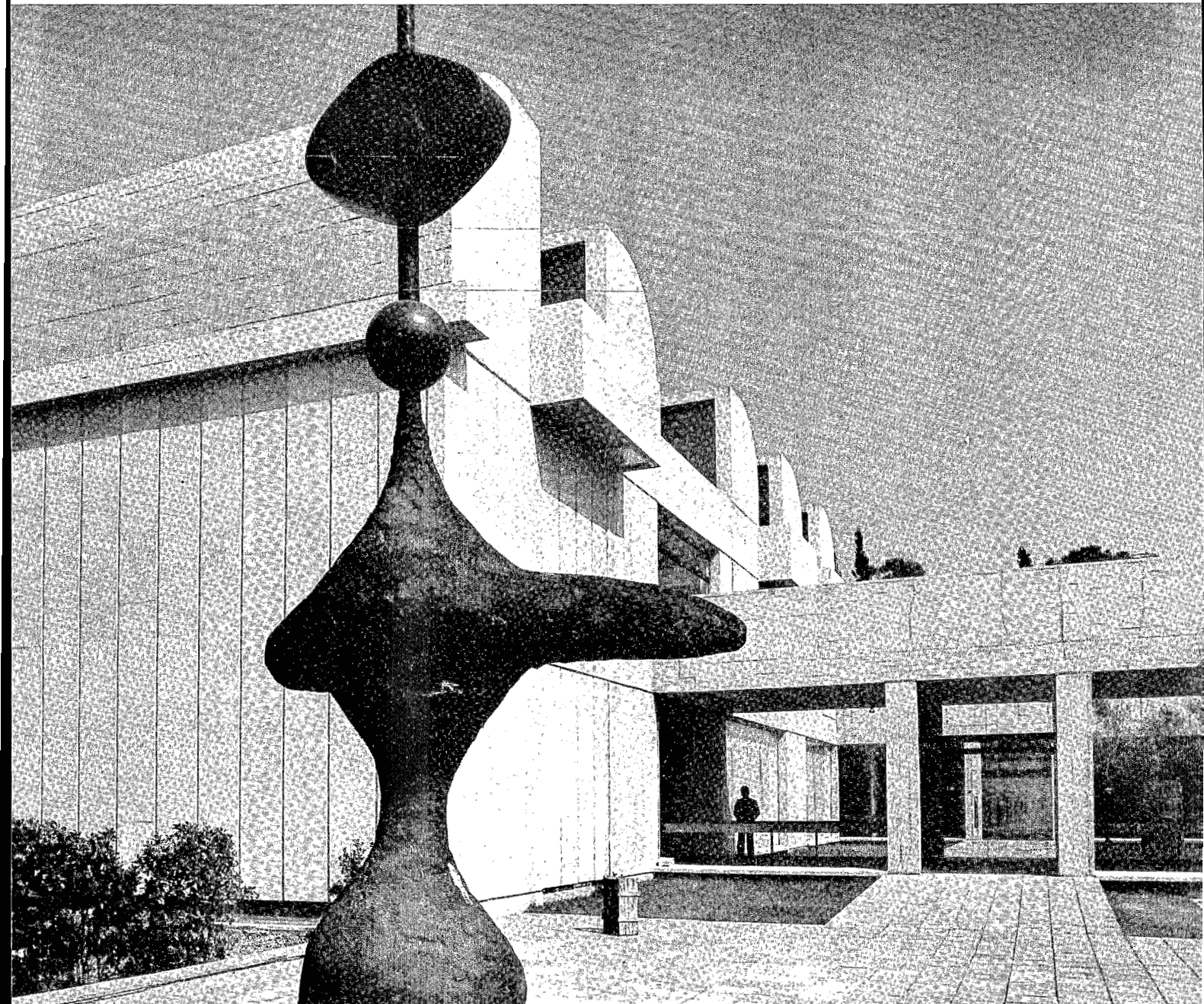
In addition, the handbook contains all sorts of advice and instructions for first aid and fire prevention, a list of all the pre-recorded messages and of all the notices to the public, all the extension phone numbers to be remembered, code words for the radio communications and samples of communications in emergencies.

An important aid to security is a restricted manual listing the duties of each guard post, which is intended for the use of supervisors who have to instruct attendants on their duties at every fortnightly change of duty.

The simplest rule, however, does not have to be even written: report everything immediately, in every detail: if a little object is reported in time to be out of its usual place, tragic, immeasurable loss or damage can be avoided with only a little effort.

The Joan Miró Foundation. Centre for the Study of Contemporary Art in Barcelona

José Luis Sert



The idea of creating such a centre in Barcelona goes back many years. After the proclamation of the Spanish Republic on 14 April 1931 and the establishment of a local autonomous government in Catalonia, the activities of groups of young people interested in the study and diffusion of knowledge in the arts increased. The local conditions were very favourable for such a development. Joan Prats, hatmaker and patron of the arts, an old friend of Joan Miró's, organized such a group in the 1930s, which was called *Amics del Art Nou* (Friends of the New Arts). This group was very active in organizing exhibitions of the works of some of the best-known artists of that time, as well as lectures and discussion evenings. The Civil War and the end of the local government in Catalonia terminated these efforts in the 1930s.

After the Second World War, contemporary art entered a new period. Many new groups interested in the arts and artists of our times were found in all countries in western Europe and in North America. Joan Miró, already internationally known since the mid-1920s, became a world figure. Picasso, through his friend Sabartés, donated an important collection of his early works to Barcelona, and the Picasso Museum was inaugurated in the 1960s.

Joan Prats encouraged Miró to make a similar donation to the city and to create a living centre for the study and enjoyment of contemporary art. This centre would house his collection. In 1965, Miró decided to donate one-third of his yearly production to the new foundation. Prats's idea and Miró's initiative received an enthusiastic response from all their friends in Barcelona interested in such activities. The Miró gift was formalized in the following years, and the foundation carrying his name was established. This foundation continued the work of the pre-war years, and many members of the old group, joined by younger people, gave much time to discussing the objectives and shape that such activities should take. Talks were initiated with the city authorities, who agreed to contribute the land for the new centre and to subsidize half of the building costs. The city submitted several tentative sites to Miró for his selection. Miró, together with the architect and his friends, selected land in the Montjuich Gardens, a public park developed in 1929 for the Barcelona International World Fair.

The Montjuich site is close to the heart of old Barcelona, Miró's birthplace. It is a site of popular gatherings, near the Museum of Catalan Art, a stadium, an open-air theatre, and an amusement park. It has many trees and beautiful views of Barcelona and the hills beyond. Miró was especially interested in having the building in this kind of setting, easily accessible to all kinds of people.

A precise programme for the new centre was then established. The building in its final form is an expression of and response to such a programme. It consists basically of a sequence of well-defined spaces for the display of works of art and facilities for the Centre of Contemporary Art. Exhibition spaces are clustered around courts that act as additional rooms for the display of sculpture or ceramics. The rooms are all linked by a continuous line of circulation. Courts act as roofless display cases viewed through the glass walls that provide the rooms with light. In this way, sculptures of considerable size can be shown in bright sunlight in landscaped areas (Fig. 13).

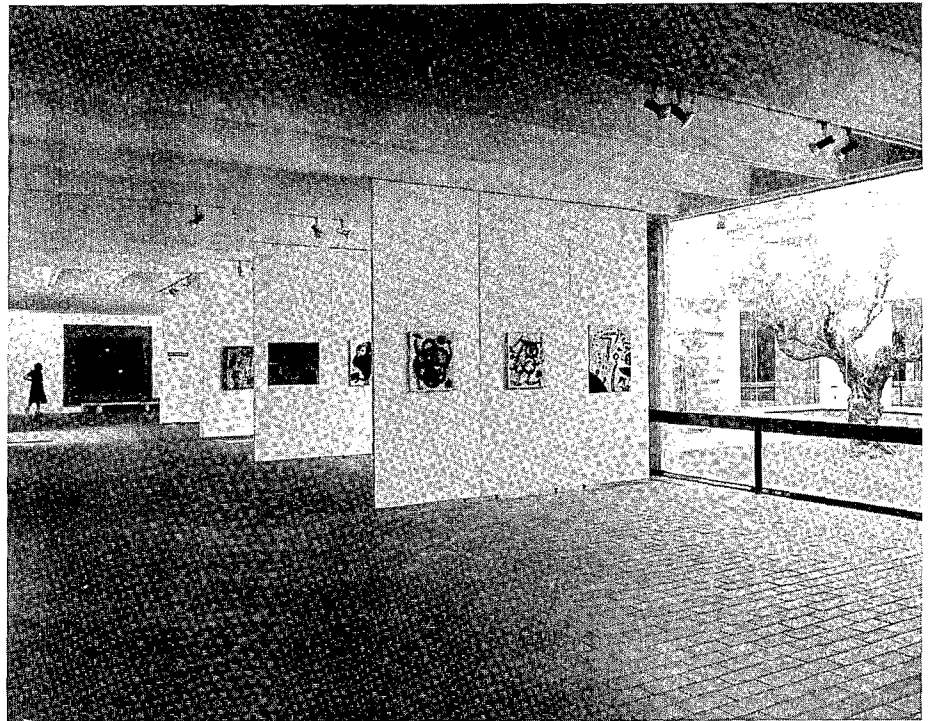
The plans emphasize long vistas through several rooms (Fig. 14), courts and walled gardens, similar to those found in old multi-patio houses in southern Spain. This approach was preferred to flexible, but shapeless, open loft-like spaces. The room sizes and proportions encourage concentration on a limited number of displays. The visitor does not see too many pictures at a time but rather discovers new ones as he moves from room to room. The rooms have different ceiling heights and different ceiling treatments, while making use of a limited number of repetitive elements in the formwork.

Ramps (Fig. 15) link the different levels, facilitating the flow of people through the different spaces.

Sunlight and lighting have been carefully studied and advantage has been taken of the bright light conditions in Barcelona. The building makes use of natural

13

FUNDACIÓ JOAN MIRÓ,
BARCELONA. A Joan Miró sculpture in one
of the large courtyards.



14
View encompassing several rooms opening on to the central courtyard.

light in two ways: through the glass areas opening on to courts and enclosed gardens, and through skylights by means of tower-like forms of half-barrel shaped vaults that give the building an original character (Fig. 16). All the walls are white, and they receive and indirectly reflect light from these light traps, which is filtered through diffuser glass. The proper diffusion of natural light was adopted as the best solution.

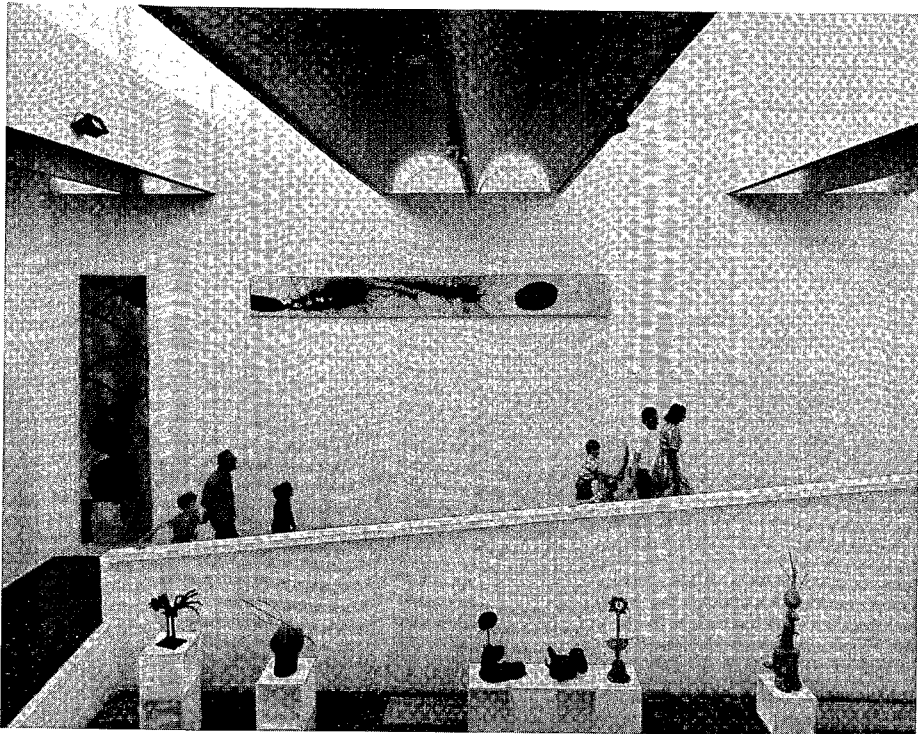
The large glass areas opening on to courtyards make use of white curtains to filter and diffuse this light. The differences in light intensity, which changes with the movements of the sun, add life to the rooms and the works displayed. The even, flat lighting systems, natural or artificial, more appropriate in store displays, have been avoided. Direct sunlight is allowed for sculpture display in certain rooms.

A similar approach to the quality of the display spaces and the light distribution was first tried in the Fondation Marguerite and Aimé Maeght at St Paul de Vence, France. The encouragement given by Aimé Maeght to experiment with these ideas was a great help in the design of the Miró Foundation. During the last ten years, many experiments have been carried out at St Paul; these included multiple uses of rooms, courts and gardens. Lighting systems, both natural and artificial, were tried out in climatic conditions very similar to those in Barcelona.

The structure is of reinforced white concrete showing the formwork and is slightly sanded outside and painted white inside (Fig. 17). Masonry is used for the enclosure walls with cavity brick partitions and air spaces for better insulation. These outside walls are faced with precast slabs, also in white cement exposing white stone aggregate. The inside walls have a natural mortar texture, unfinished and unplastered. All inside walls and ceilings are painted white.

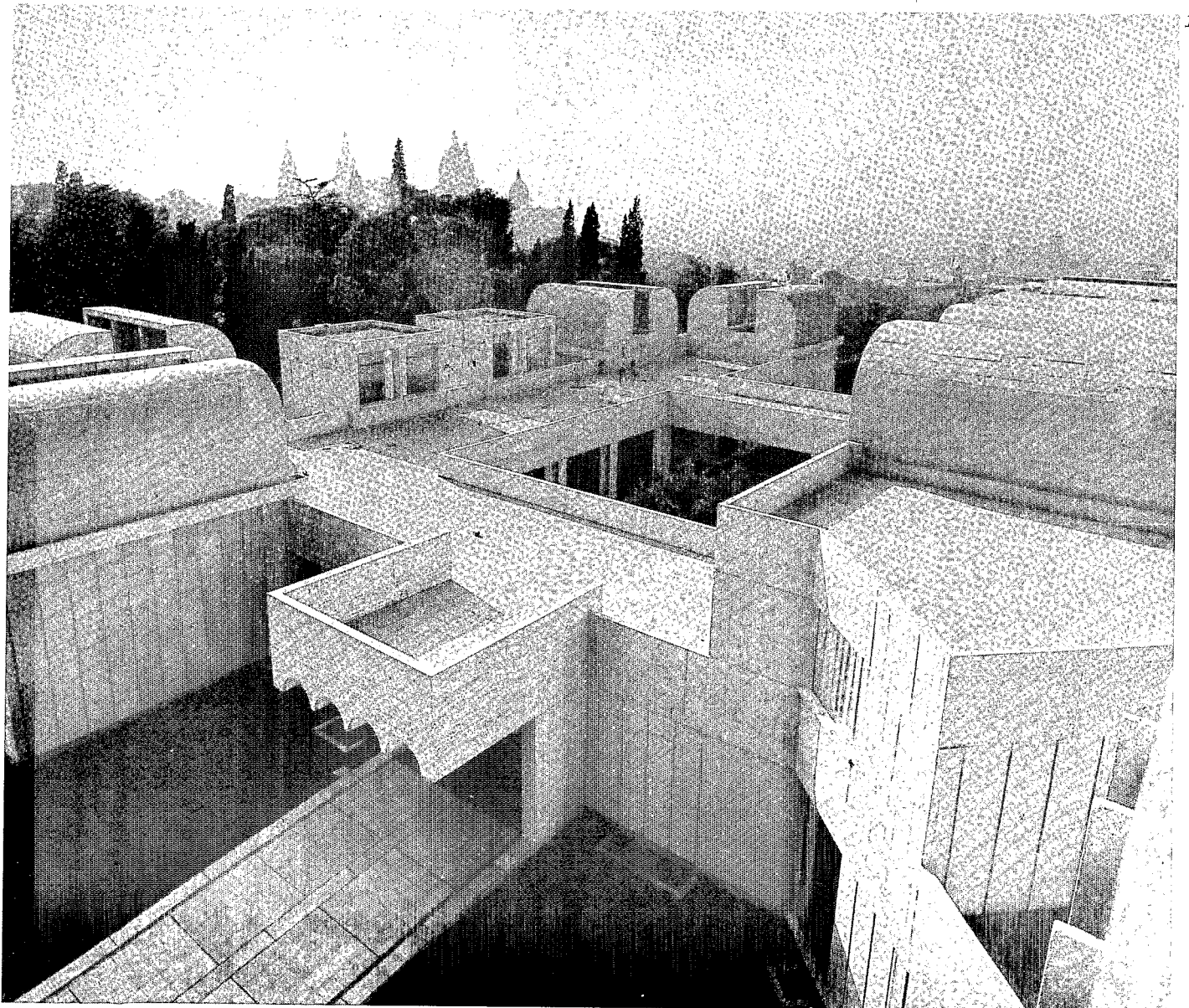
The ceilings are barrel vaulted, and the ribs carry light tracks set in grooves in the concrete (Figs. 14, 15). The extreme simplicity of the forms in the building contrasts with the more elaborate ones in the ceilings, which are of different heights. The half-barrel vaults previously mentioned are used in the rooms with higher ceilings. These vaults act as skylights or light traps that admit abundant light through large windows with diffuser glass, in this case wire glass for greater safety.

The floors are quarry tiles in natural earth colours. The main entrance ramp (Fig. 17) and the roof terraces are paved with precast tiles exposing a buff-coloured stone aggregate.



15
Sculpture room and ramp leading to the higher level.

16
Natural light is used through skylights let into high half-barrel vaults with panes of frosted glass.



16



Fixed glazing is directly attached to the concrete and masonry, and glass joints have been siliconed. All metal sash has been omitted. Frameless glazed doors opening on to courtyards, roofs, terraces and gardens serve as ventilators when required.

Lighting fixtures are concentrated in skylight areas, reproducing the indirect diffusion of light given during the daytime. The lower ceilings have movable light tracks inserted in the ribs of the barrel vaults. Light through the large skylights serves as night lighting visible all around the surrounding gardens.

The building is heated and air-conditioned by making use of air ducts. There is a humidity control system.

The nineteenth-century gardens on the site have been remodelled to fit their new requirements. The centre was given part of these gardens and allowed to treat them as extensions to the building. They are fenced with cypress hedges. The old benches, in masonry and glazed blue tiles, and also a fountain have been restored and incorporated in the plans. Other benches have been distributed in the most important rooms, courts, and roof terraces.

A basement with direct rear access through a service door occupies a space



equivalent to that of the lower floor. It is linked to all other floors by a large goods lift. This basement provides abundant space for picture and sculpture storage, book-stacks, films, furnishings, crating and storage facilities, and mechanical equipment. Prints have a special archive room on the second floor.

The building is composed of two distinct sections: the exhibit/displays areas and the Centre for the Study of Contemporary Art.

As the visitor enters through the main access ramp, turning left he has access to the exhibit of the Miró collections and whatever other temporary large exhibits there may be. Turning to his right, he enters the area dedicated to the Centre for the Study of Contemporary Art and its activities. This arrangement allows these two sections to function independently when necessary. The exhibit spaces, including gardens and courts, have already been described. The section given over to the activities of the centre proper is housed in an octagonal-shaped volume and stands out boldly as a separate entity. This is clearly visible from the entrance ramp. This duality of functions in the building is more evident because all the main elements of the centre are grouped together on this side and share the same volume.

17
Main façade.

The lower of the three floors has an auditorium with a seating capacity for 200 people. The second floor is taken up by the print archive, with a capacity of 50,000 prints. Miró gave particular importance to this facility. The top floor lodges the library, with a capacity of 35,000 volumes, and seating facilities for 40 people. Attached to the octagon are the lift shaft, crowned by the cooling tower and the main stair, offices for the director, his assistants, personnel, librarians and the conservation departments. There is a board meeting room on the top floor, close to the library, and a room for sales of books, prints, postcards, and slides, next to the bar and to the lift and stairway that give access to the lower floor.

The centre also has a special room and courtyard for sculpture exhibits and other events. These exhibit facilities are used by younger artists chosen by the board to give them an opportunity to show their work without having to negotiate with the privately-owned galleries in town.

The forms used in this building result from the concept that a place to house the arts and activities related to contemporary art development should be able to display works in conditions and surroundings most suitable for study and for the pleasure of visitors. Nothing should disturb the contemplation of the pictures, sculptures and other works exhibited. All elements that may distract the viewer, such as overdesigned furniture, signs, lighting fixtures, and display supports, have been avoided. The rooms appear bare, with only the changing natural light and the objects bringing life to the emptiness of the interiors, so that a dialogue can take place between the spaces and the works displayed in them.

Some of the forms chosen derive from the centuries-old Catalonian architecture. Proportions and their relationships are carefully controlled. The square, the golden mean rectangle, the octagon, with Le Corbusier's *modular*, harmonize with the different parts of the building, volumes and voids. The simplicity of forms required to display the works to advantage allowed for embellishment of the ceilings, a natural consequence of the devices used for the penetration of light. The building soars up, opens to the sky through the light traps, yet the sky is not seen. The forms of these light traps have been deliberately emphasized and slightly blown up. The quarter-circle vaults have been given a slightly convex form. Placed on the roof, they recall the light effect on columns, changing with the hours of the day. The skylights are also treated in a white 'cocoon' style to emphasize their fullness. Inside, the continuous barrel vaults in the ceilings change direction when the visitors move along the side rooms opening on to the courts. These barrel vaults are only visible outside the main entrance, in the projecting canopy that greets the visitor.

Some elements recall the architecture of the southern Mediterranean. Modern technology using concrete makes such forms possible. If they recall a remote past, it is intended that they should be a survival and not a revival. Widespread use of similar forms is an expression of long-rooted preferences and different building techniques. Such forms have been perpetuated for many centuries and should not be eradicated but given a new life, using new technologies responding to the particular conditions of our times. These needs appropriately incorporate them into a contemporary context.

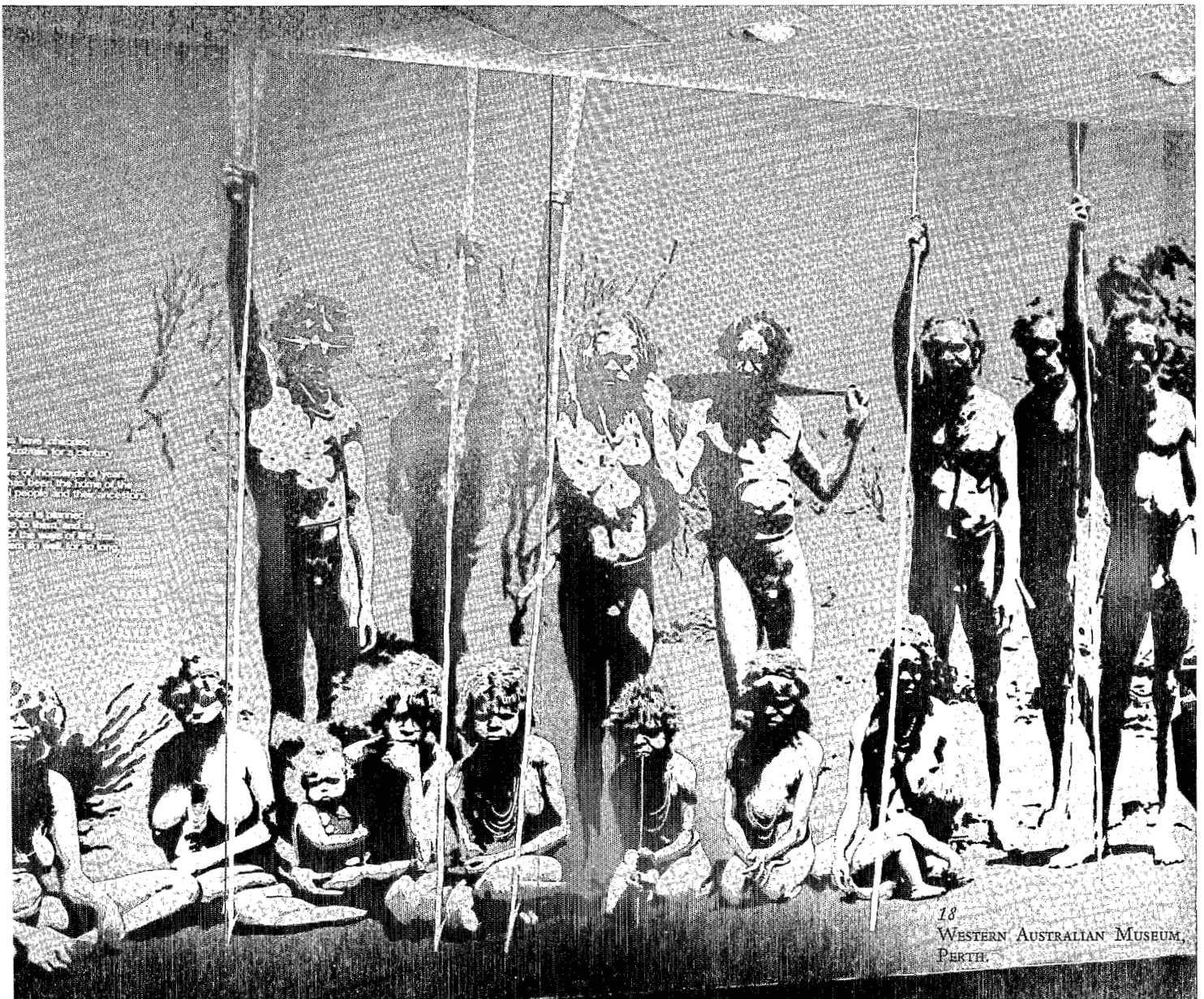
The revision of the 1920s' architectural process of making a clean sweep of the past has been exhaustively written about in recent years. The reaction of younger generations to that process is a natural one. Perhaps one should pick up some of the left-over pieces that have new significance and use today. In the building as a whole, in the strict geometry of the spaces and their relationship to the site, gardens, and climate, we have tried to avoid elements that would tend to date it to the uncertain and changing 1970s.

[Translated from Spanish]

The museum as a communicator:

*A semiotic analysis of
the Western Australian
Museum Aboriginal Gallery, Perth*

Robert Hodge and Wilfred D'Souza



18
WESTERN AUSTRALIAN MUSEUM,
PERTH.

Museums exist for a variety of purposes. Mohammed Aziz Lahbabi, in his article 'The Museum and the Protection of the Cultural Heritage of the Maghreb', says, 'It is the function of museums . . . to be the living memory of the people and for the people.'¹ Museums are not only protectors but also communicators of this living memory. A museum display is an exercise in one branch of the mass media, requiring a special kind of understanding of the processes of communication, namely the nature of mass communication systems. The essential thing to understand here is that mass communication is in some important ways an unnatural form of communication. We are all experts in natural communication, more expert than we are aware. We perform complex acts of communication with the confidence and unconsciousness born of long habit. So everyone is likely to adjust insufficiently to the major differences involved in a mass communication situation.

In a natural communication, typified by face-to-face conversation between two people of similar background, the main message of any one speaker is interpreted through this common background. It is backed up by innumerable supporting channels of communication (intonation patterns, gestures, expressions, etc.). It can be repeated, or parts of it emphasized, in the light of the hearer's response. The exposure-time of the message is controlled by the speaker, and is the same for speaker and hearer. Mass communication systems generally depart from all these conditions, and a museum display is no exception. This divergence from natural communication gives rise to characteristic kinds of communication failure or inappropriate communication in mass communications systems, which will be the main focus of attention in the present study.

Inappropriate communication here includes two basic kinds of breakdown: saying things you did not mean to say, as well as not quite getting across whatever it was you wanted to say. The first of these is very common and more insidious than the second, since for obvious reasons the communicator is less likely to be aware of its happening. Most of us realize that not all of our message is likely to reach target, so we are inclined to react by raising the volume—like the well-known tourist strategy of speaking loudly to uncomprehending foreigners. But what if a 10-per-cent increase in message *A* (the intended meaning) can only be achieved at the cost of 40-per-cent increase in message *B*, the meaning of which the speaker was not conscious?

In a traditional kind of museum, where exhibits are carefully organized into galleries and individual displays, there are certain features of the communication situation that make inappropriate communication more likely. One is the potential difference between communicator and communicatees. Visitors to a museum gallery may be different in age, class, sex, language, and cultural background from the communicator and from each other. All these differences can be regarded as differences of language, and their effect is to stratify the whole display, so that the communicator's single message is received as a large number of different messages, some of them contrary to the original intended message.

This tendency of the single message to fragment is likely to be intensified by the existence of multiple channels of communication used in a display, which are required to substitute for the multiple channels of communication available in everyday conversation. The task for the communicator is a massive piece of translation, from a language he does not realize he knows into an artificial language system that neither he nor anyone else is thoroughly familiar with. Between conception and communication, then, there is likely to be many a slip. Communicators and public may seem at times as though they had seen entirely different exhibitions. Some diversity of response, of course, is natural and desirable, but it is well for the planner of a display to have some notion of the likely responses, and some responsibility for what his display is doing.

1. *Museum*, Vol. XXVIII, No. 3, 1976, p. 146.

Ideology and aims

As an example of a museum as communicator, we have taken one gallery, the Aboriginal Gallery of the Western Australian Museum, Perth, which is administered by the local Western Australian state government. We are grateful for the generous assistance of the museum in compiling this study. Serving a population of 1,197,000, the museum is situated in Perth, the capital city, which has a population of 820,100. The Western Australian population is predominantly of European stock, with the Aborigines, the original inhabitants, now a dwindling minority.

In the past there has been open hostility between Aborigines and the newcomers, and there is continuing conflict over the role of Aboriginal culture in the Eurocentric dominant culture. An exhibition of this kind, therefore, necessarily has an ideological problem that interacts with the aims and effect of any possible display. The result is that the planners of the display show a characteristic kind of uncertainty about aims and unawareness of effects. This is only a particular instance of the general problem faced by museums that attempt to do justice to a minority culture or the culture of an oppressed or expropriated group within the society. However, any analysis of communication success has to know the answer to the question: Successful at communicating what? And it often happens that such a question asked very precisely brings out uncertainties or even contradictions in the general aims that affect the overall structure of a display.

Headings and introductory statements are clearly one place to start in determining the overall intention of a display, since this is where the member of the public will start. The title of this exhibition is *Patterns of Life in a Vast Land*. This suggests a concern with the relation between man and his environment. 'Patterns' suggests a harmonious, aesthetically pleasing object of study, the plural indicating a diversity that adds to the aesthetic pleasure. The explanatory sub-heading narrows down the scope of this title. The 'Vast Land' becomes 'Western Australia', which is only one part of the 'Vast Land' covered. 'Patterns of Life' becomes 'The Story of The Aboriginal People'. Where 'patterns' suggests an arrangement of elements perceived at one time, 'story' suggests a narrative taking place through time, a kind of history. The explanatory description of the exhibition (Fig. 18) runs as follows :

Europeans have inhabited Western Australia for a century and a half. But for tens of thousands of years this land has been the home of the aboriginal people and their ancestors. This exhibition is planned as a tribute to them, and as a record of the ways of life that served them so well, for so long.

The first two sentences discreetly mention the two races that have competed for possession of this country, and hint at claims of the Aborigines. 'Tens of thousands' is longer than a century and a half 'and home' is stronger than 'inhabited'. The tense 'has been the home' implies that it still is their 'home', which makes the Europeans who also 'inhabit' it seem like squatters. The impression that the exhibition has sympathy for the Aboriginal cause comes over clearly in the word 'tribute', which connotes a celebration or commemoration of the Aborigines by those conscious of a debt.

However, the display is both 'tribute' and 'record'. This dual function contains a potential contradiction. A record is a factual historical document, whereas a tribute is concerned to create an attitude that is favourable. What if the historical record is unflattering? What if facts are not enough to create the desired attitude? We have in fact four different though overlapping descriptions of the form of the exhibition: patterns, story, tribute, record. Two of these are concerned with pleasing, harmonious effects, two with factual, historical materials. The potential conflict here corresponds to the problematic dual function of the museum as educator: to correct prejudices, which are firmly rooted attitudes, and to overcome ignorance.

This preliminary analysis brings out the problems facing this display. The major messages we expect will concern key relationships, between man and his environment, European and Aboriginal, present and past, each of these relationships being blurred: and the thrust of the exhibition will be divided between scientific and educative, concerned with history and facts or with attitudes and values, as it presents Aboriginal life for a European and Eurocentred public.

Signs of importance

One very general but very important message the display is designed to communicate is that an understanding of Aboriginal life is important. There are a number of resources, or sign-systems, that can be drawn on to indicate this meaning, for a display as a whole and for components of a display.

The location of notices and the size of the lettering on them (Fig. 19) comprise the two dimensions of one system of signs. The rule with size is, of course, that the larger the notice the more important the exhibit, 'larger' being relative to the norms for such notices. Other general signals of status include forms of conspicuous expenditure, lavish use of space being one important indicator of this. The Aboriginal gallery has a whole floor assigned to it, a sign of high status. Within the gallery there is free floor space, and room to move about the individual exhibits. This principle also indicates the relative importance of particular exhibits. In general, the more space and the fewer the items in a given space, the more important the item or exhibit. In this gallery, top status is accorded to one component entitled 'The Aboriginal Way of Life', which is what the visitor sees first on entering the gallery (a sign of status), and which has the largest area in front of it, in absolute terms (a visitor can stand up to 40 feet back from it) and because the opposite side has no competing exhibits for that large space.

Two other indicators of expense, and therefore status, in a museum display are the presumed cost of an exhibit and the deployment of technology. The difficulty of obtaining an exhibit is not usually made evident, though it could be. All that the members of the public have to go on is the distinction between artefacts, simulations and photographs. Of these, photographs are likely to be the low-prestige form, especially recent photographs, however much enlarged. Simulations if well done are high-prestige forms (Fig. 20). Artefacts will tend to be intermediate in prestige, on their own. Technology will tend to add prestige. So a series of slides on a screen activated by a button will add prestige to the contents of the slides. Even simple technology, like lighting effects or machines that make things move, add to the status of the item, and cumulatively to the status of the gallery itself.

Indicators of status usually have the effect of drawing the attention of visitors to the item or exhibit concerned, and making it more likely to be remembered. However, there are two potential dangers with signs of status. One is that they make a kind of claim on the members of the public that has to be justified. That is, the public must feel that the items which the museum is signalling as important are important. Otherwise, they will at a subconscious level feel alienated from the museum's values, and the museum will have failed badly in its aim of changing the attitudes of the general public. The gallery section 'The Aboriginal Way of Life' illustrates the difficulties here. It has signals of importance due to position and space, as noted above, but it contains no rare objects, no recondite knowledge, nothing that seems special or difficult to obtain or worthy of close attention. This is because it is precisely the ordinariness and typicality of it that are important. However, the planner of an exhibition has to take care, with a potentially self-contradictory meaning like this, that he does not produce a display whose message cancels itself out: an important kind of unimportance.

A second danger inherent in the use of status signals is that they represent an intrusion by their user. They claim importance, but they are generally indetermi-

nate as to the further questions: important to whom, and for what? Important to the museum, of course, but to the museum as representing the public, responding to demand, or the museum as teacher, educating the public, imposing more or less subtly its values on the public? Hugues de Varine-Bohan, in his article 'The Modern Museum: Requirements and Problems of a New Approach', says:

We would further plead that the museum should be selective and 'client-centred'. All too often present-day museums are regarded by their curators as providing 'lessons' for a homogeneous but perhaps non-existent public, a public which exists mainly in the curator's mind: a group of well-bred, culture-hungry, beauty-loving, logically minded people with plenty of time to spare, inexhaustible physical stamina and, above all, at least an arts degree.²

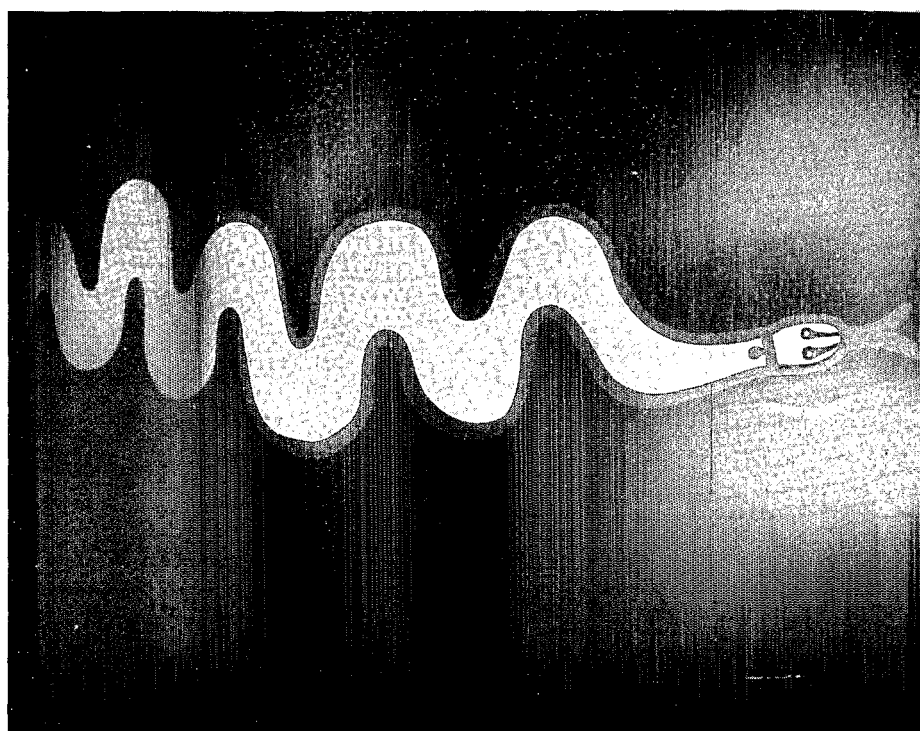
With such a gallery, which is designed as a 'tribute' to people who are themselves citizens of Western Australia, it is proper to ask the questions: important to whom, and for what? Against this pervasive evaluation by others of their culture, the value-judgements of the indigenous culture, which are so important a part of that culture, need to be prominent. The absence of Aboriginal signs of importance in this exhibition is a general though unconscious sign of the unimportance of Aboriginal values for the exhibitors. This kind of unintentional slight is probably widespread. Mohammed Aziz Lahbabi observes something similar in his article when he says:

Out of an alleged respect for tradition, the tendency was to see the indigenous culture in terms of fixed tastes and structures. Forms devoid of living substance. The structures of a vanished past cannot, however, help to overcome underdevelopment. Colonial domination took objectivity away from science and dispossessed the people of its authenticity.³

Some indications of status, such as the amount of space assigned to an item, are neutral between Aboriginal and European values, but others are not. In particular the use of technology and the products of the white man's technology carries an ambivalent evaluation. It magnifies by association, but disparages by comparison. The signal transmitted can be 'We, the museum staff, are very skilful' rather than 'the Aboriginals are very interesting'. One example would be the display of spears, carefully arranged and labelled, superimposed on a picture of Aborigines holding spears (Fig. 21). The photograph competes with the artefacts as though they were not interesting enough. The spears themselves form a set of

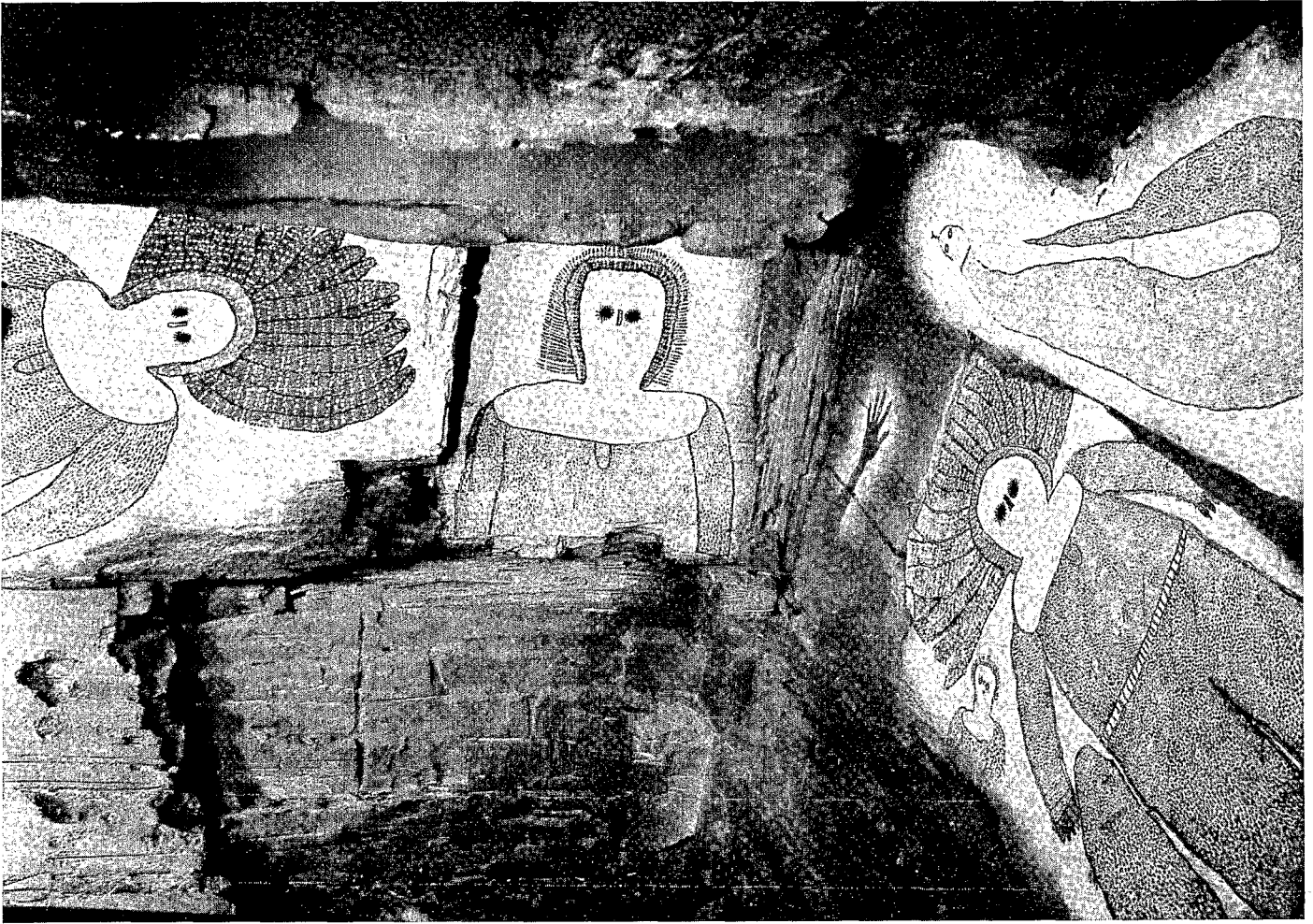
2. *Museum*, op. cit., p. 139

3. *Ibid.*, p. 148-9.



19

Sign indicating the entrance to the exhibition.



20
Rock paintings by Wattie Karawarra in a reconstructed grotto.

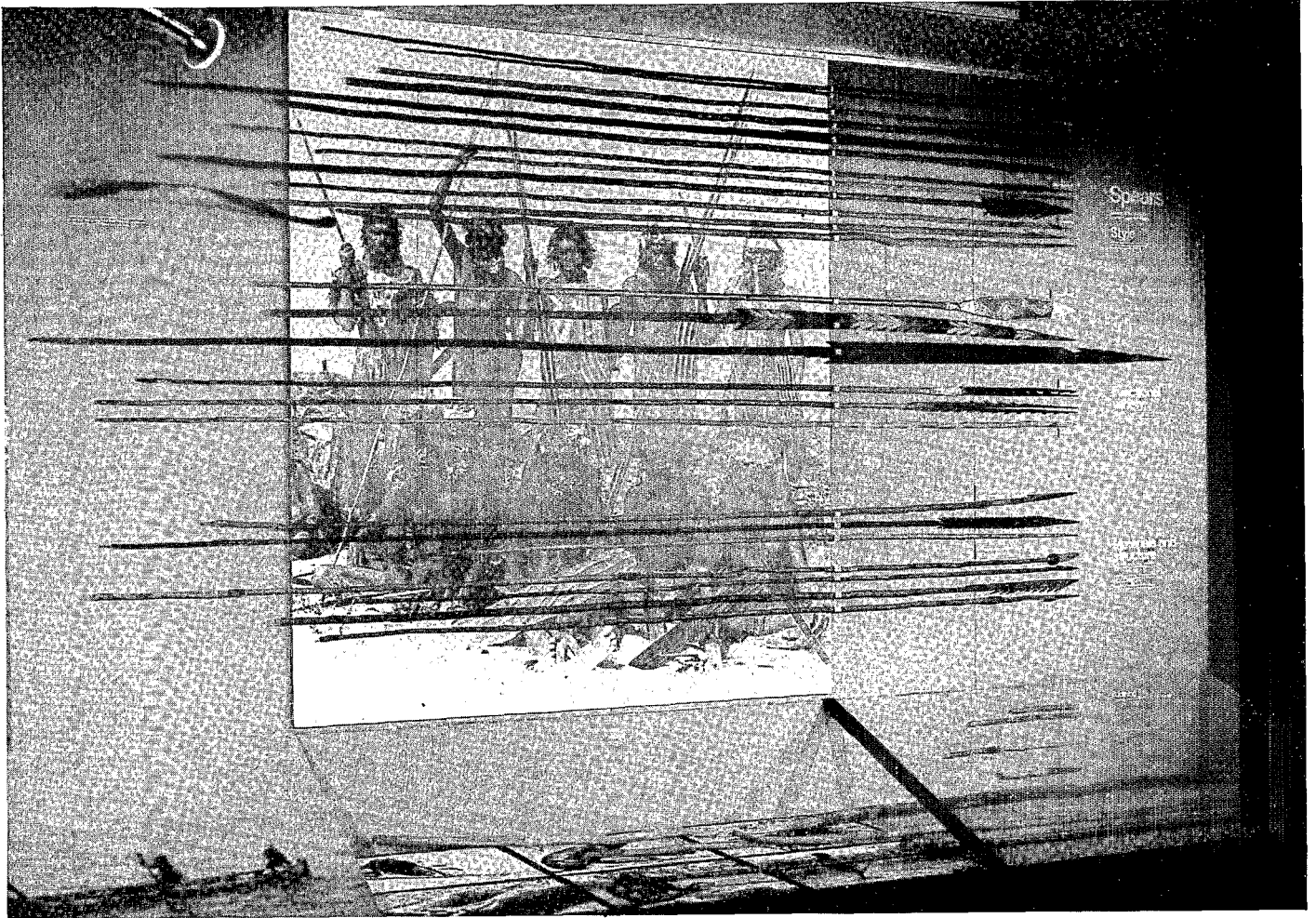
parallel lines, losing their individuality and function in this rigid non-Aboriginal patterning. Similarly, the pattern of boomerangs is created by museum staff, which distracts attention from the patterns created by Aborigines on the boomerangs themselves (Fig. 22).

Codes and their capacity

The messages transmitted by a museum display come via many channels or media; each of which has a different communication potential. Kinds of message are often tied to a particular medium. For instance, messages about large numbers, or events over different times or places, cannot easily be communicated through pictures; and conversely messages about qualities cannot easily be communicated by numbers.

The Aboriginal display uses the following main media: (a) objects and artefacts; (b) simulated environments; (c) photographs and slides; (d) diagrams; (e) labels and (f) writing. These media differ along a continuum with respect to their closeness to reality or their closeness to language. Artefacts are selected examples of reality, while language refers to reality but at some remove. We can generalize about this list of media, and say that the greater the predominance of earlier media the stronger will be the sense of reality being directly experienced. The distinctive mode of communication for museums is through objects. Hugues de Varine-Bohan in his article expands on this emphasis and its value as follows:

The obtrusive image, the all powerful influence of words, bureaucracy, etc., must be counterbalanced. It is objects, real things, which will provide this antidote: the growing success, in every country, of nature reserves, the well-known popularity of zoos and botanical gardens and even the universal taste for tourism and for escaping to countries which are still 'authentic' show that such things meet a genuine need. What we said earlier also applies here: the man in the street



is inundated with second-hand information which has been processed, arranged and commercialized: he wants not to be given but to be left free to choose for himself the first-hand information that he wants for its knowledge content.⁴

Communication through objects and artefacts is generally less well understood than more developed forms. An artefact communicates by being what it is. It therefore communicates or signifies that perfectly. Potentially it is accessible to every sense. It can be seen, tapped, touched, handled, smelt and even tasted. This multisensual experience could communicate a complex and open set of messages with an incomparable vividness and immediacy. For instance, someone handling a woomera perceives directly what could be put in a large number of sentences: 'A woomera is made of wood, a hard wood with a distinctive resonance, hollowed out in the middle, between 1 and 2 feet long, the point of balance near the middle, etc.' The strength of artefactual communication is this immediacy and openness (Fig. 23). The weakness is that these meanings are only potential, and are liable to disappear unless they are coded and retained in language. If a museum displayed only artefacts, without explanatory labels, neither museum nor public would know what had been communicated, which of course is bad communication. However, the strength of communication by objects and artefacts should not be underestimated. Precisely because it is pre-linguistic it is a kind of universal language, which can mediate between Aborigines and European and communicate to all ages and classes of the public.

In a traditional kind of museum display, items tend to be kept behind glass cases. In Lahbabi's words:

Museums seem to set a barrier between life and culture, appearing as places of contemplative silence. In North African museums, as things stand at present, a culture which enjoys official approval and prestige (because it is hermetic and above the general level) tends to co-exist with a culture which belongs more or less to the people. The co-existence is peaceful and neutral and there is neither complementarity nor interaction between the cultures.⁵

21

Display of javelins: a white man's arrangement. The photography competes with with the object.

4. *Museum*, op. cit., p. 134

5. *Ibid.*, p. 146.

The glass barrier severely restricts the communication potential of objects and artefacts. They communicate only through one sense, the visual, that sense itself operating under certain restrictions, limited to a specific distance, angle of vision, etc. The eye with its high powers of resolution is the master sense, and visual cues can convey information to the other senses. However, this works abstractly, by inference, drawing on previous experience, and is inferior to direct experience by other senses. With rare or fragile items it would obviously be impracticable to allow items out of the display cases, but with some items that are common and robust, it ought to be possible to allow visitors to handle them, with suitable safeguards against theft or damage. A child who has picked up and handled a boomerang, for instance, tested its point of balance and felt its edge, will know more about boomerangs than if he had gazed at one pinned down behind a glass plate. An exhibition intended to be accessible to the blind has to adapt in this way,⁶ and museums for the sighted should strive to incorporate such strategies. Simulated environments or reproduced objects have similar advantages over photographs. They are three-dimensional, which allows spatial information to be more fully coded. They have an advantage over reality in that scale can be controlled. This means, however, that scale is not communicated unequivocally in this medium. A *wilija* shelter's size could not be deduced from the model shown (Fig. 24).

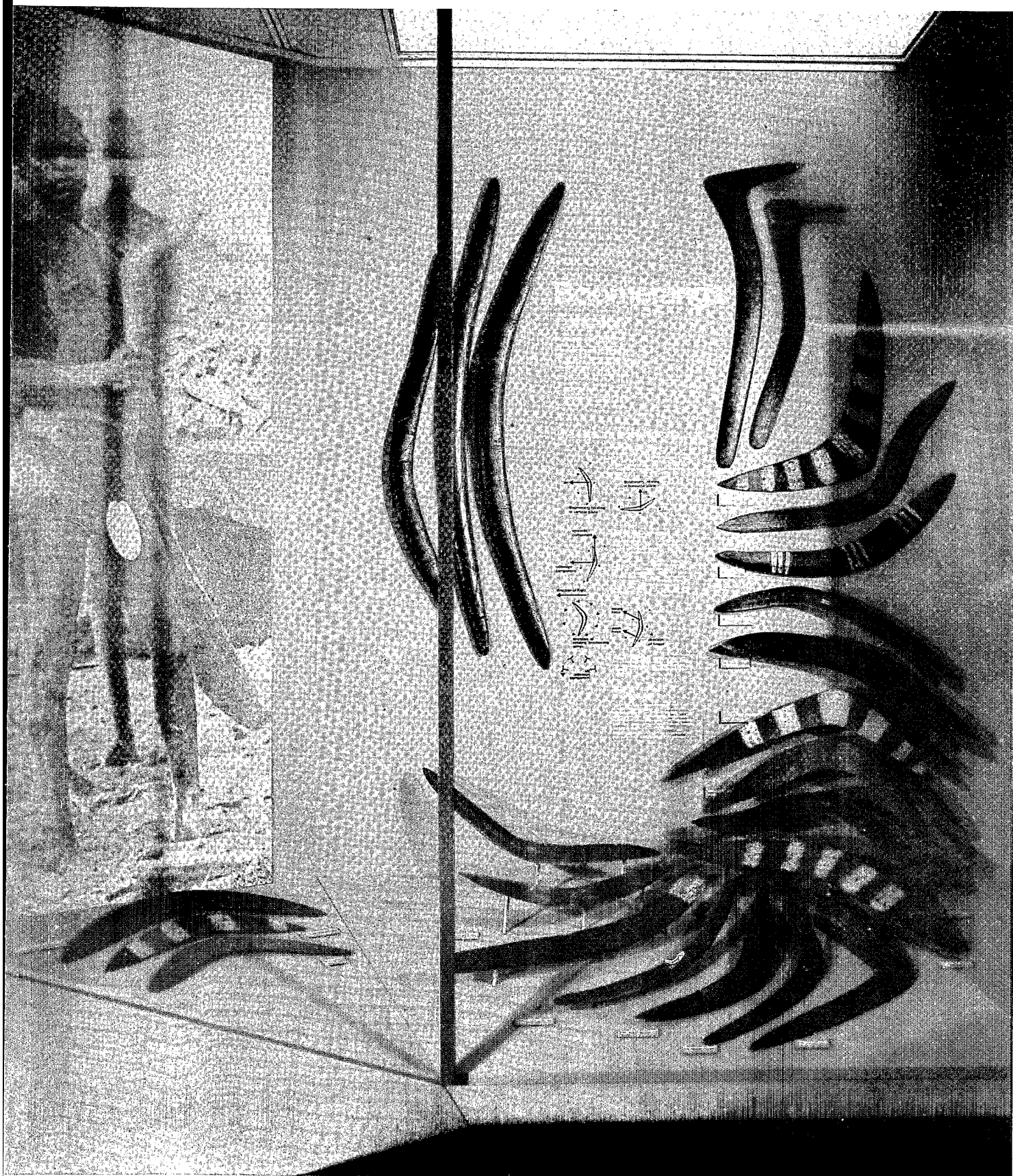
Photographs have similar disadvantages, as a result of their greater flexibility. Their great strength as a communicating medium is that they can represent people and landscapes with something of the immediacy of artefactual communication. In a display concerned with the relations of man and his environment this is a crucial kind of message. Like an artefact, though, a photograph on its own cannot communicate abstract meanings. If we see a photo of five Aborigines, for instance, we do not know what is meant to be interesting or important about them, nor whether all Aborigines have the qualities claimed, or whether it is only particular individuals at a particular time.

Diagrams differ from photographs in that they contain only what is coded in them. Their strength is that they can contain in a visual form elements and relationships that are not simultaneous in space and time within a single perceptual frame. They can, therefore, communicate abstract meanings that are language-like, with something of the directness and immediacy of artefactual communication.

There are two kinds of use of language attached to museum displays: labels and full sentences. Full sentences have only the limitations of human language; which with all its imperfections is the best system of communication known to man. Labels, however, are very restricted in the kinds of meaning that they can communicate. Essentially they can communicate only two kinds of message: this is an *X*, or these are kinds of/parts of a *Y*. Labels are frequent in museum displays, including the one under review. It should be pointed out that labels give only a vocabulary, not a message. Labels on their own, therefore, cannot communicate any message about man or his relation to the environment, the major theme of the display.

Language itself can be categorized in a number of ways. Relevant here are two distinctions: between written and spoken language and between indigenous languages and the dominant language (in this case English). Spoken language (not written language read aloud, but language produced by and for oral communication) tends to have a different structure, and the majority of people even in a literate culture find it easier to process fully oral language. The language of the indigenous culture is another matter. One problem with using any single Aborigine language for such an exhibition is that there are so many distinct forms. However, if the aim of the exhibition is to convey an understanding of Aboriginal ways of life and attitudes to life, and their ways of thinking, some thought must be given to a way of conveying the qualities of their language: the sound of it, and more important, some of its syntactic and semantic resources, and the ways language functions in such a society, for example, how do Aborigines of the Bardi

6. See Jean Favière, Halina Duczmal-Pacowska and S. Delevoy-Otlet, 'The Museum and the Blind', *Museum*, Vol. XXVIII, No. 3, 1976, p. 176-80.



tribe say 'I am/he is stalking a kangaroo'? Such material could be presented attractively and it would help to correct the Eurocentric impression given by the display at present.

Lahbabi's description of the North African situation applies to all such cultures:

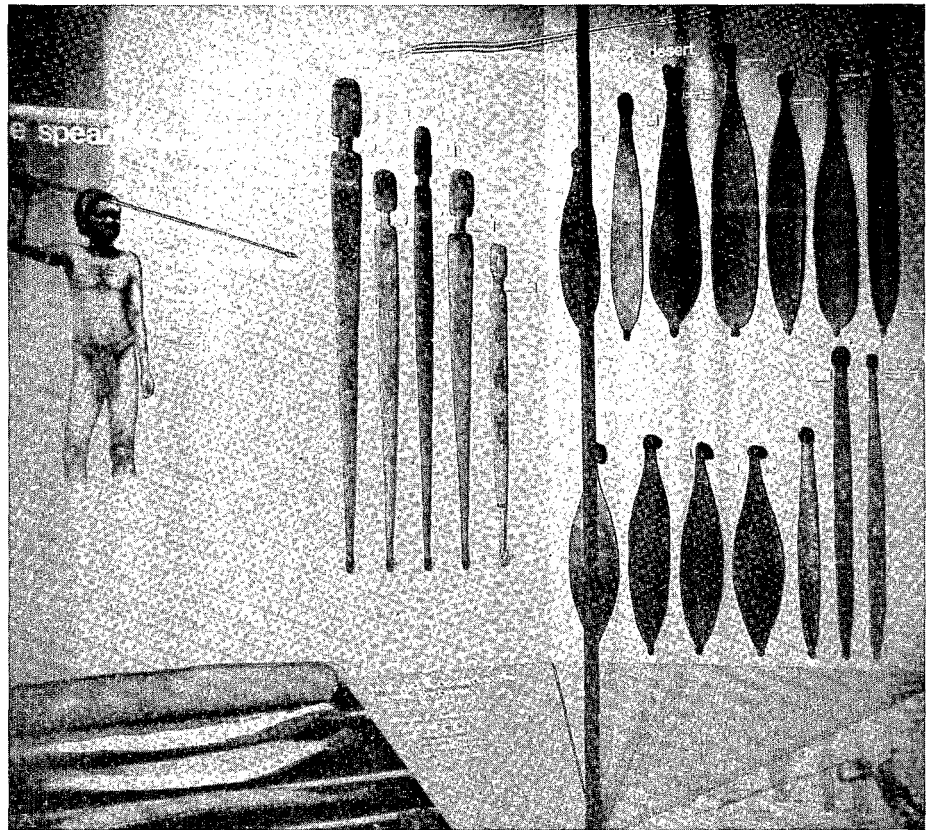
A major part of the North African cultural heritage has come down to us by way of oral tradition. Music, song and poetry, for instance, are to a great extent anonymous and are passed in oral

22

The way the boomerangs are displayed can divert attention from the drawings with which the Aborigines have decorated them.

23

Woomeras, or spearthrowers, safely hidden behind glass.



form during family or seasonal celebrations. It would be desirable for university research to be set up which, with the help of the regional museums, would be responsible for all oral arts and oral literature. A healthy and militant North African culture cannot be envisaged unless the ground work is laid in this way.⁷

Given this aspect of museum communication, there are obvious advantages in the concept of the ecomuseum over more traditionally organized forms of display, if the concern is for total communication to a universal public.

Combining codes and messages

Language is the only medium that can communicate self-sufficient messages about the themes of the display; the patterns of life of the Aborigine people, their history and the relation between their way of life and the environment. The other media only communicate such messages in combination with language and each other. However, a museum must use more than language and photographs (Fig. 26). Otherwise it will be no more than a walk-through book.

Objects and artefacts typically form the basis of a museum display, but on their own they contain none of the desired meanings. The aim of the display is to give the public access to a way of life through a collection of objects. The meanings that must be communicated concern relationships, involving one or more of the following: (a) origins, (b) manufacture, (c) use and (d) place in a system of values or meanings. Photographs plus artefacts and objects or texts can be used very effectively for (b) and (c). For instance, one photograph shows two women making a hair girdle (Fig. 25), and wearing one, above a case that contains examples of them.

Photographs are used extensively in the display. One reason no doubt is that they are so cheap. Another justification is that they can represent many things that cannot be presented directly, and in particular they can show relationships between people and things, people and people, and people and the landscape. However, to communicate, photographs must be carefully chosen, and they must be supplemented by an appropriate text (Figs. 26, 27).

7. *Museum*, op. cit., p. 146.



In general, photographs are an effective way of showing people making and using things. The relations between people and people present more problems for photographic communication. People in photographs can relate either to each other or to the viewer. In the latter case, the result is the posed photograph (Fig. 28, top photo), which primarily communicates messages about the relation between photographer and photographee. This can be an interesting and significant message. Such a photo also communicates messages about the social relations of the people concerned, but this is likely to be only the official version of these relationships. Unposed photographs (Fig. 28, lower photo) can represent far more complex relationships.

The limitations of a photograph are that it shows only the disposition of bodies in space, whereas social relations are coded in many other ways, and even the language of spatial relations (who stands in front of whom, what distance expresses regret, or intimacy, etc.) is a code, relying on conventions that need to be translated for a viewer from a different culture. This difficult kind of meaning requires focusing sharply enough to pick up expressions and gestures, plus explanations of what these mean, as a key to interpretation.

Similar observations apply to the attempts to convey the relation between man and his environment. A photograph of a bare terrain is not enough, since this terrain constitutes both a set of problems and a resource for the Aboriginal people, having both positive and negative aspects. Careful selection and focusing plus verbal explanation are necessary to help the visitor to see the meaning of this landscape for Aborigines, and its relation to his life.

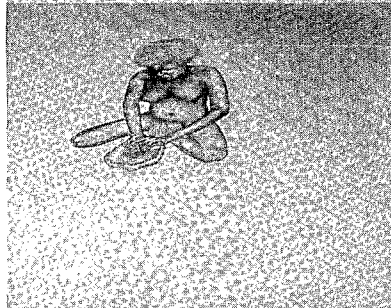
Labels are always used in conjunction with something else, usually artefacts. Labels characteristically assign names and organize perception. These two functions can work together, or in opposition. The main heading of a showcase or sequence can help the viewer to grasp the separate items as part of a larger whole. However, a label attached to an item gives two things to attend to, and loads the memory, adding the name of the object as something to remember. This diverts attention from the rest of the display. The adverse effects are intensified if the label is a long way from the item, especially if it is attached via a number, through a numerical key. The only justification for this latter method occurs when

24

A *wiltja*, a shelter made out of branches. Real branches and earth have been used. What is the difference between the original and the imitation?

Skills of the women

Women provided the larger share of the group's daily needs: food, clothing, shelter, tools, and medicine. They were also responsible for the group's social and cultural life. They were the keepers of the group's traditions and customs. They were the ones who taught the children and the young people of the group. They were the ones who made the group's decisions and who were responsible for the group's well-being.



25
Making and wearing hair girdles. Language, image and object are together in our framework of perception.

the items make up a strong visual whole whose unity would be disturbed by prominence being given to labels. Otherwise, from a communication point of view it is unsatisfactory. In general, labels make exhibits easier to talk about, if they are learnt, but interfere with the strength and immediacy of response. But the messages conveyed by labels are only taxonomic; they cannot convey messages about the theme of the display, which is concerned with relationships, functions and living.

Label size also affects the possibilities for coherence of a display. In general, if label and item are to be perceived as a single perceptual whole, then both must be decipherable from the same point in space. If the writing on the label is so small that a viewer cannot see the relevant item or exhibit even in peripheral vision, then the possibilities of meaning connecting with perception are reduced. Where letter size is so different that two adjacent messages cannot be read at the same time, the effect is again to fragment the whole. To illustrate with the opening words of the exhibition: the huge writing of *Patterns of Life in a Vast Land* can be read at the same time as the smaller but still large writing of *The Story of the Aboriginal People of Western Australia* (Figs. 18), and the large theme-picture of a group of Aborigines can also be seen within the same frame. However, the text beginning 'Europeans have inhabited . . .' is in smaller lettering



26

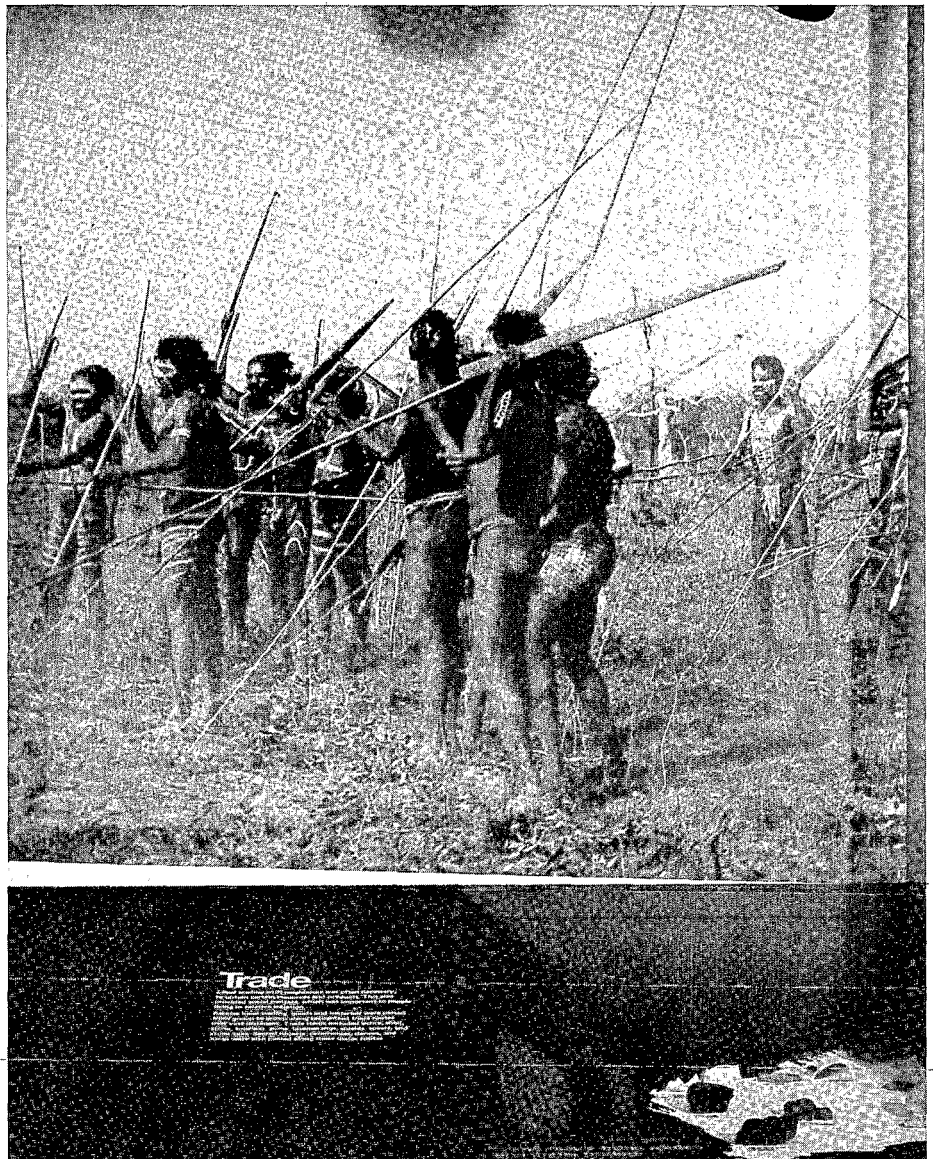
Map, photograph and artefacts used to convey a complex message concerning man and his environment.

that requires the viewer to stand so close to it that he cannot read the larger writing or take in the picture; so this is related only in an abstract way to these other components. The letter-size is influenced by the amount of text felt to be necessary, which is, of course, a decision to be made by the communicator, but the cost of a decision in favour of more text leads to fragmentation of the perceptual unity of a display.

Stratification of the museum public

Visitors to the museum clearly have differences of age, class, educational background, sex and nationality, as well as differences of interest and intelligence. This creates problems for a mass communicator, since these differences all affect communication. They have an effect equivalent to differences in language. This stratificational effect is liable to interact with the differences in the media used in a display. In particular there is likely to be a polarization between communication through objects and communication through extended written prose. Communication that is strongly concrete and particular is known to be correlated with the young, and with the working class. It is reasonable to assume that communication through objects will be much more accessible to Aborigines than written elaborated language. So messages, and kinds of message, communicated through objects, or what could be called more generally the restricted codes, will be the main content of the display for at least three important groups of museum users. Such users will hardly be aware of the messages transmitted by what could be called the more elaborated codes or channels. Since, as we have seen, the majority of the messages concerned with the theme of the display are communicated

27
Group of shopkeepers. What signs indicate that they are engaged in trade and not war?



mainly through elaborated-code media, this raises the worrying possibility that these messages are not reaching large numbers who would most need to receive them. A substantial proportion of visitors to this display are students, some very young, who would come into the category of restricted-code media users.

This suggests two areas for attention. One is to strengthen artefactual communication so that it can communicate the more abstract meanings and relationships desired. The other is to be more careful about the clarity and level of the explanatory material. Written language too can be a relatively more restricted form of elaborated-code. The following text illustrates the difficulties of some of the language used:

Life's Sacred Meaning

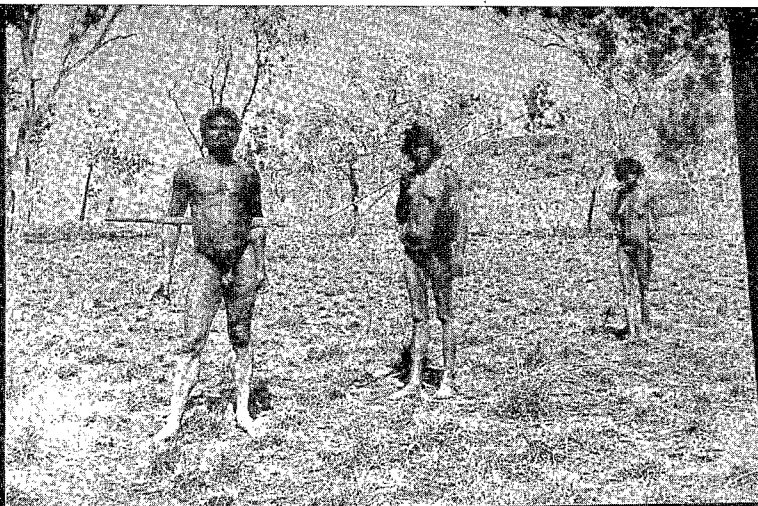
In a time called the Dreaming, creative beings shaped the plants, animals, and landscape; and established rules for Aboriginals to follow. The Dreaming is eternal, explaining the Aboriginal past, directing their present, and shaping their future.

Elaborated-code words here include 'creative beings', 'established', 'eternal' and 'directing', but the difficulty is not simply one of vocabulary. The syntax is difficult, more difficult than it appears on the surface because of a number of elisions. For instance, 'called'—who 'called' or 'calls' it this? Who is the subject of 'established'? We have to go right back to the mysterious 'creative beings'. And how can 'the Dreaming', which in the previous sentence was a time in the past, become 'eternal'? Even if it does, how can a time rather than a person 'explain' anything or direct or shape a present or future?

A man and his wives

A man might have several wives. And sometimes women had more than one husband. Some marriages were very happy; others were marked by jealousy and quarrelling.

There were no formal marriage ceremonies: a girl approaching puberty would come to live with the husband chosen for her early in her life. Gradually, she would become a wife.



West Kimberley, 1920s

Photo - W.R. Fenton

An obligation to share

Here, a cooked kangaroo is carefully divided according to the elaborate rules of Aboriginal society, which make it obligatory for all members of a group, including the sick and the aged, to receive shares appropriate to their social positions.



North Queensland, Mission, Kimberley, about 1939

Photo - Frobenius expedition

The result is a very difficult utterance, which would strain the capacity even of a university-trained elite to understand. The concept being conveyed is itself difficult, but this difficulty is concealed by the translation, which replaces interesting and important difficulties with extrinsic puzzles. Aboriginal ways of representing the concept might need supplementary explanations, they might need effort and imagination on the part of a European public even to be partially understood, but that effort and imagination are what a museum exists to foster. The language the museum has used is not deliberately difficult, and not untypical of the language used in this and other museums. It is natural that descriptions giving ideas or information from academic sources will be communicated in language that retains traces of that origin. The modern museum relies on a dedicated community of scholars to provide it with its intellectual basis. Inevitably exhibitions will make most sense in terms of the language and modes of thought of that community.

Leaving aside particular successes and failures of the exhibition we have looked at, the analysis brings out a number of points of fundamental importance in any museum display. The communication process is so pervasive and so unconscious that communication breakdown will be the rule, not the exception, and this breakdown will typically be invisible to communicators and public alike. The problems stem from the essential nature and functions of a museum, as an institution that must mediate between different communities and different cultures, offering its own physical and temporal unity as a guarantee that resolution of differences has occurred. A museum cannot suppress differences and antagonisms in the society it serves, however persuasive and sincere the image of reconciliation it offers may

28

Poses and relationships. Top: a man and his wives; bottom: obligation to share.

be. If it refuses to acknowledge these social realities in what it shows, they will silently determine what is seen. What is at issue is in some respects a failure to understand the complexities of the communication process, but this should not be regarded simply as ignorance of a set of communication techniques. Communication is inseparably bound up with habitual ways of thinking, feeling and seeing, which give definition to a culture and a community. Communication breakdown, then is a consequence of the failure to mediate between the communities involved at the level of cultural differences. But total communication is an unattainable ideal for the modern museum, until all social differences have been eliminated and made all communication redundant.

Comment

Two lecturers at the School of Human Communication of Murdoch University, Western Australia, have presented the display system in the Aboriginal Gallery at the Western Australian Museum. They have pinpointed important problems that inevitably arise in carrying out such a display on a subject such as this: How can the museologist render justice to a minority culture? How to present the role of Aboriginal culture in the 'Eurocentric' dominant culture? What is the best way to attain mutual understanding beyond the difference in languages?

Their interpretation also poses several other important problems:

A problem of terminology with respect to the use of museological terms, the meaning of which may become distorted from one language to another.

A museographical problem: according to some, to expose the objects of culture in vitro is to separate them; others would maintain that at that price it would be dooming to rapid destruction the patrimony that it is the museum's vocation to protect, that the museum should have the means to allow other objects than those displayed in the gallery to be touched, and that, if the method is appropriate and sophisticated, if ecology is involved, presenting them in vitro can only make them appear more real than they are in reality.

A problem of museum taxonomy: some will applaud the idea of seeing museums of objects and museums of oral traditions develop separately, but others will tremble at it, for how can culture be cut up into conventional slices?

A problem of 'Eurocentrism'. Is this 'Eurocentrism' that of Europe as a whole or of a stratified Europe, of which the dominant stratum can recognize the existence of the cultures of the supposedly inferior strata, which are there to be seen but at which nobody looks?

An underlying philosophical problem: should one speak of failure in the case of efforts—of which the museum world is full of examples—to overcome the problems referred to?

Finally, the authors mention ecomuseums, but there can be no ecomuseums without territory, or without a living population on that territory. A profoundly human problem arises: how, beyond the already highly sophisticated forms, can the cultural reach of a good display be yet further extended? The disciples of the ecomuseum will say that this can be done only by inviting the Aborigines themselves to work arm-in-arm with the museologists, thus enriching ethnological knowledge with the irreplaceable heritage of the knowledge handed down to them. The authors should be congratulated for having directly or indirectly raised these problems, subjects of controversy, vitamins for an institution that wishes to secure its own survival by continually renewing itself—Prometheus never bound.

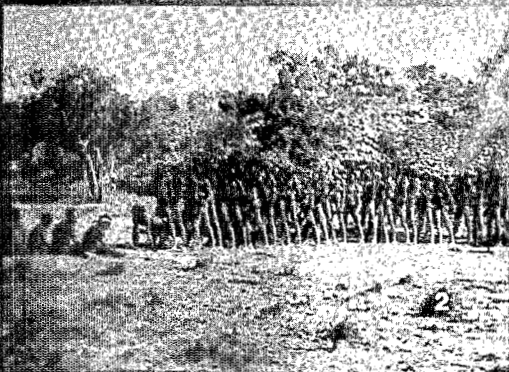
Georges Henri Rivière

Music and Dancing

Traditional folk songs, dances and customs were preserved in the folk songs, dances and customs.

These folk songs and dances were preserved in the folk songs, dances and customs.

These folk songs and dances were preserved in the folk songs, dances and customs.



Authors

WILFRED D'SOUZA

Born in 1926 in Goa. Degrees and post-graduate qualifications from India, Scotland and Uganda. Taught in India and at the Makerere University, Kampala, Uganda (as Acting Reader/Head, Department of Language Methods and Communication). Presently teaching at the School of Human Communication, Murdoch University, in Western Australia. Publications on linguistics and intercultural communication.

ROBERT HODGE

Born in 1940. Degrees from Universities of Western Australia and Cambridge, United Kingdom. Taught at Cambridge University and the University of East Anglia, Norwich, before taking up a post as Senior Lecturer in the School of Human Communication, Murdoch University, in Western Australia. Publications include works on linguistics, the study of popular culture, transformational theory, and the relation of language and social forms.

WALTER PERSEGATI

Born in 1920 in Verona. Degrees in economics and business. Studies in sociology, psychology, public relations and languages. Occupations: since 1971, Secretary General and Treasurer of the Vatican Museums and Art Galleries, Vatican City. In 1970-71, Office Manager, Pontifical Commission for Justice and Peace, Vatican City; 1958-69; Assistant Permanent Observer for the Holy See to the Food and Agriculture Organization. Frequent travels in Europe and the United States in connection with activities of Catholic organizations. Publications: newspaper and periodical articles on museum management, security, personnel and statistical studies; on Catholic youth organizations; on migration.

JOSÉ LUIS SERT

Born in Barcelona in 1902. Graduated from the Escuela Superior de Arquitectura, Barcelona, 1929. Worked with Le Corbusier and Pierre Jeanneret in Paris, 1929-31. Private practice in Barcelona, 1929-38; Town Planning Associates (with Paul Lester Wiener and Paul Schulz), 1941-59. Partner in Sert, Jackson and Associates (formerly Sert, Jackson and Gourley) since 1958. Works include urban centres, universities, master plans for several Latin American cities, and, in the field of museums, the Fondation Aimé et Marguerite Maeght, St Paul de Vence (France). Professor at Yale University, 1944-45, and Harvard University since 1953. Publications: *Antoni Gaudi* (with James Johnson Sweeney), Gerd Hatje, 1960; *The Shape of Our Cities* (with Jacqueline Tyrwhitt), for the Fund for Adult Education; *The Heart of the City*, London, Lund-Humphries, 1952; *Can Our Cities Survive?* (with the International Congresses for Modern Architecture), Harvard University Press, 1941.

SHAILESH C. SINGH

Born in 1943. M.Sc. degree in botany, India, 1964. From 1964 to 1976 filled various lecturing posts. Since 1975 Chief, Natural History Museum, Katmandu. Carried out research projects, e.g. on edible mushrooms and other fungi in Katmandu Valley. Editor-in-chief of *Nepalese Journal of Science* and, since 1977, managing editor of *Journal of Natural History Museum*, Katmandu. Author of the book *The Fungi*, published by Ratna Pustak Bhandar, and numerous articles.

Photo credits

1-3, Museum of Natural History, Katmandu; 4-12, Direzione Generale dei Musei Vaticani, Città del Vaticano, 13-17, F. Catala Roca, Barcelona; 18-29, Western Australian Museum, Perth.