Preservation and presentation of rock art 1981-1983
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Preface

Unesco's Approved Programme and Budget for 1981-83 provided for the study of the problems relating to the preservation and presentation of rock art (21 C/5 Approved, para. 4296). A number of activities were launched for this purpose.

In August-September 1981 the first international consultation of experts on the study, documentation and conservation of rock art was organized on behalf of Unesco by Professor Emmanuel Anati, Director of the Centro Camuno di Studi Preistorici at Valcamonica, Italy. The Government of Italy and the Regional Government of Lombardy contributed generously by financing travel grants and scholarships for specialists to attend the meeting and the two-week training seminar which followed it. Not only the first international event of its kind, the consultation/seminar brought together 24 participants from twenty-one Member States, plus a number of researchers from the Centro Camuno di Studi Preistorici and representatives of Unesco, the International Centre for the Study of the Conservation and Restoration of Cultural Property (ICCROM), the International Council of Museums (ICOM) and the International Council on Monuments and Sites (ICOMOS).

The first edition of the present document contained the proceedings of the meeting, which reflect the wide-ranging exchange of ideas and experiences which took place. In one of its recommendations the meeting called for the preparation of annual reports on the state of rock art research throughout the world. The first such "state of the art" report was the second part of the document.

The momentum created by the Valcamonica meeting led to further discussions focussing on particular aspects of rock art and its protection. Thus Professor Emmanuel Anati organized, with the cooperation of ICOM and ICOMOS, at Milan in October 1982 a Congress on the theme "rock art and museology". Several months later, in August 1983, during the international Congress of the International Union of Anthropological and Ethnological Sciences, a symposium was chaired by him at Vancouver, Canada, on the subject "conservation, recording and interpretation of rock art". The recommendations of each of these meetings contain the views of experts on important topics not explicitly referred to previously and have therefore been added to the present document.

In December 1983, the local government of Barcelona, Spain, organized on behalf of Unesco, ICCROM, ICOMOS and ICOM a meeting to discuss the specific problems of rock art conservation and documentation in the Mediterranean region. The meeting was attended by 22 experts from 8 countries bordering the Mediterranean. This regional focus and the existence of common problems
relating to the rock art heritage enabled this meeting to define a number of specific measures, to be carried out through international cooperation. These recommendations form the final chapter in the present document.

Under Unesco's Approved Programme and Budget for 1984-85 several of the measures proposed by the consultations of 1981-83 will be put into effect. So as to provide a basis for the inventory, worldwide, of rock art sites a common terminology is to be developed. A practical guide on documentation methods will also be prepared. It is planned to organize two field projects on the conservation of open-air rock art sites in the Mediterranean region.

In addition, it is expected that a number of national projects to record and/or conserve rock art sites will be carried out by Unesco's Member States, at their request, under the "Programme of Participation in the Activities of Member States".
INTERNATIONAL SEMINAR
AND
CONSULTATION OF SPECIALISTS
ON THE STUDY, DOCUMENTATION AND CONSERVATION OF ROCK ART
(Organized on behalf of UNESCO by the Centro Camuno di Studi Preistorici)

Valcamonica, August 31st — September 13th, 1981

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INTERNATIONAL SEMINAR 
AND 
CONSULTATION OF SPECIALISTS 
ON THE STUDY, DOCUMENTATION AND CONSERVATION OF ROCK ART 

A SUMMARY OF THE DEBATES 

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Assisted by 
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Note: This volume of proceedings has been edited collating and summarising fourteen days of open debates. Papers and prepared communications are not included. Some of the major papers presented will be published in forthcoming issues of the BCSR, the World Journal of Rock Art Studies.

The ideas expressed by the authors do not necessarily represent the views of the Editorial Board. Likewise, the illustrations provided by the authors are published under their own responsibility.

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According to answers received on the application forms

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PROGRAMME

August 31 (Monday)
16.00-19.00 Arrival of participants.

September 1 (Tuesday)
08.30-12.30 Visit to Naquane National Rock Art Park.
16.00-19.30 Working session: Scopes of rock art research.
20.30-22.30 Debates.

September 2 (Wednesday)
09.00-12.30 Nadro Rock Art Park and Ecomuseum. Practical work in the field: Exploration, identification and detection of rock art.
16.00-18.30 Working session: Methods of research.
19.30-22.30 Welcome dinner.

September 3 (Thursday)
09.30-12.00 Opening session of the Consultation:
· Addresses by Italian authorities;
· Aims and goals of consultation:
  Y.R. Isar - UNESCO Repres.
  F. Leblanc - ICOMOS Repres.
  E. Porta - ICOM Repres.
  P. Schwartzbaum - ICCROM Repres.
  E. Anati - Chairman of Seminar.
16.00-19.30 Consultation working session:
Historical reconstruction and the cultural heritage.

September 4 (Friday)
09.00-12.30 Working session of Consultation: Basic needs for the study, documentation and conservation of rock art.
16.00-18.30 Consultation working session: Towards an international strategy for the preservation and presentation of rock art.
19.00-20.30 Reception by the Mayor of Breno.
21.00-23.00 Concert of Chamber Music. Chiesa di S. Antonio, Breno.

September 5 (Saturday)
09.00-12.30 Consultation working session: Regional and miscellaneous problems.
16.00-18.00 Consultation working session: Adoption of recommendations and closure of Consultation.
19.00-20.30 Reception by Comune of Capo di Ponte.
20.30-22.00 Concert of popular mountain songs. Pieve di S. Siro, Cemmo.

**September 6 (Sunday)**
09.00-13.00 Guided visit to Esine, Boario Terme, Ossimo and Borno.
16.00-18.30 Guided visit to the archaeological excavations at Castello di Breno.

**September 7 (Monday)**
09.00-12.30 N adro Rock Art Park and Ecomuseum. Practical work in the field: Treatment of rock and identification of figures; Conservation.
16.00-19.30 Working session: World distribution of rock art.
21.30-23.30 Debates.

**September 8 (Tuesday)**
09.00-12.30 Seradina Rock Art Park. Practical work in the field: Tracing and recording
21.30-23.00 Debates.

**September 9 (Wednesday)**
08.00-22.30 Excursion to Valtellina:
- Grosio Rock Art Park
- Tirano, Ethnological Museum
- Teglio, Palazzo Besta, Menhir-Statues
- Reception by E.P.T., Sondrio.

**September 10 (Thursday)**
08.30-12.30 Working session: Regional problems-Eurasia.
16.00-19.30 Working session: Regional problems-Africa.
21.30-23.00 Working session: Regional problems-America.

**September 11 (Friday)**
09.30-12.00 Working session: Methods of recording.
16.00-19.30 Working session: Presentation and display: museums, parks and ecomuseums.
21.30-23.00 Debates.
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<td>19.30-22.30</td>
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<td>Departure of participants.</td>
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Introduction

Recent discoveries indicate that in many parts of the world Early Man developed the habit of depicting and engraving on rocks. Rock art reveals the human capacities of abstraction, synthesis and idealization; it describes economic and social activities, ideas, beliefs and practices, and provides a unique insight into the intellectual life and the cultural adventures of man. They represent over 30,000 years of imaginative and conceptual inventiveness.

Rock art sites are found throughout the world. In many countries very rich concentrations can open up new chapters for the story of mankind. This art contains the most ancient testimony of the intellectual and artistic creativity of humanity; its shared characteristics testify to the common origin of the human intellect. Rock art sites represent successive stages of the human adventure, from the Palaeolithic to contemporary hunting-and-gathering and pastoral societies that even today constitute a “Fourth World” in many countries in Africa, Asia, America and the Pacific. Hence a truly international approach or “strategy” with respect to the comprehension, study and safeguarding of outstanding treasures of rock art has become an urgent necessity.

In order to launch such a programme of international cooperation and make better known the universal human heritage of rock art, it is necessary to explain the field, identify its parameters and limits, develop adequate methods of recording and of storing data and provide a typology of art forms, media of expressions and other basic working tools. Answers should be given, inter alia, to questions such as: What is the significance of rock art in understanding the cultural heritage and history of mankind? How many rock art sites can be enumerated throughout the world? Where are the largest and most significant concentrations? What role can they have in culture and education?

UNESCO, considering the relevance of this patrimony for the cultural history of humanity, sponsored the International Seminar and decided to organize the Consultation of Specialists on the Study, Documentation and Conservation of Rock Art.

The Seminar is aimed at achieving a higher degree of professionalism in the field of rock art, as the patrimony left to us constitutes one of the oldest and most significant expressions of human creativity. Every effort must be undertaken in order to protect it, to understand its message and to make its meaning and historical heritage more accessible and comprehensible to everyone.

The purposes of the Seminar were:

1. to provide professional training in research, documentation and conservation of rock art;
2. to promote cooperation and to develop standards of procedure in the aforementioned items;
3. to lay the foundation of a world strategy for the safeguarding, evaluating and promoting of the knowledge and information in the field of rock art.

Lectures, debates and working sessions took place at the Centro Camuno di Studi Preistorici, Capo di Ponte, and at rock sites. During the Seminar participants visited sites in Valcamonica and Valtellina and studied problems related to the exploration, detection, dating, recording, analysis, evaluation, interpretation, conservation, promotion, display, creation of parks and cultural valorization of rock art.

Through debates and lectures, active participants had the opportunity to share ideas and notes about rock art in their countries and around the world.
All participants also attended the International Consultation of Specialists on the Study, Documentation and Conservation on Rock Art, held in September, 1981. Organized on behalf of UNESCO, with the participation of ICOM (International Council of Museums), ICOMOS (International Council on Monuments and Sites) and ICCROM (International Centre for the Study of the Preservation and the Restoration of Cultural Property), the Consultation aimed at defining priority measures of international cooperation for the study and protection of rock art, and approved a series of recommendations which are presented in this volume.

Both the Seminar and the Consultation were organized by the Centro Camuno di Studi Preistorici (the Camunian Centre for Prehistoric Studies) a non-profit cultural association. The purpose of the Centro is to study prehistoric and primitive art and related subjects that concern the economic, social and intellectual life of prehistoric and primitive man. The Centro is dedicated to furthering a global cultural progress through the possibilities it offers to individuals or study groups that wish to benefit from the wealth of material the Centro possesses. Scholars and students from over 60 countries have participated in the Centro’s seminars, research and fieldwork, which have been undertaken in many regions across the five continents.

The Centro is located in Valcamonica, an alpine valley north of Lake Iseo in the Province of Brescia, Italy. The valley contains a major concentration of rock art in Europe; to date more than 180,000 prehistoric figures have been recorded. In 1979 Valcamonica was included on UNESCO’s World Heritage List.
I - Orientation

ANATI: It is a privilege to welcome specialists convened from twenty-three countries to the International Seminar on Rock Art here at Valcamonica. During the next fortnight we shall try to acquire new knowledge on rock art, to promote international cooperation among countries with rock art sites and to consider procedures by which to make better known the value of this field of study, for the understanding of our universal human heritage. One of our purposes in coming together is to develop the study of rock art into a recognized discipline. As a branch of science, rock art is still in its infancy, even though it is four hundred years since the first descriptions of rock art were published. While rock art research is still a young discipline we should take the opportunity to design a world platform for research that will serve not only this generation, but also form the basis of future studies.

Rock art is not the only kin of prehistoric art. But it is the one which is the best and by the most abundantly preserved.

Upon leaving this seminar we should make it our task to share with the international community our conclusions on the significance of rock art. Until the advent of writing, art provides the main testimony of Early Man’s expression of himself and his world. Even the most ancient script is only four thousand years old, compared with at least forty thousand years of rock art. Rock art is found in over 100 countries and several millions of figures have been recorded already.

Currently, scholars working for the progress of science and culture often operate in isolation, unaware of the developments within their discipline in other parts of the world. In rock art studies, many researchers face considerable communication problems which inhibit the dissemination of knowledge. From this seminar we hope to achieve an understanding of the alternative approaches to the presentation and preservation of rock art. We have come together, each guided by his or her own motivations, for the purpose of sharing our ideas, experiences and ambitions in the field of rock art. As a result of this seminar we may extend the contacts made here to establish a network for international cooperation.

The participants in this seminar are not novices in the field of rock art; they are people with first-hand knowledge. They bring not only a wealth of experience, but also some problems for discussion. We will all be students alike, benefiting from and contributing to the proceedings. The specialists here are not going to give lectures but will talk, listen and share their knowledge.

Experience is the mother of science, and the means we will use are dialogue and practical fieldwork. We will work collectively to define scientific and cultural issues about which we may reach some form of scholarly agreement. We will discuss our experiences and problems in studying, documenting and preserving rock art. In this way we may develop a panoramic view of our field of study which will facilitate the communication of our research to a wider audience. The aims are to find a common language, to develop the ability to cooperate, to teach and to learn from each other’s ideas, and to clarify areas of mutual concern. Without doubt everyone has queries to present, ideas to develop and conclusions to verify. This seminar should give everyone such opportunities.

This seminar is, in fact, a truly international and interdisciplinary meeting. First, it is attended by persons from all continents and from all backgrounds. Our training, experiences, needs and raw materials in studying rock art are varied. We are here as ambassadors of our countries, but we will be representatives of the world. Secondly, this seminar has the support of UNESCO and other international organizations who have confidence in this project because it brings together a variety of perspectives on the same subjects. We
should specify a world-wide strategy for subsequent research in rock art. The many themes to be discussed will include: the training of specialists, a standard terminology, a world inventory and data bank, and international publications on rock art. Basically we should develop a world-wide perspective and propose a sound base to clarify and structure rock art studies. There are several proposals which we will discuss and elaborate in order to assess what must be done. These proposals should focus on the creation of an international understanding of rock art research and should advise standard procedures which may be adopted by workers within this discipline. It is our intention to present such suggestions and recommendations to various international organizations and to each of our governments.

While at Valcamonica we will be spending some time at the rock art sites and following the procedures for recording and analysing rock art used by the Centro Camuno di Studi Preistorici. Our team has designed methods and techniques of research and it may be worthwhile to see these developments. However, no methodology is universally applicable. Existing methods need to be modified and new ones devised at every stage of research. In this way the specific problems arising from each particular study may be dealt with. Methods are a means, not a goal. They should be flexible tools to be utilized creatively, rather than rigid frameworks that confine progress. By pooling our experiences of such methods we can reach more valid conclusions. For comparison, however, the means of recording data need to be more consistent and it is essential that we reach an agreement on general standards to be maintained throughout our research. We should endeavour to determine what is most relevant among the information we collect and to present the data in a coherent manner. Equally important, however, is to retain sufficient independence in conducting research so that the interaction of different ideas may stimulate the growth of knowledge and understanding.

Some distinct and interesting ideas emerged from your completed questionnaires about the role of international organizations, national governments, research institutes and individual scholars in assisting with the development of rock art studies (appendix 1). These aspects will be clarified during the seminar. It should be possible to combine the potential of each group establishing a precedent for international cooperation that will stimulate cultural progress. This seminar will help to promote a collective awareness of our common heritage.

ISAR: I will say only a few informal words of welcome to our friends from around the world. This seminar, in particular the three days of the consultation, has been sponsored by UNESCO, and I welcome you on behalf of our organization. I will only mention briefly, now, the pressing need to establish international guidelines for rock art research. This is a concern professionals who work within the field of culture. The International Council of Museums (ICOM) is a valued partner in all the work that UNESCO carries out in the various areas of museum development. Also represented is the International Council on Monuments and Sites (ICOMOS) and the International Centre for the Study of the Restoration and Preservation of Cultural Property (ICCROM). This latter body is a governmental organization funded by sixty-five governments from all continents. ICCROM takes a special interest in this meeting because rock art conservation is a relatively new and unknown field.

I am at this seminar to learn from you about a subject in which I have had no direct experience. I shall be asking a lot of questions. For the moment, though, I wish you success both with your endeavours at this seminar and also for the future.
II - Relevance of rock art for historical reconstruction
and the cultural heritage

Chairman: A. Beltran (Spain)

Participants: E. Anati (Italy), A. Camardella Rabello (Brazil), M. Duarte (Mozambique), B. Gado (Niger), F. Massao (Tanzania), O. Odak (Kenya), K. Tripathy (India), V. Wakankar (India), N. Walker (Zimbabwe).

BELTRAN: May I propose three basic questions that should be asked for any group of rock art: 1. What is the origin, or who is the author of the work in question? 2. What are the themes and their significances? 3. What is their age: their absolute and relative dating? If one combines the answers to these questions, a better understanding of the rock art in scientific and cultural terms will be obtained. The main area of concern in our research is to determine, as reliably as possible, the way of life of the artists, including all aspects of daily life and social background. Subsequently more specific questions should be asked as to the nature of the rock art. The art to be studied covers an immense timescale, from the beginning of the Upper Palaeolithic until relatively recently. The material reality may be described (e.g. the techniques, the systems of expressions used), yet what is more difficult to explain are the psychological meanings that link this art to the cultural trends which prevailed at the time. Material elements can be classified: paint, engravings and three-dimensional objects, movable objects that cannot be separated from the shape of their support, ornamental forms and tables. While material remains of a prehistoric culture may not be rich, the artistic expressions are extraordinary. When observing the great bull of Lascaux, Picasso said "None of us (meaning contemporary painters) would ever be able to paint like this".

The traces available from the material culture are extremely limited as to basic cultural information, whereas rock art can give us a very clear picture. Rock art reflects transitions in style and subject matter, which may reveal the changes and crises of the Mesolithic period, for example. There is a distinct difference in emphasis in the subject matter of the Palaeolithic and Mesolithic periods. Later, in the Neolithic, human society in some parts of Europe, became sedentary with a complex type of food production. By comparing the new art forms it is possible to understand their relationships, for example, what was happening in the Oriental Mediterranean and in its Occidental regions. When looking at the changes of the later period we may understand the complex evolution of prehistoric art forms which began in the Upper Palaeolithic. This evolution has its parallels in the progression from the near-realistic forms to the later, more abstract images. For example, the period of great cultural revolution, especially in the ancient Near East, can be vividly understood by the rock art depictions. Relying on an extraordinary bank of data, the history of humanity acquires an infinitely more complex, deep and complete image than that provided by evidence of material culture alone. Through thousands of retouched blades and scrapers in flint, we know that prehistoric man spent his existence in scraping and cutting! This is a poor image when we compare it with the intellectual exhuberance, the mythology, the feelings and the concerns revealed by rock art. This history revealed by what can be termed "spontaneous unlearned art" is continued by folk art: the art of the Eskimos, Australian Aborigines and even the Early Greeks. There is a continuity of form in "an open envelope", for this art that has no teachers.

From the point of view of historical and cultural reconstruction, rock art provides information on the techniques and concepts of expressions, and the means by which these ideas grew and developed. Les Trois Frères cave in France has a picture of a sorcerer at the entrance that brings to mind numerous ideas as to what the cave might have been used for, or what the rest
of the art signifies. We therefore have evidence of activities, objects, and tools that were used and representations of certain human types that are realistic enough to give us a portrait of the artists themselves.

Also from the point of view of the history of religions, rock art relates to theories in mythology, which can give us insights into the complex spiritual life of these people. Other possibilities of historical reconstruction include, for example, the elephant at Thumby, from which we can conclude that there were sufficient quantities of grass and vegetation for the animals to feed on. Los Doues in the Spanish Levant shows a scene in which two distinctly different groups are facing one another in battle, and we would not know that such a confrontation occurred if it were not depicted in the rock art.

Finally, in respect of art and the diffusion and convergence of forms, the presence of certain common graphic forms and artistic conventions, for example the labyrinth, show cultural diffusion and exchange of ideas. There is a sense of these universal forms throughout rock art but similar evidence is not given to us with material objects. In conclusion, for understanding the roots of modern man rock art is indispensable and necessary; without it our cultural background would be incomplete. Anybody can understand the various forms and figures in the same way one would view the folk art that succeeded it. Rock art is of great value to world culture and education since it surmounts all frontiers despite the fact that there are regional differences within rock art.

ANATI: We use the term "evolution" far too frequently in relation to the history of art and civilization. The technological aspects of culture are assumed by inventions that create the next step in a sometimes linear evolution resulting through experiences which motivate consequent progress. I question whether this occurs in art. The subjective evaluation of aesthetics and our appreciation of art may be influenced by our own cultural standards. Aesthetics changes from period to period according to fluctuations in style and taste. Therefore we can only speak of horizons in rock art which are characterized by realistic, abstract, symbolic or descriptive styles, whatever these terms may mean.

BELTRAN: Evolution can be described in rock art as the changes by modification or improvement in the techniques and concepts.

GADO: The permanence of the representation of certain forms may not have been the result of people doing things in the same way as their ancestors.

BELTRAN: A complete cultural continuity cannot exist of course, but there may be formal continuity in the art.

TRIPATHY: The history and civilization of a region may be constructed on the basis of culture. Man's culture has two aspects for us: the material and the non-material. Archaeologists deal with the material aspects of Early Man, in order to consider culture, which is the non-material existence that man achieved and maintained, including social structure and religious beliefs. Yet when we attempt to reconstruct the cultural phases from the prehistoric to the historic, many events in the dynamics of culture from the prehistoric to the historic can be established through material remains. The presence of rock art may contribute to the understanding of the cultural evolution and continuity of civilization in a region.

WAKANKAR: The study of stone tools can never ascertain the socio-religious attainments of a past society. It is through rock art that we can view the history of these achievements and the extent of the advance of human
civilization. The different activities of man in the form of social practices, religious beliefs, struggles for survival and important events are all depicted at rock art sites. Thus their study enables us to acquire a clear picture of the cultural heritage which has been transmitted to us through descending generations. It would be worthwhile to have a comparative study of universal rock art to discover the shared common ancestry and the divergent representations of Stone Age Man and their perpetuity into historic times. All of us, around this table, would then understand each other in a much deeper and more real way.

CAMARDELLA RABELLO: Archaeological excavations coordinated with rock art research may reinforce the possibility of identifying the human group of the area through the stratigraphic layers containing stone tools, ceramics, bones and other artifacts. The migration and dispersion of these groups may also be noted in the rock art distribution.

BELTRAN: The problem of synchronism between archaeological finds in the area of rock art sites should be approached with caution since in many cases rock art may be from a given period and the cultural non-rock art material found at the same location, from another period. Relationships can be assumed only when a recurring association is verified or in exceptional cases where the materials are present in such a way that there can be no doubt as to their concurrence.

ANATI: Rock art can help in defining patterns of culture when examples can be seen in specific periods or historical horizons, each representing a different stage in the cultural sequence of various styles, elements and assemblages, and hence reveal certain aspects of human life. The existential relationship between Man and his environment - what kinds of plants he gathered, what kinds of animals he hunted - tells us much about the entire ecosystem in which he lived.

DUARTE: It is possible to see the relation between the history of art and the economic production of a society. For instance the earliest rock paintings were done by hunters depicting naturalistic styles, while schematic art tends to correspond with agricultural societies.

BELTRAN: What may have actually existed are different lines of instruction making it difficult to define what is naturalistic and what is schematic. The artistic performance may be very crude and therefore not naturalistic, like a horse at the cave of Portel, which has a beautifully sketched head and body but the legs are simply two crossed lines. There may be adverse formulae for the formal structure of the art.

ANATI: Styles are the reflections of ways of thinking. In each cultural context there are impulses to paint in a specific way. The artist did not paint everything he knew but he made choices. Each cultural pattern uses a restricted assemblage of themes. Certain societies depict primarily human figures, others animals, others again, just signs and symbols in the same sense that hunting societies depict prevalently some animals in a particular style. Patterns of style and choices of subject matter indicate levels of mentality and stages in culture. While we are able to define the art styles in a general way, the details in each figure reveal much more about the artist's state of mind through his preoccupations and motivations at a cultural level. Rock art constitutes a tremendous source of information for the intellectual life of early man.
WAKANKAR: In the field of religion, rock art paintings are a good record of the rituals and ceremonies for births, deaths, initiations, communal hunting, sexual relations and other secular activities. In India the figure of the Mother Goddess appears in many drawings situated in the centre of rock shelter clusters or in awkward locations. There are also animal figures of enormous size with elaborately designed bodies surrounded by decorative symbols that would indicate a worshipping tradition. The roots of the present Hindu religious customs may be found in these prehistoric images. The worship of the bull, buffalo, fish, tortoise, monkey, deer and wild boar was dominant among these prehistoric communities and was later adopted during the Chalcolithic Period and passed on to the protohistoric and historic eras.

MAŠAO: Studies of rock art in the Sahara reconstructing the palaeocological environment have shown that it was once the home of animals such as elephants and zebras. This means that the Sahara must have abounded in vegetation comparable to that of East Africa and by inference the climate would have been different. There must have been enough rain to support a grassland-type of vegetation. In Tanzania, the species represented in the rock art records are the same as those which inhabit the more remote regions of that country today - so in this case the ecological situation has remained fairly constant.

TRIPATHY: Prehistoric sites with tool associations may be studied not only from a functional point of view but for the cultural profile in diverse climatic conditions. Rock art is instrumental in providing substantial data for the reconstruction of the palaeoecological factors influencing the social structure of a culture group. Culture in a region is partly due to the impact of various environmental situations, thus the evidence from the rock art may also yield positive interpretations of the cultural behaviour towards the palaeoenvironment.

WALKER: Rock art is an archive that provides us with insights into the culture and social structure of peoples. In southern Africa we are able to get an idea of the size of the group, sexual division of labour, how tools were utilized and of artifacts which have not survived in the archaeological record.

ODAK: Rock art is a unique branch of culture. It assists in historical reconstruction as much as other sources of historical information, namely archaeology, architectural monuments, written evidence and oral traditions. In addition, as a cultural element, it contributes towards revealing the past behaviour of ethnic groups. In this way rock art contributes to the creation of a cultural identity, an awareness which is essential to all people. For the people of Africa, knowing and understanding their rock art would be of a tremendous value. It is something we really need. It is a part of our history and of ourselves that we must retrieve.

Furthermore, the comparability of rock art found in different parts of the world, where the chance of ancient contact was possible, is a demonstration of the unity of mankind in intellectual development. Hence this goes against the racist thought that certain peoples are capable of lofty intellectual thinking in contrast with other ethnic or racial groups. Therefore, rock art studies and the dissemination of their results and information are an important tool in the struggle against racism in the world.

BELTRAN: Odak has just provided a summary of this discussion in which delegates of all continents took active part. It is significant that the most involved participants, in terms of the contribution to our cultural heritage of rock art, have been our African colleagues. Indeed, the African Continent has, so far, the longest and most complex sequence of human evolution
and apparently rock art also is present in this continent from an early stage, as early as that of Europe. The sequences at Apollo 11 cave in Namibia, or in Kondoa District in Tanzania, provide an impressive revelation.

Other areas of the world as well, such as Latin America, India and Australia, show an increasing interest in the discovery of rock art and in its integration into general culture.

One basic concept has been repeated by several colleagues: rock art has become a very important source for historical reconstruction and is a unique aspect of our cultural identity. It is our hope that this message will reach beyond the limited milieu of specialists.

III - Scope of rock art research

Chairman: Y.R. Isar (UNESCO)

Participants: E. Anati (Italy), A. Camardella Rabello (Brazil), M. De Abreus (Portugal), M. Duarte (Mozambique), M. Hernandez Llozas (Argentina), K. Lilburn (New Zealand), F. Massao (Tanzania), T. W. Medhin (Ethiopia), K. Michelsen (Norway), O. Odak (Kenya), K. Tripathy (India), I. Wainwright (Canada), V. Wakankar (India), N. Walker (Zimbabwe), B. Whistle (South Africa).

ISAR: Throughout the world specialists are studying rock art from the points of view of their own particular discipline. In this session therefore, perhaps we should discuss the fields that rock art encompasses. This will reveal different perspectives and approaches and help us to think about guidelines for recording and analysing data.

Since most of us here have been studying rock art in separate fields of research, in exploration, recording, analysis, dating interpretation, conservation and cultural valorization, it may be of interest to all of you to hear of the developments that have occurred specifically in the area of rock art. For this, I would like to call upon Prof. Anati to speak about the background on the history of research and the events that led up to our generation of scholars.

ANATI: As far as we know the first published report on rock art was written by Peder Alfsen, a Norwegian schoolteacher. It appeared in 1627 and described some Bohuslän sites in Sweden. However, major research was not undertaken till the end of the century. In America, an invaluable book by G. Mallery, Picture-writing of the American Indians, was published by the Smithsonian Institute in 1893. From the beginnings of this century there are also reports and data collections on rock art in South Africa, the Sahara and Australia. In Sweden, rock art studies were pioneered by O. Almgren while Abbé Breuil and H. Obermaier initiated an exuberance of Palaeolithic cave art research in France and Spain. But "research" then consisted of a combination of descriptions, theories and early attempts at chronologies. There was little analysis and no synthesis in these preliminary studies.

Matters changed when researchers realized that rock art, like writing can be a very important source for historical reconstruction. This consideration created a positive outgrowth for rock art studies. In the last twenty years it has ceased to be a merely descriptive subject and has become a distinguished research discipline. Also during the last twenty years several international organizations have become involved and held major symposia on rock art which allowed and promoted the type of analysis and discussion that brought rock art to the attention of the scientific community. One notable symposium was organized by the Union Internationale des Sciences Préhistori-
que et Protohistorique (UISPP) in 1968; it was followed by another sponsored by the UISPP and the International Association for the History of Religions (IAHR) in 1972; and a third by the International Association for the Study of Prehistoric and Ethnologic Religions (IASPER) in 1979. ICOMOS has now established an “International Committee on Rock Art” that is in part responsible for this seminar.

A new discipline has been born. And yet it is still necessary to define what is “rock art”; simply to say that it concerns paintings, engravings and high reliefs marked on stone is not sufficient. The artist was not merely creating images but was conveying, through his art, more complex and often deep thoughts beliefs or expectations. Researchers must take into account the more esoteric reasons behind the rock art images integrated into which are Early Man’s responses to the stimuli of his world. From his interpretations we may be able to detect implications for modern society.

A distinguishing facet of rock art is its capacity to reflect what is inside man. Rock art may converse with us in an intimate dialogue, something unique in our industrial civilization. For rock art contains messages, evidences of self-expression, and creative thoughts and imagination; and reveals attempts made in different ages to find harmony and balance within man’s world. It is a demonstration of Early Man’s intellectual capacities. Rock art expressed aspects of awareness that man had toward himself and his surroundings; different social mentalities, cultural backgrounds, economic situations and ecological conditions are all reflected in these artistic creations.

Systematic studies are only beginning with rock art. When undertaking research we should remember that though rock art is a world-wide phenomenon depicting cultural, intellectual, economic and social activities, it was created by distinct, local cultures. Though in some instances distant regions produced highly similar images and styles we must study the subsistence levels, the archetypes, and the social and psychological backgrounds of each group in question. By reconstructing sequences into diagnostic elements such as specific activities, descriptions of myths and beliefs, tools and weapons, and by clustering these elements together to then compare with the elements of a previous phase, we may get an image of the historical dynamics that occurred in that particular geographic location.

MASAO: In East Africa conventional written history began quite recently. The earliest existing volume is a mariner's guide to the Red Sea and West Indian Ocean entitled The Periplus of the Erythrean Sea, believed to have been written by a Greek from Alexandria around 100 A.D.

That along with a brief, written African annal, leaves oral traditions as the main source for history. In this part of the world rock art is needed to enrich oral traditions. Also, one would be interested in learning the relationships between the rock art and oral traditions. For example, is the folklore about hostile tribes like the Masai documented in the regional rock art? Some scenes may be interpreted as one tribe attacking another.

From the point of view of archaeology, rock art provides a new dimension concerning information on thoughts, feelings, beliefs and other aspects of human life and evolution beyond the scope of the material culture. A combination of the two sources of knowledge will give us a greater understanding of prehistoric society. The rock art complements the material cultural remains and vice versa. There is a report from a site in Engaruka, Tanzania of microliths which lie in the stratified horizons associated with the Late Stone Age deposits. Theories are many as to what these lunate or crescent tools might have been used for, but seeing them represented in the rock art as barbs on the shafts of arrows ends the need for conjecture.

TRIPATHY: Investigations of rock art using archaeological theory are not always possible. In an Indian context there is a well-defined archaeological
chronology as well as a good rock art record. Rock art, however, is limited to only certain localities and even then cannot always be related to archaeological sites. The rock art of different prehistoric cultures has been correlated to archaeological sequences, but the material evidence and the amount of rock art discovered for one specific period may not be the same for other periods.

HERNANDEZ LLOSAS: In Argentina the problem has been that there is a lack of an archaeological sequence. The first step being taken is to establish a chronological sequence from the rock art. The second step will be to combine the material culture with the rock art record while considering the rock art as a cultural remain, not separate from other archaeological materials.

WALKER: The study of rock art for the purposes of establishing a chronological record must be approached with caution. The extant rock art reflects only a part of what was originally manufactured since some rock art has inevitably been lost.

MICHelsen: In geology there is the “Principle of Actuality”: to understand what has happened in the past we must understand what is happening in the present. This can be put into an anthropological context and by studying and understanding contemporary tribes making rock art, such as those in Australia, we can gain an understanding of the ancient rock art producing cultures.

DUArTE: Recording oral traditions and conducting ethnographic studies allows us to make analogies with societies that may have had similar economic bases, i.e. hunter-gatherers, pastoral, or mixed agricultural.

ODAk: An ethnic group in northern Kenya, the Zambu, still retains its traditional ceremonies. After the circumcision ceremony the ilmorans, or initiates, must go out to rock shelters for a certain period of time. While there they make paintings of human stick-figures, following closely the artistic traditions of previous initiates. The reason for this was explained in several versions. One was that it was still being done for historical purposes - a remembrance of their initiation, something that would be there for future reference. Another explanation was that it is a leisure activity since the celebrants would have little else to do while alone in the bush. This is an example where ethnological analogies should be thoroughly studied for their associations with the rock art.

The scope of rock art research is interdisciplinary. Although the art is the focus of our investigations the allied historical disciplines (archaeology, history of art, etc.) and the associated natural sciences (conservation, geology, geography, etc.) together contribute to a broader and sounder knowledge, and to our understanding of the rock art. A major aspect of this study is its anthropological or social nature; in ethnographic terms, what functions had rock art in a society? We can only reach a valid understanding of the meaning of rock art if we embrace all these various fields of study.

The aims of rock art research should be academic. The actual direction each study may take is dependent on the interests of the researcher. This may be from the perspective of time-space relationships within the art, evolutionary developments of the art in a particular region or a comparative study of the rock art of various regions. The ultimate goal of the rock art researcher should be the introduction of new knowledge of a past culture into the heritage of a nation. Cultural identity that grows from rock art is a means by which the local population may find social awareness or confidence in their own originality and innovative ability. For Africa, rock art studies are of primary importance.
CAMARDELLA RABELLO: When discussing an approach for the study of rock art, we should consider anthropology, archaeology, ethnology and ethnography as one united discipline.

MASAO: Ideally we should be looking for models of analyses. But in doing so we must be aware that our own personal backgrounds may influence our interpretations of art forms, types and styles. There is an apparent bias in studying rock art; purely for aesthetic reasons many researchers seem to concentrate on the naturalistic representations and consequently a few scholars have allowed themselves to be carried away with isolated figures, comparing them with such things as modern art. This distorts the picture we are trying to reconstruct, for to be meaningful a study must be syntactic, i.e. studying scenes or assemblages rather than isolated figures.

As an insight into modes of production and economic levels, for instance, rock art studies should try to explain past subsistence activities. One alternative might be to try the Marxist approach. But we must be objective in our work, not subjective.

WAINWRIGHT: The vast majority of people studying rock art today are actually amateurs who do not apply an analytical approach as would a specialist in the field, yet they do often provide meaningful interpretations of rock art.

ODAK: To ask the question "Is it art?" automatically introduces ideas from a different culture. Art for art’s sake is not a relative concept for most groups who made rock art. We need to understand the socio-cultural background of the artists before we can make any judgement on functions or motives.

WANLESS: Perhaps in some cases the artist did perceive his work as being art. In South Africa there are pictures painted on burial stones and in shelters that show a person possibly holding a palette and a brush that looks to be made from a quill, and one interpretation is that this man is an artist. One particular scene appears to have an artist with two followers, as if this man is someone set apart from the regular duties of society and very aware of his special status. The scene may have other deeper, and more serious overtones, but he seems to perceive himself as an artist creating art and whose work must be valued as such.

WAKANKAR: The practice of rock painting is still continued by some tribes in India. The paintings are done by the group’s religious leader as part of ritual ceremonies. We have been studying the lives of these peoples through interpretations of their paintings but we must hurry before assimilation into our industrialized society changes the cultural patterns of these tribes.

ISAR: To what extent can we speak of a living heritage of rock art that is still being made today and to what extent are researchers concerned with it?

ANATI: The tradition of making rock art is almost extinct and will disappear completely during the next generation. Therefore we should urgently study all rock art, but especially that of the few cultural groups continuing to produce it. I can speak of two quite different experiences I have had with modern tribal people making rock art. The first experience was in the Negev desert about twenty-five years ago. A Bedouin shepherd was making a rock engraving with a tool that was almost identical to the prehistoric tools used for the same purposes in Valemonica and elsewhere. When asked "Why are you making rock art?" he was shy and finally answered, "Because tomorrow a girl from another ma’abal (group of tents) will come here to pasture her
animals and when she sees my carvings she will be very angry with me." This is an obvious case of abstract communication between two people who each come to the same rock separately. Some years later another Bedouin from the same area was carving on a rock and when I asked him why, his answer followed the concepts of artists within society: "There are shepherds who play the flute and there are shepherds who do carvings." Would a prehistoric hunter or shepherd have made the same reply? It is doubtful. But one factor is here important: we see that from the same cultural groups two different artists from the same generation provided two different motivations for creating rock art.

My second experience was in central Australia. A branch of the Aranta tribe, consisting of several clans, holds a special ceremony which lasts for about a week. This is the only occasion when they meet together and so it is the time when the young are initiated, presents are exchanged (a sort of primitive trade), hunting lands are redistributed (if the size of a family has changed they will need more or less land), marriages are decided and social festivals are performed. These activities take place near a painted cave, and while the rest of the land is redistributed, this cave is always under the collective ownership of the entire tribe although the care of the cave is shifting in turn from one clan to another. The paintings are redone for the ceremonies by the older males of the clan. While preparing the colours inside the cave the men begin to sing so that the sound of their voices may call back the spirits from inside the rocks to give them inspiration for remaking the paintings. The figures constitute the presence of spirits and mythical ancestors. The ceremonies are a complex and marvellous process that involves the whole tribe in a magical way, something quite different from what we define as art today. In one thousand years, an archaeologist will perhaps discover some of these paintings and try to understand what took place there and what sort of society produced the art. But even with plenty of analysis and imagination he will only be able to record certain figures from the rock art. He may be able to recognize the image of a certain spirit, but the people that created the rock art will unfortunately be lost and he will reconstruct very little about their lives.

As shown by these examples, the Bedouins and the Aranta have completely different purposes in producing their rock art and we must assume that we cannot generalize about an extinct society's reasons for creating rock art, either.

WANLESS: The last known instance of a Bushman painting was in the last century and there have not been any historical recordings. In the region of Africa south of the Sahara, rock art reaches into the midst of history because oral traditions that persist have turned into myths and legends, losing their basic details. Rock art provides a record of the life of the people and, as such, is a precious part of our cultural heritage.

ODAK: Rock art, being an object of culture, contributes to our social development. A major issue is the context of the art in cultures: rock art may be connected with religious beliefs, social functions, ceremonial activities, etc. In Africa these traditional cultural institutions have been undermined by the partial replacement of the African culture with a European way of life. The African people have lost their spiritual and social contacts with the world of their forefathers, they have converted to Christianity, taken new names and received an education from European missionaries. The effect has been a gradual erosion of respect for their cultural roots. Some tribes, however, have continued their traditions. In Kenya, a rock art site on an island in Lake Victoria is still visited by the local population. Here they perform rituals to offset catastrophes, such as drought or famine. Associated with such cultural behaviour is a strong oral tradition. If we lose the traditions connected with rock art, we lose a part of our identity. The study of rock art may give us back something we had lost.
ANATI: I encountered the Chief of the Iranga tribe in Tanzania, who explained their oral myths about the rock art that existed in the area. His tribe did not make rock art, yet some knowledge as to the meaning of the images has been passed down through the generations. The paintings - handprints and abstract symbols - were made by another tribe at least 14 generations ago. The paintings were associated with the initiation into manhood of the young boys of the tribe. They would first receive instruction on how to survive in the bush and then they would be tested. The test involved fasting for fifteen days, after which the instructor would send each of them, alone and naked, into the wilderness to fulfill certain tasks. The initiated would be directed to a cave where he would have to paint his handprint in a specific colour, and to live alone for a short time. He would have to make all the tools and weapons with which to hunt and survive in the bush. On his return he had to bring back a lion’s skin to prove he had killed a lion, and would also have to report on the paintings that he had seen in the cave; the instructor would therefore know how many initiates had reached the cave by the different number of coloured handprints.

This is a good example of the use of rock art in the Iranga region, although this particular explanation may be just one of several uses for rock art. However, the tribe is quick losing its traditions as successive religious influences permeate their culture. As the chief explained, his father became a Muslim, he became a Christian, while his son is an atheist. A reappropriation of the past is much needed for cultural identity.

MASAO: What we are faced with is the loss of value for one’s own culture. This would seem to be the case in Africa and Asia where as under-developed countries we are faced with the dilemma of responding to pressures demanding the modernization of our societies, whilst at the same time trying to hold on to the traditions of the last ten thousand years and more. Developed nations have impressed their culture onto their own, yet we need time to accommodate such changes, if we are prepared to accept them at all. To add insult to injury, the culture they have taken away from us - in the form of art, etc.- is placed in their museums for their enjoyment and study. It is easy to understand why Third World countries neglect their own cultural heritage.

ODAK: It is a contradictory situation, we are in the limelight for our cultural ingenuity and artistry, yet we are regarded as inferior because of our lifestyle. Of course this is quite wrong and we must consult UNESCO and other international organizations to discuss the role they can play in salvaging our patrimony and restoring a cultural identity to such Third World countries as those of Africa. No doubt it is a world responsibility and an international task.

MASAO: Rock art is a source of cultural identity and everything should be done to preserve what exists. In the case of Africa, some of the rock art may be more recent than other archaeological heritage sources and therefore it can best provide the sense of identity that is needed in Africa since the independence of the colonial nations.

ANATI. No doubt, as motivation, the reappropriation of cultural identity is much stronger than that of cultural heritage; man has always been curious as to his cultural roots because he needs such roots. It is a legitimate curiosity about our own identity. Europeans are in a situation where they seem to know only their history. The quest for the roots is still submerged, but we need to know exactly where the structural formation of our society originated. Every man has a need to identify the fundamental elements of his cultural background.

WAINWRIGHT: Contemporary Indians in Canada have developed a sense of identity from rock art and are trying to illustrate the same feelings in their
current traditional art forms. Specialists realize that some rock art will not exist next year, in ten years or in a hundred years and therefore it will cease to be part of the cultural heritage if it is not recorded and studied in time. Preservation of rock art is not just the concern of specialists, it is a concern for all.

Camarndella Rabello: There is a growing problem in Brazil with religious groups going to rock art sites to make offerings because they believe them to be sacred places. Yet these activities are accelerating the rate of destruction of sites.

Anati: These are cases where it is not really clear whether people should be stopped from using the sites because they are performing a stage of rock art. Is there moral justification for denying these people the facilities to worship in the same way as their ancestors? Preservation concerns all aspects of culture, not just the objects.

Masao: We have an obligation to prohibit people from going to sites if they have the intention of being destructive but not if they wish to view the paintings of their ancestors. In any case how can we prevent people from visiting caves in the forest? Documentation and recording is most urgent before the pictures disappear, and we need international help for this task. But previously unknown sites are being discovered every year and nothing can be done to preserve sites for which we have no record.

Duarte: In Mozambique some of the population light ritual fires and make offerings at the rock art sites. We do not forbid them to go there but we are trying to change their attitude by explaining the importance of rock art in historical and scientific terms. We hope that this will encourage them to teach their children the value of the art so they in turn will appreciate and preserve the sites. We hope that in some year people will no longer visit the sites for these ritual activities but to admire their cultural heritage.

Anati: A serious question arises: is it morally justified to transform ritual sites into museums?

Medhin: We have to consider if there is a way to prevent the cultural identity from fading off and the national heritage from changing. But change is a dimension of culture.

Anati: The awareness of cultural identity must be felt; it cannot be imposed upon people. There should be campaigns to promote culture through the educational system of a country; schools, special programmes and families can teach the merit of this identity. Nothing can be done, nor should it be done, to prevent change and progress, but something could be done to prevent a precious part of the human heritage from being lost forever. To know where we are going we must know where we have come from.

Tripathy: Tourist organizations and other private bodies should take an interest in the educational programmes since they encourage a large number of visitors to come to the sites which contributes to their deterioration.

Isar: Have any studies been done on the reactions of tourists to the parks in Valcamonica?

De Abreu: No actual studies have been carried out, but in guiding groups through the parks I have noticed that children find rock art very important, young people less so, and adults least of all. The more "culture" they get, the less they seem to care about it. We may question our concept of culture.
WANLESS: Studies regarding the type of visitors and their reactions to the sites may help prevent vandalism, which is the greatest problem facing rock art today. Public education should teach how important rock art is for the cultural heritage; it would be an essential step toward creating the respect that would protect the site.

ANATI: We should not just tell people that sites are important but why they are important. If a person becomes convinced that they are a patrimony that belong to mankind then he or she will want them protected. It would be interesting to conduct a survey like those just mentioned at three or more separate sites, each in a different country, and compare the results.

WANLESS: Museums holding examples of both rock art and ethnography play an important role in the stimulation, assistance and background of further research.

ANATI: However well we preserve and present the rock art in its natural environment, it may be in such an inaccessible place that few people will come to see it. Such a problem has been met in a peculiar way by the chief archaeologist of Siberia, Professor Alexej Okladnikov, who works in an environment which is, for the most part, too inhospitable to attract visitors. In the garden of his dacia, in Akademgradov, he has collected boulders and menhirs from the tundra region and made them available for the public to view.

ODAK: Such a solution is difficult for me to accept. The original rock art should always be left in its natural setting; casts may be used for display purposes. In the future those areas that are now inaccessible may become easy to visit. In such cases, as the Siberian example, a distribution map of the original sites together with a display of reproductions will enable scholars to study the art both in the comfort of a museum setting and in its original setting. Again, it is necessary to emphasize the dual responsibility of preserving the rock art for both present and future generations.

LILBURN: Surely the removal of art from its context renders it less valuable in a cultural sense. And the land is thus deprived of one of its characters and its own patrimony.

ANATI: The old-fashioned approach to museums was the collection of objects. Okladnikov did exactly that; believing that the culture is inherent in the objects, he removes them from the tundra where nobody would see them, and places them in a garden-museum where everybody can study and enjoy them. Rightly or wrongly, this was his approach to his specific area. In Valcamonica it would be unthinkable to cut the rocks out of the landscape and relocate them in the garden of the Centro; yet pieces of rock art discovered while building roads or houses have been rescued and are now in our garden. It seems to me that cases of salvage may justify, in specific cases, the displacement of finds.

LILBURN: Preserving rock art from total destruction is one thing, collecting it for museum displays is something else...

ANATI: The Siberian example reflects a special situation - there are hundreds and hundreds of square miles of wilderness without roads; and for the majority of people this area is inaccessible. There is some justification for bringing some examples of rock art to the people. Of course the context of the art must be studied before removal of the rock.

LILBURN: These distances may seem vast but how do you evaluate the significance of fifty miles in comparison to the advantages of leaving the art in its setting?
WANLESS: The locations have to be well documented before the stones are removed; that would seem to be the major consideration. They should have a card index with the original location of each boulder.

LILBURN: That is a very limited kind of information in terms of rock art research; with new techniques, the information we could get from those rocks in their original setting is far more extensive.

ISAR: Rock art research would seem to cover wide scopes. With this consideration, it would be important to continue the kind of communication between researchers that we have started here. A person could spend a lifetime learning the theory and methods of all the disciplines that encompass rock art, but it would be of little help to science and culture if everyone were to do that. What is more fundamental is to have a constant programme of seminars and symposia which would allow scholars from various disciplines to come together to discuss the aspects of rock art from their particular angle. In this way rock art researchers can concentrate their work using their disciplinary approach without having to cover all the others. No doubt such cooperation could be very helpful for the progress of study.

IV - Methods of research

Chairman: E. Anati (Italy)

Participants: N. Darwish (Jordan), O. Fonseca Zamora (Costa Rica), B. Gado (Niger), P. Masso (Tanzania), O. Odak (Kenya), E. Porta (ICOM), K. Tripathy (India), I. Wainwright (Canada), V. Wakankar (India), N. Walker (Zimbabwe), B. Wanless (South Africa).

ANATI: Various approaches to rock art have many criteria in common and, although differences critical, the principal purpose of research methods is to define these common elements. To achieve this we must be able to communicate with other researchers and obtain data which allows broad comparative studies to be undertaken. Otherwise, research cannot be done on a global level nor may a world evaluation of rock art be established. Both of these are needed for the advancement of science and for sites and countries to benefit from parameters that can be applied everywhere. International cooperation between scholars is necessary for the results of research to become part of culture. Research provides the raw material for culture and if research does not answer such questions then culture cannot benefit from it, and both lose one dimension.

There are basic requirements needed to collect data for comparative research. If we have a different kind of information for each site, no comparative work can be undertaken. What information we already have or believe there to be, may actually be useless. Data should be recorded on standard world inventory forms, so that we may make an international survey of rock art. The Centro Camuno di Studi Preistorici has elaborated forms which can be adapted to serve a world inventory. After testing in Valcamonica the form was used in Tanzania and in Mexico, and it appears to be as practical for the Tanzanian paintings in rock shelters as for the open-air engravings in Valcamonica, and for the paintings and the engravings of Mexico.

Through ICOMOS we have prepared a preliminary form for a world inventory of rock art sites which is distributed for your evaluation. The primary purpose of the inventory is to acquire a general knowledge about the state of rock art around the world (e.g. how many sites there are, their age, content, meaning and relative importance). The initial goal is to make world distribution maps of all the pertinent information. This should contribute to a broader view and a better understanding of the rock art phenomenon, but it should also contribute to make comparative data available for specific studies.
MASAO: From the scopes and aims of rock art research which we discussed in the last session, a research approach to the study of the art can take many perspectives. The researcher has to decide for himself, according to his own concern (archaeology, art, religion, etc.) what it is that he intends to achieve from rock art studies. Every research project should have models of analysis on which to base the study. If the information reflects the principles of the model, then there will be progress in rock art research. It means that new models have to be found and tested until the information we have collected conforms to certain established patterns, which will then tell us something about the nature and significance of the rock art.

TRIPATHY: It is important to distinguish between the cultural groups who made rock art; as we have seen, art was produced for a variety of reasons, by different means. We should attempt to explain these differences through the interpretations of the art. The method of research for rock art would depend on the background of the cultural group, the influences which helped shape the structure and formation of the society, and their group behaviour. A model of analysis for a comparative study must be flexible enough to control these influences.

ANATI: The method of analysis used by the Centro Camuno is divided into three sections: 1) stylistical analysis; 2) chronological analysis and 3) ethnological analysis. The stylistical analysis is the detection of certain recurring figurative traits within an area. On a large scale there are specific characteristics which form horizons of rock art, such as the Early Hunters, Late Hunters, Fishermen, Pastoralists and Mixed Economy. Each one of these major groups has defining features in their art. It is easy to recognize general trends of style, but each of these may have characteristics which separate them into further groups. The analysis of styles is essential because each stylistic trend may contain hints for understanding motivations, purposes, and cultural background.

The chronological analysis is conceived in two parts: relative dating and absolute dating. Relative chronology is made from the study of the phases of the art by considering superimpositions, the degree of preservation of each group or style, the degree of patination on the figures, and the correlations with the archaeological record of the area. It provides chronological sequences which enable us to state in which order the figures were made. Absolute dating establishes a fixed time of execution for each depiction and may be determined by such features as extinct animals, characteristic implements of an archaeological period, or the possibility that material remains are found in strata related to the rock art. Other methods such as radiocarbon dating and geological analysis may further help in absolute dating.

The ethnological analysis reconstructs the cultural data rendered from the rock art: elements concerning daily life, social practices, economic activities, political structure, religious belief systems and the contacts and affiliations with other groups: as much about the pattern of life of the cultural group as possible. This should be accomplished after separating the depictions into phases which correspond to the stylistic and/or chronological series, and these are then studied individually for the details regarding the pattern of life of the makers of rock art.

When these fundamental analyses are completed a better understanding of the cultural group in question and of its evolution is obtained. If a definition of such a group is reached, a substantial goal has been achieved.

Single sites may provide a limited amount of information, but when large numbers of sites are analysed a vast amount of substantial content may become available. The final product of the analyses is the historical reconstruction of the human group that lived in a particular area or region, its peculiarities, similarities and differences, when compared to other groups.
MASAO: We may extend our analysis to include the function of rock art in society. An ethnographic analysis reveals aspects of the daily life and major economic activity in each phase of the rock art represented. With the functional analysis the subject matter is being further studied. No doubt, it is difficult to determine, the role of rock art in the group. Rock art may have been produced for many different reasons: to achieve success in the hunt, to insure rain during the dry season, (magical purposes), for leisure, or in the course of training young initiates into manhood. Whatever the purpose may be, it is important to understand the meaning of rock art in the society and this will aid us in grasping what it is we are studying in rock art.

ANATI: The functional analysis can be extended by studying the patterns of form of the rock shelter or of the location of the rock art. With this analysis the researcher would want to determine also whether the rock art site was a habitation place, a religious centre or a public meeting place for special events (initiations etc.). The artists may have made specific choices for the location of the rock in which to produce the art. Indeed all this information is extremely important and no less vital to research.

WAINWRIGHT: Some knowledge of the relationship between rock properties and the paintings themselves must be arrived at. In Canada we have made numerous chemical analyses on samples of the paint pigments, which in all cases have proved unsatisfactory in determining what type of binding medium was used by the artists. Apparently they would use organic material such as fish roe or bear grease which would decompose some time after, but the colour would continue to preserve for long periods. In some cases they may not have used any binding medium. For instance in Argentina the handprints that were made by blowing the paint through a pipe to get a negative impression would have been made using a dry pigment to allow the paint to pass through the blowpipe and make a fine and even distribution.

The media themselves are usually composed of iron oxides and hydroxides which are ubiquitous minerals in the earth, so tracing their origins would be very difficult. The number of variables involved with the examination on the penetration of the paint into the rock is outstanding and to study the effects of the ecology on the paintings would mean having to consider ten thousand years of climatic changes, natural disasters, acid rainfall and many other factors. It would be a gigantic task on a microscopic scale that would only produce random results.

Some general conclusions should be made regarding the relationship between the rock and the art. The type of rock, its geomorphological character, the placement of the painting at a certain location on the rock and the position of the site in the landscape should all be considered.

ODAK: There is often a formation of an iron oxide crust that may confuse the observer as to whether or not it may be traces of paint or just a stain. Fine white silcrete is often difficult to distinguish from light-coloured paintings. This problem is of course reduced when the paintings are variously coloured, which allows a wide range of tests to be done to determine the different chemical properties and, more importantly, the artists' use of colour.

WAINWRIGHT: Although we do have pictographs in green, white and black, for the most part the paintings are coloured with a red ochre material, usually on a reddish background. This makes it difficult to distinguish superimpositions, border lines etc. The technique we would apply to help distinguish between two such paintings is not unlike the techniques used to study Renaissance or even modern art before restoration. When faced with the problem of superimpositions, infilling and over-painting, which produce different layers of paint, a chemical breakdown of the substances in the paint could determine a stratigraphic sequence that will aid in relative dating. We need to pursue this aspect of research more actively.
FONSECA ZAMORA: The newly developed dating technique of amino-acid change may help in obtaining dates from paint samples. The process consists of the study of the alteration within dead organisms from one level of amino-acid to another. The University of Pittsburgh has excavated a large rock shelter that had a very good stratigraphy between occupation levels. They used C14 and amino-acid dating simultaneously to compare how each methods worked. The amino-acid testing proved to be a better technique under those specific conditions.

WAINWRIGHT: The technique of amino-acid racemization is very much a new and experimental method. People have encountered some difficulties using the technique, except when they have a well-defined strata that has undergone similar climatic change.

WALKER: The technique can-in fact be used only for relative dating at this stage. The technique was tried for dating rock paintings in southern Africa but they did not have very much success.

WAKANKAR: Unfortunately no laboratory in India is equipped to do amino-acid racemization or C14 dating. We must send materials for dating to the United States or to Europe. If we want to do this we must get permission from the government who is reluctant to have items sent out of the country for fear they might be lost or stolen.

ANATI: There are other methods for dating rock art. The engraved boulders at Cemmo in Valcamonica lay at the bottom of a steep mountain. From a geological study of the soil strata around the boulders we were able to date when the rocks had fallen from above. This provides a terminus post quem for which to date the rock art, since it was established that it was executed after the rocks had fallen. At Dos dell’Arca we found rock- engravings below an archaeological level. This fixed a terminus ante quem for the figures.

WAINWRIGHT: We have been using lichenometry in Canada to a limited extent for dating. The size of the lichen encroachment is measured and the rate of growth is determined for that particular species. This technique is difficult to apply even in regions like Canada or the Alps, where it was developed, because of technical problems.

ANATI: Rock art researchers are able to use various techniques for dating, and they range from the more sophisticated methods such as of C14 or amino-acid testing, to the simple study of superimpositions and styles. Dating is an essential part of any analysis and is a basis for the conclusions reached about past cultures.

FONSECA ZAMORA: In order to understand better an approach to the analysis of art it is necessary to look at the stylistic seriation. By studying the development of the subject matter, relative chronologies for the depictions can be established. The researcher is then able to compare his findings with the archaeological record in the region to explain the past behaviour of the human culture under study.

DARWISH: We need to view the development of artistic expression on a world scale in order to see how it coincided with the development of culture. The way in which rock art follows the same lines of growth in a region, as the culture in general, will tell us about how such factors as intellectual ideas influenced the development of a human group.
GADO: It would be most important to begin gathering comparative data from all parts of the world. An aim of research is to define patterns of behaviour. From a world study of rock art we should be able to define rock art provinces using a variety of criteria. We may describe regions in terms of the various characteristics and traits predominant in art and in culture. This can lead to the production of different distribution maps and to the understanding of patterns. For example, maps can be set to show the distribution of certain depictions found throughout the world, such as the labyrinth.

ANATI: Having distribution maps is certainly one priority measure that needs to be taken on an international level. The basic starting point to do this would be to fill out standard inventory forms, on a world base which will then be a working tool for comparative research. A World Archive should be created that would have as much documentation as possible in the way of standard data, locational maps, photographs and tracings. In a central archive all the information would be readily available as to the number and type of sites, figures or patterns in any particular region or country, and it would not be necessary to contact half a dozen organizations just to see if this information exists or not.

Today sometimes, data collected seem to be the private property of the scholar who collected them. It even happens that data from one country are kept in another country and are not available to the local researchers. This causes a tremendous waste of time and energy as some investigations are repeated by different teams to obtain information which is kept hidden somewhere.

The collection of information for a world inventory and data bank has two main advantages: 1) availability of data to researchers and institutes the world over; and 2) standardization of the collection of data by using the same universal system; otherwise it will be like communicating in a Tower of Babel and research will be of no help to anybody. The first advantage really can only come about if the second advantage is achieved. To reach these goals it is necessary to collect the same information using the same terminology. For instance when naming or classifying figures we should all use a common typology, and the same basic information should be provided for each site.

WAINWRIGHT: The need for a World Data Bank and Archive extends to having a permanent record of rock art. To this extent researchers should be concerned with the adequate storage of their records of a site, i.e. the photographs, drawings and tracings. These materials start to decay after a certain period of time. For example, a 35 mm colour film is likely to have a short lifespan of about twenty years. Consequently, the rock art will outlast the records, wasting the time and effort put into their recording. Repeated use of a slide also reduces its lifespan. Similarly, acetate plastic for tracing is overly sensitive to degradation by light, temperature and humidity and hence needs careful storage.

The concept of colour separation for the preservation of photographs is a field that the Canadian Conservation Institute has been applying to rock archives. The process involves the separation of the colour information into four component colours, referred to as the magenta, cyan, yellow and grey. These four parts are then stored as black and white negatives, which means they can last for an indefinite period of time. At any future date they can be recombined as often as one wishes to use them. The technology to do this is actually based on the early “one-shot” cameras which used a system of prisms that directed the light from the lens to the film through a series of filters (a red, blue and yellow) which produced the colour photograph. Since one-shot cameras are no longer available the same procedure can be achieved by taking three pictures, one with each of the required filters, and then a final photograph in natural light to be used for study purposes. Some kind of
a colour scale has to be included in the photographs, like the "Kodak standard scale", so that the developing technician can use it as a guide when printing the pictures. The Canadian Conservation Institute is preparing a report on this topic.

PORTA: There are two procedures at ICOM for photograph preservation. 1) Do not use colour slides; use negative film because it is more permanent. There is a process known as Thiverchrome by which slides and black and white photographs can be made directly from one negative colour. 2) Another system that will be available in the near future is photography by magnetic dots. This is a system that uses a camera similar to a 35 mm but there is no film. Instead, there is a very small magnetic square which the light penetrates in dots. The image is then reproduced on a video screen. Because the magnetic field is very stable this technique should solve the problem of colour storage.

The problem of colour reproduction is most important. Not only is the colour of the slide not the same as the colour of the figure that was photographed, but also the colour of the figure changes at different times of the day and under different conditions. At Altamira, a chronometer machine that produced tri-chromatic coordinates was used. The colour is translated into three numbers which can always be referred back to the original colour series as a record to compare any modification in the chroma. It is a very expensive machine, requiring electricity and a technician who is experienced in this type of work.

ANATI: An aspect of collecting and storing information is that it should be able to be computerized and compared with other data. The purpose of documentation is to provide, as completely as possible, a record of the site. It contains the raw material for the analysis and interpretation that ultimately leads to historical reconstruction. Satisfactory storage of this information is essential, but if there is no output from the results then the information is wasted; it should be stored to be used, now and in the future.

WANLESS: Moreover, storing information safely means that in the future comparisons can be made regarding the deterioration of the rock art site, and also allows people to verify published information, especially in cases of rapid deterioration.

WAINWRIGHT: Permanent records of rock art are definitely necessary now because rock art is very rapidly disappearing. This is another area where archaeologists and conservationists must work together.

ANATI: What type of data storage is available in Canada that can be provided to colleagues around the world, in reference to the types of figures or the number of engravings or the kinds of associations that may exist?

WAINWRIGHT: Comparative research on a regional basis is only beginning in Canada. There are several institutions which contain documentation on rock art, for example the Dewdney Archives in the Royal Ontario Museum, the British Columbia Provincial Museum and a central repository for Northwestern Ontario in Kenora. The Canadian Conservation Institute is interested in the computer retrieval and technical aspects of data storage. From a distribution map, for instance, we would be concerned about which sites could be affected by a hydroelectric project or an oil pipeline so that we may take protective measures.

ANATI: There are many services that a world archive and data bank could offer. We have discussed just some of them: a means by which to do research, a way in which we can store information for future reference, and to consult when we need to know which sites in an area will be affected by human development. In fact, the archive has use for a great number of different people.
From this session we have seen the imperative need for creating a world archive and data bank and in later sessions we may define the requirements that would be needed to fulfill such a venture. Canada has started with regional archives and these might prove to be good examples. The Canadian Conservation Institute is involved with the technical aspects of storing data and I am sure that colleagues would be most interested in being kept informed of the CCI's developments.

Other countries, such as Sweden, Australia, Italy, have started with their own national rock art archive. These attempts are invaluable for progressing towards a world inventory in which all countries will join efforts and from which all countries will benefit.

It has been felt during this session that a world archive and data bank is becoming essential to develop further methods of research and scopes in rock art. Broad planning, preservation and conservation, and adequate evaluation at international levels can hardly be achieved without the necessary comparative information. Further ideas on the organization and set up of such a centre may come from our next discussion on regional and continental problems.

V - Regional and miscellaneous problems

Chairman: O. Odak (Kenya)

Participants: B. Gado (Niger), Y. Isar (UNESCO), F. Leblanc (ICOMOS), F. Masao (Tanzania), T. Medhin (Ethiopia), K. Michelsen (Norway), K. Tripathy (India), I. Wainwright (Canada), B. Wanless (South Africa).

ODAK: We have outlined for UNESCO and the other international organizations the basic requirements for the study, understanding, preservation and presentation of rock art, and how all of this can be achieved. We must now make clear other problems that you feel should be brought to the attention of the representatives of the world organizations.

WAINWRIGHT: The problems in Canada stem from the fact that the country is very large and researchers are kept very busy. The many geographical regions pose a variety of natural conditions which the researcher must deal with, weather ranging from arid to humid and art on various types of rocks (marble, sandstone, granite etc.) are just a few the natural variations that make research and conservation more complex. While Canada has excellent research facilities both at federal and provincial levels, researchers must work on several projects other than just rock art as there are no specialists concerned just with rock art. A positive aspect is that in Canada there are strong and active professional associations working towards the protection and preservation of the cultural heritage. For the past fifteen years the Canadian Rock Art Research Association (CRARA) has been involved in the exchange of information, the publication of newsletters, the holding of triennial meetings, communication with the government and public officials, and verbal resistance to activities that threaten to damage rock art (e.g. hydroelectric dams which may flood sites or oil tankers which may spill oil by ocean sites). And above all they have clearly defined the problems to other organizations, like the Canadian Conservation Institute, who then help it possible. CRARA's work is one way we are overcoming the problems regarding rock art in Canada.
ODAK: Kenya has only recently become involved in rock art studies and very little has been published about it. Because of this we are facing all the problems associated with carrying out research: personnel, funding, conservation, preventing vandalism and so on. We need international support to initiate research and even to define what our main problems are. Several countries could demonstrate their concern by helping us in this research; our country needs culture and history as much as we need technology and medical care.

TRIPATHY: In India, we are either unaware of, or cannot afford, the more sophisticated techniques that have been discussed here, therefore we are forced to continue our sketching and limited photographing of rock art. Neither the government nor the universities have, as yet, taken any proper steps for organizing any type of research, let alone shown any interest in rock art studies. Support for research has come from the personal attempts of small groups of persons affiliated with institutes. Even the researchers who conduct excavations often do not do any analytical work with the materials which they have recovered, but simply send them to museums for display purposes. Subsequently a major problem in India is how rock art studies should be brought to the attention of people in authority who can then aid in making their importance properly understood by everyone. If perhaps a national organization solely for rock art could be established then it could oversee the work being carried out in India; but again we need international assistance to provide aid and know-how for our research.

LEBLANC: There is not enough coordination in the field of rock art to generate a movement towards the types of activities being suggested. In fact, this is the first international meeting held to discuss a universal approach to rock art and we are just discovering the kinds of problems researchers are encountering. What ICOMOS and the rest of the international organizations can do is to advise the respective national governments on how to develop an appropriate mechanism for research and studies in rock art in their countries which can then promote international cooperation.

WANLESS: South Africa has about 7000 recorded sites which are found in rock shelters and on boulders, so it is difficult to generalize on methods for documentation and conservation. Weathering and vandalism are our biggest problems. For the protection of sites against weathering we have been diverting the water and moisture away from surfaces with art. Vandalism is related in a large degree to the fact that there is not a great consciousness about the richness of rock art in the country. Usually within five years of the publication, a site has been destroyed by vandals. The government no longer publicizes sites and is now trying hard to protect the ones the public has knowledge of. What we must do is disseminate information to the population, mainly to school children at an early age, on the importance of preserving and understanding rock art. Basically, then, our problem is people and the need to educate them.

GADO: The problem of education applies to the cultural problem as a whole. In African countries, the inherited colonial curricula in school programmes were drawn up in the early missionary periods. It has been a slow process to change the content of these curricula and to introduce new programmes into the school systems involving teachers, schoolchildren and other educators. But there is a great interest in the cultural heritage because it shows our identity before Colonialism, and therefore rock art studies and appreciation will have a very positive response.

ISAR: UNESCO organized and sponsored a seminar last year in Freetown precisely on the topic of introducing the cultural heritage into the school curricula. We are now preparing a booklet in cooperation with the Organization of Museums, Monuments, and Sites in Africa (OMMSA), who co-sponsored the conference, mainly for schoolteachers and museum personnel who are interested in this subject.
MASAO: If the premise of rock art research is to educate people about their
heritage then the people must become involved; parks and reserves are made
to serve the population. Therefore the community should be active right
from the initial stages of planning. This must be taken as the *sine qua non*
for any park or reserve or we will merely be creating "white elephants" or
tourist attractions. The planning should take into account what local re-
sources are available, especially as far as raw materials are concerned. If the
necessary equipment is not available then improvisation would be the next
best thing.

Most of us here are not in a position to influence official policies governing
culture in our countries nor, for most developing countries, is culture a de-
clared priority item. We should ask UNESCO to contact the ministries
responsible for culture in developing countries to emphasize the importance
of preserving rock art as one of the components of culture. Perhaps then
governments will take the appropriate steps to protect rock art and make
available the necessary funds.

TRIPATHY: Most researchers themselves are not properly exposed to the
subject of rock art. Publications are a valuable source of communication
between scholars. The problem in India is that we are either not able to find
the publications or we find only those written in foreign languages. We need
publications everyone can read.

MEDHIN: There needs to be an exchange not only of specialists but also of
educational materials: publications, slides, and exhibitions of work being
carried out in rock art by the institutions in other countries. Perhaps this
could be accomplished by museums and universities.

MICHELSEN: If we are going to progress in our work then we must make
ourselves members of a large family. The government in Norway has been
very supportive of researchers doing rock art studies. Yet it is important
to be able to go to other university departments, for instance the institutes
for geology or chemistry, to use facilities or consult staff members. Interdi-
sciplinary cooperation must be further developed. We would never have all
this expensive equipment solely for our own work; we must cooperate with
other institutions to provide each other with the materials not available to us.

ODAK: Poor and rich countries have many problems in common: personnel,
resources, concern, cultural awareness are not evenly distributed. Even the
rock art sites are not evenly distributed and sometimes countries which are
rich in resources have few sites to research and countries rich in rock art heri-
tage lack trained personnel and adequate resources. It seems that interna-
tional cooperation could be very useful in solving regional problems.
VI - Africa

Chairman: F. Masao (Tanzania)

Participants: E. Anati (Italy), P. Bardill (Lesotho), M. Duarte (Mozambique), O. Fonseca Zamora (Costa Rica), B. Gado (Niger), T. Medhin (Ethiopia), O. Odak (Kenya), J. Schobinger (Argentina), V. Wakankar (India), N. Walker (Zimbabwe), B. Wanless (South Africa).

MASAO: This century has seen a great deal of investigation of African rock art. Between the World Wars, large concentrations of sites were surveyed in Ethiopia, South Africa and Zimbabwe. Recently more rock art sites have been found. We now know that the distribution of sites covers most of the African continent. While careful and complete research is being done on local levels, little work has been done with a continental perspective. In this session we hope to hear about the general situation in different countries so we may confront the problems of rock art research in all of Africa.

In Tanzania, prehistoric rock art appears only as pictographs and is restricted to central Tanzania, particularly the Kondoa-Singida area bordering on Lake Victoria and the Masal Steppe. The Kondoa-Singida area has the most extensive and varied rock art sites. Most of the sites are rock shelters, which may have served as base camps, while their walls provided ideal panels on which to paint. Some have stratified cultural deposits below the surface.

The subject matter of Tanzanian rock art can be grouped into four categories:
1. Anthropomorphic figures in which the trunk and head are usually exaggerated;
2. Animal representations, portrayed in many styles, but ultimately invariably naturalistic;
3. Geometrics, single and double lines, circles, checks;
4. Tectiforms, doodlings and various abstract forms which defy any description except to lump them together as enigmatic forms.

Four main styles have been tentatively recognized:
1. Stylized line representations, often depicting anthropomorphic figures, and executed in red.
2. Boldly filled silhouettes executed in various shades of red pigment to represent animals. At many sites, styles 1 and 2 seem contemporary.
3. Outline silhouettes sometimes filled in by various motifs. This is a style used for depicting animals and is usually executed in red though other pigments may also be found. This style seems to follow numbers 1 and 2.
4. White semi-naturalistic, boldly filled-in silhouettes executed in a thick white paste. The finished project is fuzzy and generally poor. This style is considered to be later than the others.

Present day tribes, the Irangi, Gogo, Nyaturu, Iramba, and Hadza, who inhabit the areas richest in rock paintings, deny authorship. However, the Sandawe, a remnant hunter-gatherer group who have now become pastoral, are known to own clan rock art sites which they hold sacred. It is tempting to speculate a possible connection in the authorship of Tanzanian rock art with that of South Africa.

Several of the rock shelters have been excavated and it seems that the art of hunters can be related to the material culture of the archaeological levels. In some sites we have found an accumulation of over two metres of anthropic levels with all the phases of the Late Stone Age, from the transition between the Middle and the Late Stone Age, all the way to the Iron Age, a sequence of over 20,000 years. Based on the stratified deposits from the rock art sites, and assuming that temporal associations between the rock paintings and the stratified deposits can be established, the rock paintings may be contemporary with each of these Ages. Some rock art may also be quite recent, since
Marai clans still paint rock shelters with their cattle ownership symbols. Further, pictures of cars and other modern appliances have been reported in rock art shelters. No doubt some of the paintings, such as the anthropomorphic figures, are quite old, while the semi-naturalistic white silhouettes are relatively recent.

Judging by the practice of the Sandawe who venerate rock art sites, a number of sites probably have religious intent. However, some of the rock art may have been executed simply to idle away leisure time while also providing satisfaction and pleasure at seeing a finished work of art. The Tanzania rock art can be seen as a link between the two better known rock art regions in Africa, i.e. the Sahara and South Africa.

WALKER: Over 2,000 rock art sites have been found so far in Zimbabwe. The majority are painted shelters located in granitic regions. On the other hand, engraved sites occur mainly on sandstone in the area to the north and to the south. The rock art tradition may go back over 14,000 years, though some of the creations are quite recent.

Most of the rock paintings correspond to the Late Stone Age and are interpreted in religious terms, although some researchers feel that they are simply narrative scenes. Few paintings have been interpreted in magical terms. Late Stone Age paintings are usually naturalistic and themes are woven mainly around animals and human groups. In contrast, more recent Iron Age art is often schematic and crude, and may relate to ceremonial activities.

Rock engravings include a few animal outline peckings, but the majority are of animal spoors. These are considered to relate to the Late Stone Age, while a third group, namely geometric designs, are thought to relate to the Iron Age.

BARDILL: There are at least 6,000 rock painting sites within Lesotho, a country approximately the size of Belgium. This must give Lesotho one of the highest concentrations of rock art in the world. Dating of the rock art has been a problem. Some scholars believe that the figures are very old, while others believe that they are very recent. But since most surfaces have ten or more levels of depiction, we tend to suspect that both are partly correct. There are traditions that have lasted for ages. If we could locate them in a time sequence it would help provide the much needed historical perspective.

DUARTE: In Mozambique, the rock paintings are distributed in the mountains in the centre and the north of the country. All of them are located in rock shelters, and many of them are exposed to the direct light of the sun and to rain. Basically we can consider two styles of paintings that correspond to different ages and economies:

1. the naturalistic paintings of the San population with animals and hunters painted in different shades of yellow, ochre and red;

2. the schematic paintings with geometric and other symbols, almost all of them painted white. These schematic paintings are considered to be more recent than the naturalistic ones and to have been made by the Bantu population that settled the territory during the Iron Age.

After achieving independence, Mozambique initiated a programme to study its history and culture; which had been disdained and even denied during colonial times, and which consequently are now eroding rapidly. The recording of oral traditions among the old people is an important and urgent task.

In 1978 a “Natural Campaign for Preservation and Appreciation of the Cultural Heritage” began, engaging people all over the country in study and critical reflection about culture and the past. This campaign, which will end in 1982, is divided into phases concerning different cultural subjects. File-enquiries are made for each subject and distributed all over the country by “Agents for Cultural Preservation”. The rock art sites are included in the file-enquiries for historic places. At a base level, the campaign is organized
around "Circles of Interest", groups of pupils in each school, orientated by their teachers, who make the historical and cultural recordings and inventory of the region around their school. Because popular participation in the programme is so high we have learned that:

a. it is possible to find a large number of sites in a relatively short time; the same task would take a long time if undertaken by professional researchers;

b. the local populations are aware of, or can be made aware of, the value these sites, which is the first step towards their protection, conservation and appreciation.

After the start of the inventory, the second phase is the scientific recording by photography and tracing. This work must be done by specialists with the necessary technical equipment and skill. The third phase, not yet begun, is the archaeological work which will provide concrete information about chronology and lifestyles of the ancient communities.

ODAK: Compared to neighbouring countries, Kenya's rock art heritage is almost completely unstudied. Thirteen years ago, only two sites were known. Some progress has been made since and over thirty sites have been examined so far, but few have received adequate attention. The work begun in 1976 in the Western Highlands of the Rift Valley and in the hills around Mt. Elgon has led to recording of rock art sites there. Northern Kenya contains engravings which have not yet been sufficiently recorded. Among the sites studied in detail are those of Nyanza Gulf, Lake Victoria, and of Western Kenya. The most relevant naturalists' paintings are at three sites around Mt. Elgon; they may belong to the Late Stone Age, while schematic rock art probably belongs to the Iron Age. Considering the scanty information available about Kenyan rock art, and the need to compare notes with researchers in neighbouring countries, it is important that cooperation in East Africa is developed.

ANATI: There is an original province of Stone Age hunter's art in Central Tanzania which the early phase of rock art in Kenya appears similar to. The pastoral and later rock art is southwestern Africa seems to be different and it is likely the styles originated outside the region. Rock art in Tanzania appears to have some stylistic similarities with that found further south, which we call the "Late Hunter-gatherers"; for this phase the South African group is the richest of all. The earliest phases on the other hand appear to be probably as old as the European Upper Palaeolithic art. The Early Hunters, which have depictions of large flat-type animals with some specific symbols related to them, are restricted, as far as we know, mainly to Central Tanzania and Namibia. Apparently no humans are represented in the early phases. After the Early and Late Hunter-gatherer phases, there is the pastoral phase, sometimes defined by the misleading terms of Neolithic and Post-Neolithic. The earliest phases of pastoral art may go back as far as 2,000 B.C. It is then when we find oxen present in Kenya, Ethiopia and Somalia, figures not represented during the hunting-gathering phases. Ethiopia may have one exception at Park Epic where there may be a few figures from a Late Hunter-gatherer phase.

Next there is the group of Agricultural and Mixed Economy art. In Tanzania this may be related to early Bantu groups. Schematic drawings cover the last 2,000 years also in Kenya and Ethiopia. The two phases of the Pastoral and the Agricultural and Mixed Economy are also found in Zimbabwe and Mozambique. The image we receive is of two centres of very early beginnings of art so far: Tanzania and Namibia; and then there is an explosion of rock art throughout the subcontinent. This distribution may prove to be extremely significant for historical geography in that part of the world.

ODAK: There seems to be a certain stylistic pattern in the Mt. Elgon region of Kenya which comes from Ethiopia and which has not been found south of this region. The Lake Victoria area has completely different styles. Thus, Kenya may be the transition zone between the southern and northern rock art.
ANATI: The entire distribution of rock art in Africa reveals a peculiar pattern. Rock art of the two later groups, the "Pastoral" and the "Agricultural and Mixed Economy" are spread widely almost all over, with the major concentrations along the Nile Valley, in Egypt and the Sudan, in the Ethiopian highlands, in the Atlas mountains, both in Morocco and in Algeria, and in parts of Chad, Niger and Mali. When we turn to Hunting and Gathering rock art, the distribution changes. The Hunter-gatherer rock art is spread out across several broad areas, of which the most significant include Namibia, South Africa, Botswana, Lesotho and Zimbabwe. A second major area is clustered in the Central highland of Tanzania and a third major area concerns the southern Central Sahara, from the Hoggar and the Tassili in Algeria, through the Fezzan in Libya to the Tibesti in Chad. Strangely enough, very little information on the rock art of Central Western Africa has been assimilated. Little or nothing is known about rock art in Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Benin, Nigeria, Cameroon, Gabon, Congo, the Central African Republic and Zaire. This geographical sketch already provides some general view on the distribution of rock art in Africa. One of the many questions which may be raised is whether the three major concentrations of Hunter-gatherer rock art (namely in South Africa, Central Tanzania and the Central Southern Sahara) have any connection with each other or rather represent three independent centres of early artistic creativity. It should be added that in the Sahara and in large parts of South Africa most of the Hunter-gatherer art belongs to the "Late Hunters" styles whereas major concentrations of "Early Hunters" art are found in Tanzania and in Namibia.

GADO: Recent discoveries seem to invalidate the concept that art was invented in Europe and later diffused into Africa.

DUARTE: It is strange that Central Western Africa has so little rock art. That same region has produced most creative and imaginative art in wood: masks, images, figurines, spirits, divinities, and beautifully decorated functional objects.

ANATI: Cultures from the tropical forest tend to use wood as the raw material for art. This later inspired the use of other materials, such as pottery, for the last two thousand years; and metal, with such stupendous results as in Benin.

MEDHIN: Rock art is found mainly in the mountains, where stone is a dominant feature of nature.

WAKANKAR: Have any studies been done in Africa on the comparisons of superimpositions from groups of rock shelters in different areas to form a chronology?

ODAK: As far as I know there have been no systematic studies carried out on superimpositions. This will be the subject of future research.

WANLESS: It is very difficult to determine a chronology for a very large area or even for one country because the chronology of a region may not correspond to the chronology of a neighbouring region. Rock art in South Africa consists of paintings in shelters and caves and engravings in more open savannah areas, and is thought to have been done by the San people and their ancestors. Attempts have been made in South Africa to create a chronological sequence on the basis of superimposition, but there may be regional styles which are common in one area and are rare in others. It is necessary to study each region independently.

MASAO: The four-stage model that Anati has proposed for Southern Africa can be applied in a general sense to most regions both in this study area as
well as on other continents. The sequence: Early Hunters, Late Hunters, Pastoralists, and Agricultural and Mixed Economy is an easy and logical succession of widespread patterns. It should work, for instance, in Northern Africa, the Near East, Arabia, India and other areas. This chronological ordering can be put into operation for intrasite research and is a very valuable method for broad comparative studies.

ANATI: The type of rock art in most of the regions of the Republic of South Africa reflects the kind of situation that Wanless has mentioned because 90% of the figures belong to the Late Hunter-gatherers phases. Within a certain pattern of tribal life, reflected in the rock art, there are tribal and regional characteristics. A broad division can still be made between the other kinds: Agriculture and Mixed Economy, Pastoral and Early Hunters. They are altogether very different assemblages. I would certainly agree about the necessity of establishing first local and regional sequences as a base for broader comparative work. But let us make sure that by concentrating our interest on one we do not fail to see the forest.

SCHOBINGER: The same four horizons may be applied to South America. Are there some specific contextual associations in certain regions of Africa between all these periods? In particular, would the schematic-abstract style always correlate with the Agricultural and Mixed Economy horizon?

WALKER: As part of the research strategy in Zimbabwe we are trying to obtain evidence for the age of the rock art from excavations, but there have been problems with the stratigraphy. However, most of the schematic figures seem to be quite late, though they may be connected with Hunter-gatherer rock art, as well.

WAKANKAR: In India we have the same four horizons but there are many different variants. Has any work been done on devising a chronology based on the artists' use of colour? In India there are different colours in different periods; dark colours were used in the earlier periods while brighter colours are used later.

WALKER: We have made numerous attempts at establishing a chronological sequence. Colour has been tried for this sequence but it has not proved feasible. We have been relying more on speculation at each site to determine chronology of the art. Red colour has been used in every period.

FONSECA ZAMORA: Is it possible to relate colour to certain styles that are found in the later periods or to those in an earlier period?

WALKER: The colour of the later paintings becomes varied. Once clay pigments were introduced during the Iron Age, the colours became much more varied than in the early paintings. Different binding mediums were also used in the later periods as opposed to darker tones. It is quite often the white pigments, which are very easy to produce, that give an apparent monochrome. An interesting phenomenon at one site in Zimbabwe is the growth of a fungus on a group of human figures. In every case it is purely localized on the head or face. This raises the question as to why the fungus has not attacked the rest of the painting. It seems that the type of pigment used may be responsible for that.

ODIK: It has been hypothesized by Dr. Philipson not only that earlier paintings in Zimbabwe are in different colours but than naturalistic paintings are related to the earlier periods while schematic designs are from the Iron Age. In Kenya, where there are superimpositions of one colour over another, we usually find the white colour superimposed upon the red colour, making the white paintings later than the red ones.
MASAO: The same is true for Tanzania.

ODAK: As for the relationship between style and colour, in panels where there are depictions of animals mixed with non-representational designs the latter are normally in white and overlap the animals which generally are in red or other colours.

MEDHIN: In Ethiopia the rock art is usually of a deep red ochre with white superimpositions. The white figures are later than the red ones. Some figures of oxen are polychrome, belonging to a special pastoral style. The typical styles are more or less naturalistic figures of animals, both domestic and wild. Some of the white paintings are abstract and schematic. Paintings and engravings are most common in the northern and eastern parts of the country.

MASAO: It is generally accepted in Tanzania that the styles that use the white are later. In all cases where superimpositions occur the white overlaps the red. As well, depictions in darker pigments sometimes are more faded than those in white. Perhaps this would have something to do with their age or with the binding medium. There has been speculation that the white was derived from plant resin or latex. In some cases it might be derived from ground diatomaceous (chalky) stones.

ODAK: It would be interesting to compare the regional distribution of rock art patterns in Africa according to style, techniques and colours to find the paradigms in their common features and stylistic relationships. Differences are inevitable even within groups of the same culture.

ANATI: This is the kind of documentation that a world data bank could produce at once.

MASAO: There is a noticeable lack of steatopygia in human anthropomorphic figures, especially in Tanzania. There are a few example where the buttocks are slightly exaggerated, but not to the extent that they are in the South African anthropomorphs. This may be because we are dealing with separate art styles and not cultural groups.

ODAK: One of the major characteristics of the African race is a sufficient amount of flesh in the back. It would therefore be difficult to relate protruding buttocks with the early distribution of the San people.

FONSECA ZAMORA: It would be better not to use a physical anthropological approach to rock art as it may be simply a difference in style. The style may have developed from certain horizons in an area. Specific stylistic variations from one area to another may show differences in body depictions and changes from the realistic to the abstract.

BARDILL: Physically the San people are short but the paintings sometimes have stylistic representations of elongated people in a running position. If indeed they are San paintings, this style would seem to contradict the physical characteristics of the artists. All we can say is that we do not know enough about the prehistoric artists in our part of the world.

ODAK: Certain parts of the body may be exaggerated for ritual purposes. Art itself is something that is rather subjective and may show cultural conditions. Legs may be exaggerated to indicate running or the belly may be made very big to indicate a pregnant woman.

FONSECA ZAMORA: Human motif forms can display physical features which may be associated with the extant population in the region. Even with this we may only make the hypothesis that the style is a result of these characteristics. For prehistoric art, however, these comparisons cannot be made, because we have nothing to compare it to!
WALKER: Since art attempts to convey some meaning to the viewer, the elongated figures may be a demonstration of movement and speed. Similarly steatopygia might be associated with women. The observer must bear in mind that interpretation is limited to what the most reasonable meaning is after all other possibilities have been excluded.

MASAO: It is generally accepted that the Negroid race has well-developed buttocks. In light of what Walker has just said, the exaggeration of the buttocks may be complimentary to a person.

ANATI: In many examples of rock art there are physical attributes of races which may be identified. In the Sahara there are depictions of Negroids, early Libians and humans with blond hair. In Arabia there are depictions of a Negroid people that no longer inhabit the area and most likely disappeared around the third millennium B.C. From such cases certainly we can define the ethnic background of the figures portrayed. We cannot be categoric about such traits, however. Associations such as those above must always be made with care, since they might represent stylistic forms.

FONSECA ZAMORA: The researcher must decide if the form of realism rendered by the art is accurate. This would assume that one is trying to answer a specific question about the rock. Anthropologists work with different kinds of evidence that can, on a general basis, relate people to their environment. The same holds true of rock art; if the environment is of the type that permits biological affinities in the population to be identified, then the rock art in the region may be examined in terms of physical characteristics. However, we must ask ourselves why Negroids were depicted in Arabia and the Sahara while they seem to have resided only in the jungle regions of Lower Africa.

ODAK: Perhaps pre-conceived ideas must face new evidence, but the origins and diffusions of races goes beyond the scope of this session.

BARDILL: Throughout all of Africa there are many figures depicted in a particular way. The best method is to study them while working with the evidence in hand, measuring isolated factors, controlled by specific criteria, to come to definite conclusions.

MASAO: From the broad discussion which we have had it appears that there are problems of dating, of classification, of identification of styles and horizons, of synchronization with material culture and of interpretation. Many problems exist along each of these lines, but the main problem, in my view, is that a system of research has not yet been agreed upon. If one scholar counts the figures, another describes the colour and a third analyses the degree of preservation the results cannot be compared and comparative work becomes impossible.

It is therefore urgent to fix basic parameters and it seems to me that the adoption of standard international forms to be compiled on each site is a good starting point. In fact, a methodology which we would agree upon is much needed. Let me give you an example. We spoke a great deal about the colour of paintings and how it may be used in the study of art styles and chronologies, but the problem of describing colour has yet to be tackled properly. The simple solution would be to use a common system of describing colour. The Munsell Colour Charts have been used extensively by all researchers and this could enable us to be more precise when talking about red or brown.

Another matter I have noted from the discussion here is that it has been primarily the subcontinent of Southern Africa that was referred to, although there has been substantial, if not more, research carried out in the Saharan subcontinent. Their problems may be different on a regional base, but it is an area that still may have important associations with the diffusion and patterns of Southern Africa.
Lastly, to carry on research, many African countries need well-trained people, adequate equipment and materials. But most of all we need a cultural reappropriation of this patrimony. It concerns our own history and for us it is vital that it become appreciated and admired both by the local population and by world culture at large. The African people should be allowed to be proud of their rock art.

VII - Eurasia

Chairman: I. Hassan (Pakistan)
Participants: E. Anati (Italy), F. Masao (Tanzania), K. Michelsen (Norway), O. Odak (Kenya), K. Tripathy (India), V. Wakankar (India).

HASSAN: The state of rock art research in Eurasia varies as much as the regions of the two continents themselves. Very little work has been done in Asia proper. Parts of India have been studied as well as several areas of the Soviet Union; but in the Middle East, where there are such monumental treasures as Persepolis and Babylon, rock art research has been neglected. Arabia, Sinai and the Negev have been studied in the Near East but in countries such as Syria and Jordan further study is necessary to bring new ideas to the history and dynamics of culture. Of the great wealth of rock art in the Far East, Mongolia, China and Thailand, we know even less.

Europe, on the other hand, has been studied profusely over the past century and researchers have taken advantage of technological developments. If would therefore seem fitting to ask our colleagues from Europe to open this session by discussing their problems and perhaps to give us a brief summary of rock art in their continent.

ANATI: Rock art is widely distributed throughout Europe, with great concentration of sites in 17 out of 25 countries. The image we receive is of two main sequences, the first beginning with the Upper Palaeolithic some 35,000 years ago and lasting until approximately 9,000 B.C.; and a second series of rock art starting ca. 8,000 B.C. and covering the Neolithic and Metal Ages. During the first sequence, rock art was already widely spread over Europe and we can define two areas of particular importance: the main concentration is in the Cantabrian region of Spain and the south-central Dordogne and Pyrenees region in France. A second area is located in Central Europe while other minor concentrations are found throughout various regions of Spain, Portugal, Italy, Romania, etc. We can divide the first series, the Palaeolithic, into three distinct phases: the oldest is the prefigurative "art" of the Mousterian Period (before 33,000 B.C.) with its cryptic engravings and finger lines. Some colleagues do not consider this phase as "art". Next is the Aurignacian period (ca. 33,000 - 20,000 B.C.), characterized by symbols, outlines of animals and schematizations of both male and female sexual organs. The final phase begins with the Solutrean (ca. 20,000 - 15,000 B.C.) reaching the apex in the Magdalenian (ca. 15,000 - 8,000 B.C.). This phase is characterized by a complex art of fully-developed assemblages with polychrome images. The caves of Altamira and Lascaux are examples of the latter.

The second sequence from the Mesolithic and Neolithic Periods onwards starts a new dispersion and new models of rock art. The general patterns of styles and evolution of the art are at first almost identical from the Ural Mountains to the Atlantic Ocean. In the Bronze and Iron Ages European culture would seem to have become more provincial and the rock art allows us to see the patterns of life, activities and ways of thinking of the
different peoples of Europe. This differentiation reflects also the changing climatic conditions caused by the glaciation of most of Europe. This is especially true for the Scandinavian Nordic art where there may have been a great deal of northward migration following the recession of the glaciers late in the Palaeolithic period. The localization of culture runs parallel in the rock art of the Spanish Levant (East), Galleo-Portugese in the Iberian peninsula West, Valcamonica, Scandinavia and Soviet Karelia. At the beginning of this sequence are the images of the large game animals of the Epipaleolithic. This is followed by the implementation of the human figure at the time of the beginnings of agriculture, which thereafter becomes the dominant subject of art. As technological innovation produced differentiation the rock art starts to consist of symbols such as concentric circles, cupmarks, meandering lines, a profusion of anthropomorphic figures and various local innovations. Among the latter were the Scandinavian ship or boat, the Valcamonican "paletta" or paddle, totemic animals and the Iberian net patterns and geometric designs. Regional patterns of mythology and beliefs emerge from the characters of figures and symbols in various areas.

Major concentrations of rock art in Europe are located in Albania, Austria, Bulgaria, Denmark, Finland, France, Great Britain, Greece, Ireland, Italy, Norway, Portugal, Spain, Sweden, Switzerland, USSR and Yugoslavia; 17 countries with some 23 major concentrations.

MICHELEN: At the time when the later sequence of rock art had started in the rest of Europe, Scandinavia was still covered by ice. The rock carvings in Norway are thought to start much later. Archaeologists divide then into two groups: the art of the "hunters" and the art of "earth fertility", or of agriculturalists. Hunting scenes extend along the Atlantic Coast from north to south Norway, and are also found in central Scandinavia, although they are most abundant in western and northern Norway. The motifs of these engravings have been taken from the world of hunting. The artists depicted food-providing animals of the mountains, forests and seas. In addition, there are drawings of men and geometric patterns which are thought to date from the Bronze Age. The principal motifs are ships, people, horses, spirals and circles, footprints and cup-marks. While Anati is correct in his descriptions of the types of figures and their chronology, in Norway the dates set for their age are considerably later than in the rest of Europe.

ANATI: Our Scandinavian colleagues have tended to date their rock art much later than we do. Evidence is now emerging of an early stage in the agricultural rock art of the southern part of Scandinavia showing a striking similarity to the Megalithic rock art of Britain and Ireland, which goes back to the fourth millennium B.C. Axes which seem to have been imported from Denmark have been found in Megalithic tombs in Brittany. Several factors may have led to a relationship between these people, and some of the earliest phases of the Scandinavian agriculturalist rock art may have been inspired by contact with Brittany and Ireland. If this is the case then the starting date for the agricultural art is in the beginning of the Neolithic, not the Bronze Age. Cultural exchange occurred at two levels: the material and the artistic; if the coincidences in the rock art and in the archaeological record are the result of cultural diffusion, it would have occurred in a very short timespan. Therefore our Scandinavian colleagues may have to reconsider their datings for rock art.

There are several sites in Scandinavia where the rock art seems to contain features from both the southern and northern tradition. At these sites there are superimpositions of the southern type over the northern type, implying that the northern group started earlier than the southern group. The rock art tells us that the agricultural art expanded northwards into zones where we have the Nordic art (which may even have persisted until about the second millennium B.C.), but it was in its advanced stages by the time it reached its northernmost extent. Because the Nordic hunting art is earlier than the
agriculturalist art, the beginnings of art in Scandinavia would be much older than my colleague believes. Big-game hunting was probably continued in the Nordic area for a long time, because of the lack of other natural resources and innovative technology. Game was plentiful and big-game hunters had no need to adopt new ways of life. Evidence for an early beginning of rock art in Scandinavia is further supported by the rock art in northeastern Soviet Union, where material recovered during excavations has suggested a starting date for the rock art within the final phases of the Palaeolithic.

MICHelsen: Tremendous work is being done in Scandinavia to establish more exact dates for the rock art. Excavations at rock art sites in recent years have revealed a coal layer in the strata directly on top of the rock carvings. This will aid us in radiocarbon-dating the Arctic rock art.

HASSAN: The problems in Europe seem to be related to the dating system, although some chronologies have been safely established. Let us turn our attention to Asia. From the representatives of that continent we shall no doubt learn just how different are the problems that face rock art researchers in that part of the world.

WAKANKAR: Indian rock art was first discovered as early as 1870, but the chronology was only established after the excavations at Modi (1959) and Bhimbetka (1972). Bhimbetka, in Madhya Pradesh, has one of the largest clusters of painted rock art shelters in the world: 1,700 shelters within a range of 9 kilometres. All over India painted shelters extend from the Himalayan foothills in the north, to Kerala in the south, and from the Aravali and Abu hills in Rajasthan to the Rajgirha Hills in Bihar. Within these clusters we have recognized over 30 different colour shades including black, browns, greys, greens, reds, pinks, ochre, yellows and white. Bhimbetka in particular offers a huge variety of styles, some using only one colour and other combining many; some focusing largely on human figures and others on animals, symbols, geometric patterns, tools, weapons etc. The change of the human types as well as the regional distribution of other symbols and weapon or tool types proves useful in establishing a consistent chronology. The number of known painted caves and shelters in India is now above 5,000. The earliest paintings in the central Indian Vindhya-Satpura hills can safely be dated to the Upper Palaeolithic period (ca. 25,000 to 15,000 B.C.), with hunting and dancing as the major elements in the paintings.

Strangely enough, compared with the situation in Europe the Mesolithic is the golden period of rock art in India. During this time, society stabilized and religious practices dominated life. Paintings and engravings vividly depict a variety of ceremonials practices and activities connected with daily life from sexual union and childbirth, to death and burial. The rearing of children, initiation, training, beginning of hunting (individual and communal), ceremonial parades, dancing, eating, drinking, singing, family groups, food gathering, fishing and other human activities are well illustrated on the walls of shelters. A good picture of prehistoric life can be built up from these paintings.

However, the dynamism and expressiveness of the Mesolithic period faded into the progressively stylized art of the Chalcolithic. Early historic drawings show still more stylization and simplification. Only in the early Medieval period (6th to 13th century A.D.) is there again a rise in rock art activity and the paintings become dynamic and vivid once more. By the 15th or 16th century A.D. the tribal communities living in hills had adopted agricultural patterns of life and had moved to villages in the plains and in the shallow valleys, ending the rock painting tradition.

Tourism in India has been increasing, and large numbers of visitors view the accessible paintings. These sites urgently need systematic recording, documentation and interpretation for their own protection.
MASAO: What type of chronology may be drawn from the use of colour in the paintings in India?

WAKANKAR: In Bhimbetka the earliest paintings are always in green, until well after the Mesolithic period. The green colour was produced by grinding a stone which is collected locally. Green appears in the early historic period, along with a variety of other colours, but in this phase the styles and subject matter are totally different, having become more geometric after the influence of Buddhism.

ODAK: The combination of rock art and archaeological deposits helps to illuminate the relationship between the art of a culture and the behaviour of prehistoric peoples. Were the excavations useful to the study of rock art in India?

WAKANKAR: We have not as yet studied these relationships. We have been able to date some rock paintings from the decoration on pottery which came out of the Chalcolithic levels during the excavations. Precisely the same decorations occur on the pottery and in the rock art, so the dating seems safe. It would be interesting to find out if these symbols shared the same meaning, or if they had separate levels of significance. It would depend on the values a culture placed on its rock art and on its pottery-making.

TRIPATHY: In 1875 Valentine Ball undertook a study of the early cultural assemblages in Orissa, which revealed the presence of man from Palaeolithic to the Iron Age.

In the last hundred years, the State has been further explored. Cultural evidence from the pebble industry to the protohistoric period has been reported. Incidentally, the northern area of the Orissa contained the majority of Lower Palaeolithic and Neolithic sites, whereas the south and southwestern areas are associated with Middle Palaeolithic, Mesolithic and probably Neolithic levels. The evidence of a pebble industry in the region indicates a distinct cultural trait, exclusively limited to the region of southwestern Orissa.

In India during the last ten years, stone blades, burins and bone tools fashioned with stone burins have been discovered in the Chittoor and Kurnool districts of Andhra Pradesh. Bhimbetka caves and rock shelters in Madhya Pradesh have also yielded a large variety of scrapers and burins, as well as rock paintings. Bhimbetka is located in the Vidyav Hills, which extend to Orissa. Since the surrounding states, such as Andhra Pradesh and Madhya Pradesh, contain examples of early artistic creativity, we hope Orissa may also have evidence of Early Man’s art. In fact, evidence of rock art has been reported at Sitabanji in the district of Keonjhar, Hemagiri in the district of Sundergarh, Ulagad and Guda Handi in Kalahandi district, and Bhimmandua and Nrusvinghanath Hills in the district of Kalahandi have recently been reported. Attempts must be made to survey and preserve the rock art evidence in these archaeologically rich locations so they may contribute to the world’s knowledge of Early Man and his artistic creativity. Unfortunately, most archaeologists come to India to study big monuments while rock art has been very much neglected.

MASAO: It was mentioned earlier in the seminar that there has been an intrasite analysis of the rock art of India. What are the results of this study?

WAKANKAR: When we started studying the southern Indian site of Badami we found, to our astonishment, that most of the animal and human drawings were almost identical to those of the Mesolithic Period at Bhimbetka, to the north. There has been no apparent outside influence on either culture, so we may assume that there was cultural exchange between the tribes. Political domination and conquest by various tribes also caused movements of people throughout the country which contributed to the spread of different rock art traditions.
HASSAN: Pakistan has two mainstreams in archaeological research: the Harappan civilization, which later developed into the Aryan civilization, and the Gandhara civilization, believed to have been the executors of rock art and also the monumental art. The Gandhara culture flourished from ca. 500 B.C. to 200 A.D. and had a rich tradition of stone sculpturing and rock carving. It spread over a wide area from Afghanistan to the Punjab, and some rock inscriptions have even been found at Jhelum in the extreme north. In 1935, D.H. Gordon reported a rock art site 30 kilometres south of Peshawar. Here the rock engravings, executed on large boulders, feature animal figures and human activities. The archaeology of Pakistan has not been fully studied yet, and the rock art should reveal some interesting information once it has been properly studied.

ANATI: Jordan is another country that needs to be studied in more depth. The wealth of rock art recorded in the Negev Desert and in the Sinai, as well as the numerous sites published from Arabia indicate that Jordan may have a lot to reveal still. The site of Kilwa was studied in the 1930's by Nelson Glueck, George Horsefield and Han Rhoterr. The early phase of the site probably belongs to the Epipalaeolithic, some 10,000 years ago. Numerous sites are known in Jordan of much later rock art, from the Nabateans and the Sabaite tribes, from the last centuries B.C. onward, but more research is needed before any information can be used for study purposes.

HASSAN: The lack of research seems to be the major inhibiting factor to our understanding of rock art in Asia. As we have discussed in previous sessions, this void in Asia is the result of many problems: insufficient funds and inexpertise of technicians among other things. After this seminar perhaps our Asian representatives can apply what they have learned to their own countries. We hope that in the future the continent of Asia will be better represented at international conferences and that the dissemination of information about Asian rock art will improve so that researchers around the world will become fully aware of its exceptional value.
VIII - America

Chairman: O. Fonseca Zamora (Costa Rica).

Participants: E. Anati (Italy), A. Camardella Rabello (Brazil), M. Hernandez Llosas (Argentina), F. Massao (Tanzania), T. Medhin (Ethiopia), O. Odak (Kenya), M. Podesta de Wechsler (Argentina), J. Schobinger (Argentina), I. Wainwright (Canada), V. Wakankar (India), N. Walker (Zimbabwe).

FONSECA ZAMORA: The American continent, particularly North America, is considered to be the most developed region in the world. It has the image of a nation which sends astronauts into outer space, and builds sophisticated planes and submarines, and yet rock art studies in this area are underdeveloped in comparison with Italy, Tanzania, Algeria or Australia. The American continent is very rich in rock art, which is spread from Canada to Patagonia. Take for one example, Costa Rica, where there are numerous sites, so far to be systematically studied.

ANATI: It is puzzling, given the current state of rock art research in the Americas, that the earliest dates for rock art are provided by the Southern rather than the Northern continent. There appears to be a lack of rock art in the major areas of early urban civilization which developed in Meso-America and the Andean region, yet there are major concentrations of rock art in what we may call peripheral areas.

SCHOBINGER: The “Early Hunters” rock art in the Patagonia is assigned the earliest date for rock art in the Americas. In this area it may go back to 12,000 B.C. or more. The Patagonians were more specialized hunters than the societies of the areas further north who disposed of a larger variety of natural resources and had, from earlier times, practised an eclectic economy.

PODESTA DE WECHSLER: The study of Patagonian rock art is particularly significant since it is the artistic manifestation of early hunters whose lifestyle has continued until recently. It has been documented by the chronology of this art, which takes into account radiocarbon dating, stylistic sequence and correlation with artifacts.

FONSECA ZAMORA: In Patagonia it is possible to observe associations with exfoliations of the rock, which aids dating. The Palaeo-Indian hunters and gatherers are relatively recent, reaching the continent by about 40,000 B.P. The earliest archaeological site dated by C14 is in Mexico (Lapoconia/Bascilico), and is estimated at 20,000 B.P.

WAKANKAR: Has the rock art of North America not been dated yet?

SCHOBINGER: The earliest dated paintings in North America are all more recent than the art of South America. Apparently Man passed very rapidly from the North to the South of the American continent.

ANATI: Some of the rock art of North America may well be older than conceived by some archaeologists. The term “Pre-Columbian” for American archaeology may be used like the term “Dreamtime” for the Australians.

WAKANKAR: Is there much work being done on chronology with the rock art in the Americas using, for example, material remains as an aid in dating?

WAINWRIGHT: The majority of the ochre paintings of North America are found in the Northern Woodland region, which the local Algonkian-speaking people call “Land of the Silver Birch”. This geographical location makes it
difficult to do excavations from which to develop a chronology. It is certainly not through lack of trying. Radiocarbon dating is expensive and complex. The research of Early Man in North America is still a fairly new discipline.

HERNANDEZ LLOSAS: It is not always possible to establish a firm chronology. In the Quebrada de Humahuaca region of Jujuy Province, in Argentina, we have tried to correlate the artistic phases in the rock art with archeological levels. The first phase, that of the Archaic period, made by hunting and gathering groups is datable due to the stylistic similarities between the rock art and the mobilair art in the archaeological levels of Inca Cueva 4. The second phase is more problematic; we can tentatively date it at the Late Pre-ceramic - Early ceramic period, based on stratigraphic traces in Cueva 5, but such a chronology requires elaboration. Dating means correlation with archaeological assemblages, but the actual dates are not always available. Some of them are still just guesses.

CAMARDELLA RABELLO: We have been trying to establish a chronology for the Lagoa Santa cultures in the Sao Francisco area of Brazil. Many national organizations concerned with culture have collaborated on this project which aims to find an intact cave or rock shelter with enough stratigraphy to establish a chronology for our cave art. A secondary purpose of this study is to devise a methodology for rock art research in this area. Rock art in this region begins with Early Hunters, styles and may have started as early as in Patagonia or even earlier.

FONSECA ZAMORA: The search for Early Man only started in the 19th century so there is still much work to be done. In Costa Rica volcanic activity has covered anthropic deposits with lava. This makes it difficult to excavate, especially early sites because they will have much thicker lava cover. Mainly in the late period there are symbols on ceramics that can be accurately dated. The rock art, however, contains abstract and schematic designs whereas the pottery has realistic figures.

ODAK: From the slides on Argentina, there appears to be rock art situated in desert areas, places that would seem uninhabitable at present due to ecological conditions; could we assume that the reason no one is living there today is the hostile environment, and has there been a climatic change in the area?

SCHOBERGER: No serious climatic variations seem to have occurred since the time that the engravings were made. At least we believe so. A more logical explanation is that these sites were not common habitation sites but were used as ceremonial centres. Rock art is also found along ancient roads through the mountain passes connecting one region to another. These sites may have been considered sacred spots and travellers made offerings at them.

It is very rare to find rock art sites near, or associated with, habitation sites. We know, for instance, that there is some correlation between the large cultural centres and the rock art sites. The rock art in northeast Argentina is culturally similar to that of the southern Andean area, and there are examples of rock art which can be related to nearby settlement ruins.

ODAK: We saw a slide from Costa Rica of a very intricate carving below a paved road. Was the road a modern construction or had it been used in prehistoric times as well?

FONSECA ZAMORA: It was a boulder road which was built by the later prehistoric tribes of Costa Rica, similarly with the carvings that was located beside it. Both were done in the Lacuanda Period (800 - 1,500 A.D.). The previously-held idea that the prehistoric socio-political organization functioned as tribes is now changing; the evidence from this site indicated that in fact the people had chieftainships during this period. It had to be a large
socio-political unit involving thousands of people inhabiting a fairly large territory. In Costa Rica different tribes could have become a federation for certain purposes, i.e. during wars or for trade. Some of the traditional concepts must be revised.

WALKER: Are there any interpretations of the six-toed human figures, or the six-toed footprints?

SCHOBINGER: Interpretation can only be speculative, but some cultures may have considered body deformations as having some magical significance or perhaps it represented the power of shamans. There are ceramic pieces from the northwest belonging to the Early Stone Cultures which have representations of human beings on “all fours” but with the legs deformed. This position may be assimilating them to animals or it may simply be showing their deformity. We cannot be sure about the ethnography of these groups because the Indians really disappeared in this region in the 16th century under the conquest of the Spaniards.

FONSECA ZAMORA: In Meso-America, people with certain diseases, stedropathy and Hobacks for example, were considered divine. As told to the Spaniards, they were elected by the gods. These people had a special power even though they were handicapped.

ANATI: The mask-like figures shown by the slides are interesting in that they have a specific type of symbolism; they have three points - two representing the eyes and one for the mouth, and with protrusions on top of the head. There appears to be a Circum-Pacific distribution of this pattern. It is found in a very wide area from Argentina to British Columbia, and to the Amour and Ussuri rivers near the border between China and the Soviet Union. There may be some conceptual relations to actual masks of the Dorset culture in the Canadian Arctic which have three holes for the mouth and eyes as well as holes or protrusions along the forehead.

SCHOBINGER: This does not necessarily have to be a coincidence nor does it have to be a direct relationship. It could be that the same idea was the basis for representing the head with certain symbolism as the radiating forces which extend out from the upper part of the head.

FONSECA ZAMORA: We find several motifs that are repeated in various parts of the world. Both the cross and the labyrinth are depicted in Europe, Africa, Asia and America. It is the same problem of interpretation. It does not mean that there have been direct connections between the different areas, but it may be that the symbols were used by separate groups at the same time.

ANATI: People moving from one area to another did not necessarily leave their ideas behind.

MASAO: I would like to discuss the methods used in South America, with regard to the filling in of the petroglyphs with chalk. That could be classed as vandalism; if every professional were to do this then the ordinary person will follow suit, but with malicious intentions like putting the initials of their name.

FONSECA ZAMORA: It is not possible to see the engravings if we do not chalk them. Chalk is something which is easy to clean off the rock and will not penetrate the surface. We have no access to more sophisticated techniques. A great number of researchers in Latin America are forced to use this method because of similar problems.
MASAO: If you use this method what will prevent others from marking the rocks or you yourself accidentally damaging it? What is more criminal: marking just the engravings or producing new "signs and symbols" in blank areas of the rock?

FONSECA ZAMORA: One is done with a scientific purpose and the other is simply vandalism. Chalking does not penetrate the rock art and causes no permanent damage; it can be cleaned off. This is not criminal.

ANATI: Chalking is not necessarily criminal in that it may not harm the rock but it is a tricky technique by which you can draw the depiction any way you feel, for example in cases where people use chalk to reconstruct or interpret the figures.

It may happen that your eye does not see something and you may unwillingly be misled later. Even a bit of imagination can create something that is not really there and which may mislead further research.

WAINWRIGHT: In a recent newsletter of CRARA this question was discussed: "Why can I not chalk engravings when I work on the petroglyphs which are in the intertidal zone and I only have six hours maximum to document an unsubmerged site?" Depending on the type of rock art and type of chalk there may be differential weathering of the cracks of the rock matter, resulting in damage to the surface. The best solution would be to confine yourself to only a two-dimensional record such as photography and, as is the case on the Pacific Northwest coast, producing rubbings of the carvings. You lose some helpful information although the site still may be analyzed further.

ANATI: This depends on the depth and scope of analysis you intend to carry out. Sometimes a rubbing would not provide the type of documentation you really need. And you can make a rubbing which just mixes up intentional engravings and natural cracks. Documentation should specify such details.

MEDHIN: Having so many different types of rocks on the Earth makes it difficult to apply the chalking method everywhere. In Valcamonica there would be little harm done, while in Ethiopia the rock surface would be damaged. If a researcher does not have any experience in marking figures with a "free-hand", observations and interpretations would be left open for wild confusion at a later date.

SCHOEBINGER: Chalking is an old method and most researchers are not using it any more. In reality someone can add to a tracing anything he wants. There has to be trust in the recorder; it is a case of professional ethics for everyone.

FONSECA ZAMORA: To chalk or not to chalk has been the main question of the American delegates in this session. Problems of dating, interpretation and distribution seem to be more relevant to the understanding of rock art in America. Could Professor Anati further elaborate on the distribution of American rock art?

ANATI: Major areas of rock art in America are found in a few well-defined regions: in Canada, the major concentrations area along the western coast and on the offshore islands of British Columbia. Sites like Peterburgh, Agawa near Lake Superior or Alberta's Writing-on-Stone Park are also quite important.

In the U.S. all the states along the West Coast have rich concentrations, from Washington State, through Oregon and California. The most important region of North American clusters of rock art known so far is in California, Arizona, New Mexico and Texas. This intensely populated province continues into Mexico where Baja California provides the most exceptional sites.
In South America, out of 13 countries, 9 have reported major concentrations of rock art while the richest regions known so far are in Minas Gerais, Brazil, and in Cordoba and Chubut, Argentina. Amazonia is almost a blank in the distribution map of world rock art. Interestingly, also in Africa and in South East Asia the tropical forest zones have less rock art in them than anywhere else.

Assemblages of Early Hunters, styles in the Argentinian Patagonia and in a few localities in Brazil seem to be the earliest known rock art in the Americas. Some sites in British Columbia and in Washington State may be quite old, but no early dates are available so far.

FONSECA ZAMORA: Most of the rock art in America seems to belong to the last three thousand years. Very few sites are likely to be earlier than that.

ANATI: Earlier sites can be identified in British Columbia and Washington State, perhaps also in Mexico (Baja California); and in a few areas of South America, Brazil, Argentina and Chile. We await the results of future research.

FONSECA ZAMORA: More than showing us what we know, this session has shown how much still remains to be done in America. If, as it seems, rock art in this continent can go back over 15,000 years, indeed rock art can become a tremendous tool to understand many millennia of human adventures in the New World.

Rock art studies in the Americas are badly neglected; not just in Costa Rica, but also in such rich countries as the United States. Yet rock art appears to be a very important source of historical reconstruction for understanding of the American heritage.
IX - World distribution of rock art

Chairman: J. Schobinger (Argentina)

Participants: E. Anati (Italy), T. Medhin (Ethiopia), F. Masao (Tanzania), O. Odak (Kenya), I. Wainwright (Canada), B. Wanless (South Africa).

SCHOBINGER: It has been stimulating to receive an overall outlook on rock art from all five continents. Rock art is definitely a world-wide phenomenon, and this session will be devoted to discussing patterns, similarities and differences that have become apparent through our presentations on local problems in studying rock art.

ANATI: The earliest evidence for rock art in each continent appears to be much older than we would have believed a few years ago. In Africa the oldest art dated so far is found in South Namibia, at Apollo 11 cave, where stone slabs painted with animal figures were found in an archaeological layer which provided several C14 datings ca. 26,000 to 28,000 B.P. As mentioned in a previous session, rock art in Tanzania is likely to be still older.

In the southern end of South America at Rio Peinturas, in Patagonia, the oldest evidence of rock art goes back to 11,000 B.C., or more. In Brazil, recent investigations seem to have obtained C14 datings from rock art sites, as early as 17,000 B.C.

The earliest evidence of graphic notations in Australia is provided by Koonalda Cave, which is in the extreme south, close to the coast, and is dated at ca. 22,000 B.P.

In the Near East, the earliest sites in Arabia may be related to the Late Paleolithic and dated at 12,000 - 14,000 B.C. For Asia our knowledge is much more limited, but rock art in the Baikal region of central Siberia has been dated to 18,000 B.C., based on the Malta mobiliar art material, and may have started earlier. Professor Wakankar has told us during his lecture here about the discovery of decorated ostrich egg-shells in India that have been dated by C14 to 25,000 B.P. In Europe, in France and Spain, the earliest evidence comes from around 33,000 B.C., if the Mousterian "prefigurative art" is not considered.

These dates are surprisingly close together and we should not exclude the possibility that other art creations may come to light in the future, adding new dimensions to the question of the birth and development of art. Although the earliest reliable datings of art obtained so far are found in Europe, further research may locate older material in other continents. From what we know today we may safely assume that by 30,000 B.C. art was present in Africa, Europe and Asia; by 20,000 in Australia and shortly thereafter in the Americas.

What emerges, though, is a pattern of the earliest dates in all the various continents being found in peripheral zones and not in areas which were major centres for encounter and for the subsequent development of civilization. For example in Europe, the ancient transit area was Eastern Europe in the Balkans, and later, the Mediterranean, while the earliest artistic expressions found so far are in the Franco-Cantabrian region, a sort of dead-end zone facing the Atlantic ocean. On other continents the peripheral patterns are evidenced by the Koonalda Cave in Australia, the southern and south-western tips of Africa, and the Argentinian pampas. The problem thus posed is why the earliest centres for the creation of art known so far are located in marginal areas and not in the large centres where great civilizations (Sumerian, Egyptian, Greek, Roman, Aztec, Mayan etc.) were to develop and flourish.
MASAO: These areas are not really peripheral at all if we consider the entire evolution of man. The oldest evidence of the human species is found in the southeastern areas of Africa, in the Rift Valley, where rock art flourished thereafter. While these areas may be regarded as peripheral to major development areas over the last 30,000 years, they were the centres of human evolution from about 2 million years ago to about 50,000 years ago. While we are still unsure of what may have happened in the ages of emergence of Homo Habilis, Homo Erectus and the other hominids, in terms of technical innovations (most archaeologists are studying these sites from a physical anthropological viewpoint), cultural remains show that man has been living in these "marginal areas" for an incredibly long period.

In Europe, the site of Torralba, central Spain, has evidence of the oldest butchering, indicating that there were advanced hunting practices being carried out in this "peripheral" zone at a relatively early time.

ANATI: Within the general range of prehistory in Africa, from the Early Stone Age, no doubt major developments of hominids and humans took place in the Rift Valley. In Africa rock art originated in the Stone Age and its major concentrations are found on the margins of this region. For example, the Central Tanzanian Highlands, a very important rock art zone, is a mountainous area bordered on one side by the large Masai Steppe. This area would act as a geographical barrier to the migration out of the Rift Valley. The two main migratory paths of people from eastern Tanzania would be either along the ocean coastline, or along the lake routes. The Central Tanzanian Highlands are virtually off the beaten track and people would not migrate through there but would settle in this area. Even today there are at least five different ethnic groups living in the region because the local natural resources are plentiful and the chances of survival are good, as was perhaps true when the region was inhabited by the stone age tribes who executed the rock art.

Similarly, in Australia we find the rock art located in the south, far away from the northernmost points of land where early man would have landed had he crossed over from what may have been a long tail of South East Asia, today New Guinea and other islands of Malaysia.

MASAO: The subject of the migration of early man in Africa should be approached with considerable caution. We must question the current belief that migration occurred from north to south. No doubt the Rift Valley is the cradle of Mankind. Even for later episodes, recent discoveries of microlithic industries at various sites in southern Africa turn out to be older than those of Ethiopian Highlands, previously considered the core area for their diffusion.

WANLESS: I agree, the richness of the archaeological finds in southern Africa could mean that this region was a centre for the diffusion of ideas and technology and from where there was a cultural shift northwards over the continent.

ANATI: There is evidence of mass movements of people both up and down the main African natural routes and between the Asian and African continents. But man was spread throughout the world by about 70,000 years ago. Thus, well before the earliest dates available for art anywhere, apparently the capacities existed worldwide for its development at later dates; it flourished, seemingly independently, in various zones throughout the world. Many of these areas according to present-day standards, appear as peripheral.

ODAK: One important factor to consider for Africa is that until recently the forest zone extended from the Sahara to South Africa, covering almost all of central Africa. Insufficient archaeological evidence has been recovered from which we may reconstruct any history of the region. This may be explained both by the lack of research in the area and by the forest conditions which have rendered the region unsuitable for habitation. Considering
that the latest movement of the Bantu-speaking people bypassed the forest area, and disregarding the popular question as to whether or not San-speaking people were spread over the continent by the Late Stone Age, the forest region can be considered as a paramount barrier which forced the migration of people to other marginal areas. There are the peripheral zones of western Africa (Senegal, Gambia etc.) which have no testimony of ancient rock art, consider Anati's theory of rock art being a product of peripheral zones.

WAINWRIGHT: The use of the word "peripheral" is to some extent dependent on the Mercatorial Projection and the scale of distances. For us this is a relative term which would have no meaning to prehistoric people.

ANATI: These areas may not have been peripheral in terms of geographical location but were isolated enough to allow meditation and intellectual development. The seclusion was provided by the environment, where humanity and nature coexisted in harmony. The constant interaction and encounters between different groups may prevent people from developing some form of internal compassion within the group, while, on the other hand, it may constitute a stimulus for other aspects of social and technological development.

MEDHIN: Prehistoric man made rock art consciously to express the thoughts revolving in his mind. These thoughts are on the same level as we have today: events that have occurred, or are about to happen, and anticipating what one may do in the course of everyday life. What is important is that he felt this desire to express himself and thereby identify himself as a human being. Is it not so still today? In studying rock art we search for the identities which prehistoric man chose for himself, and attempt to determine the similarities and differences with these identities that shaped the world cultural mosaic.

MASAO: Studying these different identities would mean asking ourselves basic questions about the entity of rock art. Why do people make rock art? What function does it serve? These questions may be answered by what modern theorists call the cultural approach—looking at the socio-cultural aspects of the group in relation to its physical environment. This may reveal what prompted each social group to make rock art.

ANATI: We can be conclusive about one point: there is no single motivation for the creation of rock art. Many factors resulted in the making of rock art, ranging from the structure of the cultural group, to the environmental influence, to the period of time in history. We have already discussed how some of these factors have contributed to our understanding of the rock art for the purpose of research in various disciplines and for the world cultural heritage. But without understanding the significance that the rock art held for the human groups which we are studying we can never really begin to ascertain any valuation of rock art, no matter what reasons we may have for studying it. We have spoken of the different formulae that may have produced the motivations for rock art: as a technique for initiation, as a means of magic, as part of religious ceremony, and so on, and yet we need to be more specific as to its general function. We can say, for instance, that art in a specific case was made on the occasion of a Cult of the Dead Worship. In Valcamonica we have perfect example of scenes from the Neolithic Period depicting the funeral worship of a corpse involving a praying group with their arms raised up over the dead. We have found fire stains on the rock beside these particular engravings, and some evidence seems to indicate this as the result of a cremation ceremony with the engravings made to mark the site as sacred. This may be a form of communication and expression of feelings for the dead. According to the beliefs of that culture, the soul had entered the sacred rock at the time of cremation, prepared for a life after death, but the people may still speak with the deceased by coming to the rock and continuing the relationship there.
SCHOBINGER: Each man would have to act in his own environment and surroundings. We cannot assume that a man simply picked up a stone and began to hammer out an image on the rock for the fun of it. The evolution of the human species took four million years before he acquired the ability for artistic creation. The oldest expressions of art are found in the Upper Palaeolithic levels, a period when Man was a specialized hunter with refined stone-tool traditions and industry. Cultures developed in similar ways in many parts of the world. The problem of the distribution of rock art can be connected with the geographic origins of the Upper Palaeolithic cultures or with Homo Sapiens, however the beginning and extent of this period varies in different areas. In America, prehistory lasted until the sixteenth century when European contacts began to have a profound influence on the large parts of the Amerindian population, including the elimination of their practice of rock art altogether while others incorporated the influence, depicting boats, guns and horses, for example. Early Man in America migrated very quickly over the landmass from Canada to Argentina, much more rapidly than the migration of hominids within Africa. From the very beginning, it was Homo Sapiens who migrated to the American continent. We find no evidence of earlier hominids there. The development of Man in Europe, Asia and Africa, on the other hand, may illustrate three different centres for the origins and diffusion of the human race. It is only after these migrations and diffusions have slowed, leaving various cultures, that we can have independent inventions of art.

We are in a position to recognize common characteristics of rock art throughout the world. The development of art followed a similar pattern, parallel to the development of culture and society. From rock art we are able to distinguish phases of economic evolution: from early hunters to mixed economy groups. The early paintings of the Rio Pinturas in Argentina, mainly outlines of single animals, show a style similar to Scandinavian Nordic art depictions of big game animals, as well as those of the Valcamonica Proto-Camunian period in the Alps. The dates are different for each area, however. This one style represents the first phase in all these regions, which then follow similar yet independent development throughout their rock art cycles. The Late Hunters’ art shows dynamics in movement, scenes and group activities. The same characters appear in Argentina, Australia and Tanzania. Fisher-Gatherers, i.e. coastal and lake groups, tend to depict net patterns, geometric symbols, fish motifs and other abstract forms. Pastoral art reflects a transition in the mentality of the cultural group, showing parallel themes worldwide. The drawings are more schematic and human figures and groups of animals are typical subjects. The art of the mixed-economy groups is more diversified, as were the social structures within the societies themselves. These appear to be worldwide patterns.

The world distribution of rock art is relevant to the understanding of Man and his culture. Where did we come from? How did we evolve? What is the reason for being who we are? These questions may be answered to some extent by the study of rock art on a world-wide scale. We must continue comparative research between rock art sites on all continents in an effort to understand its significance in the evolution of Man.

To my mind, it is important to identify universal patterns of human thought and behaviour. It is at least as important as recognizing the local patterns that characterize specific cultural identities.
X - Methods of recording

Chairman: V. Wakankar (India)

Participants: E. Anati (Italy), P. Bardill (Lesotho), M. Duarte (Mozambique), Y. Isar (UNESCO), K. Liburn (New Zealand), K. Michelsen (Norway), O. Odak (Kenya), I. Wainwright (Canada), N. Walker (Zimbabwe).

WAKANKAR: Without proper records, the patrimony of rock art will be lost for ever. Records are scientific documents which contain the information on the paintings or engravings that is used when analysing or presenting rock art. Recording means to number, describe and define the associations of each figure at a site. The superimpositions, the compositions, the state of preservation, whether the figures are in outline or are fully decorated and the artists' choice of colour are a few of the items that must be considered for a complete inventory of a site. Accurate tracings should be made, duplicating the details of the art; and there should be maps locating the site and plan drawings of the different rock faces.

Various techniques for recording rock art are being applied all over the world. Hopefully, this session's discussion of different methods will be particularly helpful to those countries who have not yet begun to record their rock art, and for those countries who are experiencing difficulties deciding on what form of documentation to choose.

In India a systematic method of recording has been developed to deal with extensive sites. The zone to be recorded is divided into areas, labelled in a clockwise direction with consecutive letters, and the rock shelters in each area given numbers. Each individual site will therefore have an area letter and a number denoting the specific rock shelter - for example: B1, A3. Due to the difficulties in acquiring photographic equipment, each image is copied directly from the surface. Often the art is high up on vertical walls, in which case scaffolding is necessary. After tracing, the art is classified on a stylistic basis. Superimpositions of art are common and consecutive phases of rock art can be distinguished. The older drawings are often obscured by silcrete or incrustations and need to be cleaned before tracing, though with the more recent drawings this is generally not necessary.

We have recorded nearly two thousand rock shelters using this system, and it has enabled us to analyse the rock art from various perspectives (i.e. sociocultural, religious, etc.). We have found that this method works well for our particular area, but it is just one of many methods that are being utilized throughout the world.

Some of the problems we face concern also the storage and conservation of the collected documentation.

DUARTE: In Mozambique we have not started to record the rock art in a systematic way. All we have is a collection of photographic slides. We want to select a recording technique most suited to our particular conditions. Is it better to trace the paintings directly from the rock face or from the photographic slides? This is just one of our problems. International assistance is badly needed if progress is to be made.

BARDILL: The ARAL Project is tracing the paintings onto plastic sheets from slides. For us this is the best technique available. Not all known art is being traced; instead we are recording a sample of the most representative types of each style. Lesotho is very rich in rock art and we consider this patrimony as the major treasure of our cultural heritage. Unfortunately, due to a shortage of manpower, it has taken over two years to trace one site out of over 1,700 sites; on the basis of the research at this site we will analyse the style and content of the rock art.
ODAK: What method are you using to trace from a slide?

BARDILL: Plastic sheets are placed over the screen and a slide is projected on to it. The outlines of the figures are traced, but the colour is not duplicated, black and white shading is used. For publications or exhibitions colour photographs are used.

ODAK: Do you made a mosaic composition by connecting the tracing sheets so that the entire rock face may be reconstructed at a later date?

BARDILL: Individual sheets are overlapped slightly with adjacent sheets. This is more convenient for storage and handling when studying individual scenes or panels in addition to recording the entire decorated surface.

ODAK: Is the rock art traced at the original size, or at a reduced scale?

BARDILL: At the original scale, 1:1.

WALKER: How accurate is tracing as a method of reproduction?

BARDILL: Differences between the original and the copy are minimal. The photographs distort to some extent because the optic lens angle of the camera foreshortens the image, so the dimensions of the figures may be inaccurate. In caves and in rock-shelters distortions are greater than in open air sites, such as those we have seen in Valcamonica.

LILBURN: Is it not possible to place the tracings over the original rock to check their accuracy?

BARDILL: If there is any doubt about the accuracy of the tracing we return to the rock and make a direct tracing of the area in question.

ANATI: There may be distortion from the cave or rock shelter wall as well. We trace the outline of the figures on to polyethylene while at the same time taking a mosaic of photographs. This documentation is taken back to the laboratory where the polythene is placed on a screen and the relevant slide is projected from the back. We complete the rest of the tracing without the natural curves and angles of the cave or rock shelter. The only restriction is that a three-dimensional image cannot be achieved if needed; and by flattening a curved or wavy surface some sort of distortion is hardly avoidable.

MICHELSEN: We must invent methods to record all the dimensions of rock art - especially the third. There is much greater content in the art than mere shapes of images.

ANATI: Textural qualities can be as important as relief features in recording rock art. For example, most of the engravings at Stonehenge (England) no longer have any depth but retain a texture which enables the figures to be detected.

ODAK: Tracing the rock art is a responsibility that all researchers should be prepared to undertake. Rock art sites all over the world are being destroyed or are rapidly deteriorating. Unless we record those sites soon they will be lost forever. Most of the persons in charge of culture do not seem to realize the dimension of what is being lost by humanity, due to deterioration, every generation, every year and every day. Recording our rock art heritage is a very urgent matter.

BARDILL: When there is a lack of manpower and financial resources you have to cope in the best way you can. We have visited all the known sites in Lesotho and taken a systematic photographic record. Now we may examine all our sites to choose various situations for different types of studies. A site may be a good example of the iconography, another may require urgent conservation treatment.
We have been recording one particular site in order to make a complete
documentation that can be used in rock art analysis. We study the individual
paintings on the rocks and classify them according to style and dimension.
This information goes on to a computer card which will help us to process
the data. We hope to draw some conclusions about the styles represented so
that we may study and assess immediately, in a qualitative way, the signifi-
cance of other rock art sites.

ANATI. This approach is a sound one. It is better to record one site com-
pletely before moving on to the next, rather than partially recording sev-
eral sites. By choosing a pilot research project within each country and
studying the site thoroughly one achieves more than by taking photographs
of hundreds of sites. Yet, Odak's appeal is a very serious one. Both system-
atic inventory and research are moving too slowly at present, while the dete-
rioration of sites is moving fast.

WAINWRIGHT: After twenty years of trial and error, rock art researchers in
Canada have found suitable techniques for recording the wide range of indig-
igenous art. The method of recording depends on the nature of the rock art si-
te: whether you are dealing with pictographs (paintings), petroglyphs (engra-
vings), or petroforms (boulder mosaics or rock assemblages in the form of
anthropomorphic or zoomorphic figures). The pictographs are widely distri-
buted over a large territory along the southern perimeter of the Canadian
Shield. The sites are often accessible only by canoe or seaplane or, during
the winter, on the frozen lakes, so it was necessary to develop a rapid recor-
ding technique using photography. The typical pictograph is a reddish pain-
ting, usually with red ochre or haematite, on a reddish background, usually
granite. Consequently, the contrast between the painting and the rock is not
very distinctive. A mineral deposit usually covers many of the pictographs,
adding to the problems of selecting the most applicable recording technique.
Photographic techniques suggested for recording paintings include using
either infra-red, ultra-violet or the visible light of the spectrum. An experi-
ment was performed by the Canadian Conservation Institute using the dif-
ferent types of films suggested and then testing them with the various types
of cameras available (35mm., 120mm., 9x12 cm., and 21x26 cm.). In addi-
tion to considering the selection of materials, the logistical situation at each
site was examined. To summarize the results, none of the sophisticated tech-
niques worked in this experiment. The best method found was a very high
contrast, high resolution, fine-grain film recently developed by Kodak. This
film enabled the paintings' visibility to be enhanced dramatically by improv-
ing the colour contrast. Although large format cameras can be used in some
cases, the 35mm. type is still recommended because it is most suitable for
researchers with limited time and money.

The Peterborough petroglyph site in southern Ontario has been recorded
using a mosaic tracing method. The problem at this site is that the rock is
course and crystalline whereas the glyphs are very smooth, making them
virtually invisible in daylight; an added difficulty is the surface's hOMO-
geous greyish-white colour. To overcome such problems a technique using
raking light can be employed, either with a flash in a daylight conditions or
a more powerful electronic flash unit at night. These may be operated by
gas generators when other electrical sources are not available. Initially a 9x12
cm. format camera was suspended on a tripod and synchronized with the
flash units. By varying the height of the camera different views can be pho-
tographed, depending on the angle of the shadow. This method was extreme-
ly accurate, although the glyphs tended to be lost in the great detail of the
background rock. A second method is with a 35mm. camera and a pilot light.
Glyphs are discovered by their shadows. Those not visible in daylight may
emerge at night and such types of photography can be used to investigate
thoroughly any site.
The third method used at the Peterborough petroglyphs site was photogrammetry. Very early on in rock art studies it was recognized that stereoscopic pairs of photographs are invaluable for interpreting glyphs, offering a facility for examining contours. Photogrammetry uses precise measurements; for the best results it is necessary to get as high above the site as possible so that the best results it is necessary to get as high above the site as possible so that the camera lens is parallel to the surface. If the rock surface is smooth and even and if the man-made engravings are deep enough, the glyphs are perfectly projected on to the film, making it practical to do tracings from the photographs. Its accuracy renders photogrammetry the most useful method of recording the deterioration of the rock through time. It gives a true orthographic picture of the site which tracing cannot do. Tracing a rock surface that is not flat, using a mosaic of polyethylene sheets does not allow for the contours, the mosaic compilation may be inaccurate and the area distorted when reduced to a plane surface.

Obviously each individual study requires its own methods. On the Canadian West Coast, petroglyphs on small boulders in the intertidal zone are recorded by making rubbings of the carvings. In such cases, the other methods that I have already outlined would not apply.

WAKANKAR: We must remember to take into account what local materials are available when selecting a recording technique. With an annual budget of just $500. Indian rock art researchers are resigned to copying the drawings to plastic sheets.

LILBURN: Which alternative is really more expensive, taking ten rolls of film in two days or having twenty people, with the costs of materials, food, etc. taking four weeks to trace a site?

ANATI: That depends on the field conditions at the site in question. Both tracing and photography are needed to obtain a good documentation; tracing materials may be relatively cheap but transporting men and equipment over vast distances - as in Canada - is problematic. In such situations photographic methods provide a more viable alternative. When possible both techniques should used. But the main problem to solve yet, is how to obtain some sort of standard results the world over, so that documentation may be compared, analysed and made available to all researchers.

ODAK: In standardizing methods, the most basic recording techniques should be considered so that countries with little financial resources can participate. Tracing is an example of such a technique which can be used to record information at minimum expense. Yet at sites where figures are distributed over extensive areas, using cellophane sheets is often impractical, in which case photographic methods are helpful. Of course, the ideal method is doing both, tracings and photography, as it is done here in Valcamonica, but there are many problems of money and time which oblige researchers to limit the scope of documentation.

We have to obtain and record the maximum amount of information within our financial limitations. The situation at Valcamonica where the local community plays a supporting role in rock art studies is admirable, but it is not a precedent that can be followed in countries with sites dispersed over thinly populated areas.

WAINWRIGHT: Inexpensive recording techniques are available. The technique I described using the high contrast black and white film only requires the facilities of a commercial laboratory. For tracing, rice paper and red ochre are inexpensive and long-lasting materials. Photogrammetry is expensive but for deeply engraved figures it is the only method for accurately correlating figures in rock shelters. It is possible to cooperate with other profes-
sional bodies which already use this equipment. The use of photogrammetry for shallow engravings and, even more, for paintings, is yet to be confirmed.

ISAR: Cooperation with other organizations has allowed photogrammetry to be made available internationally. For example, the Institut Géographique National in France collaborates with scientists the world over, particularly in projects concerning the cultural heritage. An international specialized committee of ICOMOS, chaired by the director of the photogrammetry section of this Institute, has prepared guidelines for the use of photogrammetry, which will help to make this technique accessible to all countries. This booklet will be published by UNESCO.

WAKANKAR: The purpose of this session has been to learn of reliable means of documenting rock art. Many different methods are being used, all valid means of recording. Some are simple, like tracing directly from the rocks as in India, or tracing from a slide in Lesotho; and some are more sophisticated, like the Neutral Method of Valcamonica or photogrammetry in Canada. Different situations require different methods, and techniques of recording and analysing must depend on whether the art is engraved, or painted, or a combination of both; whether the sites are rock shelters, open-air or caves, as well as their size. It would be relevant to develop standards of documentation so that sites from various parts of the world may be compared and appreciated according to universally accepted criteria. Records are the essential tools of researchers, and we must do all we can to make them as efficient and reliable as possible.

XI - Conservation

Chairman: I. Wainwright (Canada)

Participants: E. Anati (Italy), A. Beltran (Spain), O. Fonseca Zamora (Costa Rica), F. Massao (Tanzania), K. Michelsen (Norway), E. Porta (ICOM), J. Schobinger (Argentina), P. Schwartzbaum (ICCROM), Z. Shi (China), F. Soleillavoup (France).

WAINWRIGHT: The subject of conservation would be worth a separate seminar since it relates to so many aspects of rock art, yet involves the complex field of the Earth Sciences. Researchers should be acquainted with the various agents of deterioration acting upon rock art, which can be classified as follows:

GEOPHYSICAL: freeze, thaw, insolation, heat, wind;
GEOCHEMICAL: mineral accretion, soluble salts, acidic precipitation;
BIOGEOPHYSICAL/BIOCHEMICAL: lichen, moss, algae, bacteria, higher plants,
HUMAN: vandalism, re-use, development;
ANIMALS: insects, mammals.

Unless the kinds of problems caused by the actions and interactions of these agents are confronted soon, the arguments concerning the origin and interpretation of rock art will become entirely theoretical, as there will be nothing left to study. Investigations of rock art deterioration at the Canadian Conservation Institute from 1972 to 1981 lead us to the conclusion that the majority of pictographs and petroglyphs cannot be protected from gradual erosion leading to complete extinction. We studied several sites across Canada to examine what were the specific problems of preservation in order to pres-
cribe appropriate conservation treatments: Frost, weathering, mineral incrustation, lichen encroachment and vandalism were the most frequent factors. From the analysis of the data collected we will recommend to several authorities the correct procedure for rock art site maintenance and preservation.

SOLEILHAVOUP: Systematic research of the chronological successions of the geomorphologic and paleoclimatic events in the pre-Saharan Atlas, Algeria, has been helpful for a better understanding of the origins and dynamics of the processes of deterioration. In some cases such research has established correlations between the alteration phases and the relative chronology of the engravings.

Two complementary research approaches are currently in progress at the rock art sites in the Atlas region:

1. A survey of the morphogenic evolution of the rock art sites in the Atlas sandstone formations (regression of cuesta, evolution of slope, seepage, expansion and contraction), and geodynamic actions (rock slides, fractures, fissures of seismic origin).

2. An examination of the micro-morphologic evolution of rock surfaces (sedimentological, petrographic and physical-chemical studies).

The complex, dynamic mechanisms of meteororism (actions of water and wind) and macro- and micro-biological agents (lichens, insects, bacteria and algae) and the chemical and mechanical characteristics of sandstone are responsible for a limited surface erosion. The desquamations, mainly granular disintegration and similar effects, represent the most common deterioration agents.

The basis for rock art conservation for the Atlas engravings on sandstone in a semi-desert environment should include:

1. Study of the causes of alteration.

2. Research for the most appropriate methods of recording engravings.

3. Measure and control of alteration.

4. Implementation and surveillance of conservation methods aimed at safeguarding the most important engravings.

WAINWRIGHT: The main concern is how to put all this theory into practice.

SHI: In China we have had some experience with consolidating altered and collapsed rock sculptures. The Great Variocona Buddha of the Fengxiansi Open Air Temple cracked due to natural corrosion. If not consolidated it would have collapsed. The restoration process involved:

1. Consolidating cracks by means of grouting, using low molecular weight epoxy resin. This product has the advantages of strong adhesion, simple operation, fine contraction, superior stability and weather resistance. By adding active dilutants, the viscosity of the resin decreased to under 5 centipoises so that even the fine cracks could be grouted and the flexibility of the epoxy resin increased at the same time.

2. Consolidating cracks by inserting metallic anchor bars to reinforce the grouting materials.

MICHELSEN: In the context of rock art, conservation is the control of deteriorating agents acting upon the rock. The first step is to keep the rock surface clear of vegetation and litter. This treatment must be done in such a manner as to avoid further damage to the art. In each case the type of rock determines whether to wash or simply to sweep it. Spraying the engravings with a fungicide is a safe method of removing any superficial organic growth, and it should be followed by a careful scrubbing to remove any further debris.
Chemical weathering can be reduced if the water and moisture on the rock are controlled. This may be done by constructing a shelter over the rock surface and redirecting any running water to other parts of the site. But some concern is needed for the aesthetics of the sites. You would not want to build elaborate structures that would disguise the natural beauty of the setting. This and other factors deserve consideration before deciding the most appropriate means of preservation.

MASAO: When working with a rock that has a high percentage of black mica, as it happens in Tanzania, the process of deterioration increases if the rock is exposed by the removal of the turf, or if it is not protected artificially.

MICHELSEN: When the rock has been in the open air for a very long period stronger weathering can occur. In both volcanic and metamorphic rock containing black mica (biotite), chlorite or amphibole, a special deterioration is recognized which may alter the carvings in a way that they can be misinterpreted as peckmarks. The expanding mica grains can, in addition to causing exfoliation, flake off in small, thin, shell-like fragments. As the degree of destruction becomes more serious and the surface becomes rougher, the more likely the pecked lines will be weathered; on a smooth rock surface they preserve better.

ANATI. The degree of preservation of the rock surface depends on a number of factors. For the rocks at Cemmo in Valcamonica, the parts that have been exposed for five thousand years are much better preserved than those found below the surface. This may be due to the acidity of the soil.

MICHELSEN: The problems can become compounded, certainly. Acid humus on rocks contains nutrients which the roots of a plant will move toward, following the surface of the rock. If they find any cracks the roots bed into them, harmfully increasing the deterioration of the rock. This is just another example of the problems conservationists encounter and have to deal with when proposing protective measures for rock art. It would be necessary in the case I have just mentioned to keep the rock surface free of vegetation by practical and safe methods.

SOLEILHAVOUX: One of the most interesting phenomena which occurs in the rock art of the Alpine Area and the Sahara is the colour of the patina. The mineral ions form a crust which may be of various types and complexities. At all rock art sites it is important to establish a time sequence with the qualities of patina observed; the clear, transparent patina is more recent, the darker and thicker patina is older.

The method of recording engravings used in Valcamonica certainly gives excellent reproduction of even the finest detail, down to the level of the filiforms.

Unfortunately, this very same process can mask the chronological evidence provided by the different colours of the patina. It is also possible that this application of paint could alter the superficial chemical nature of the rock or change its porosity by closing off the surface.

The mineralogy, crystallography and petrology may be determined by examining a thin section of the rock. There are many different types of rock and each one presents its own particular problems. In cases where the rock structure is more complicated, microgeotechnology should be used. Sandstone, for example, has crystals that expand and contract more in one direction than another, as a result of the heat of the sun causing surface deterioration. In other instances the microporosity of the rock should be examined for differential water diffusion rates. Every rock must be studied separately for the kinds of problems that are associated with conservation.
ANATI: The Neutral Method that has been developed in Valcamonica, for recording engravings, does not do any harm to the rocks; the black paint that is applied lasts only a few months and the white disappears several months later. We take pictures of the rocks when they are first discovered and then after each phase in the treatment. Photographs of the rocks are taken also after two years when the white paint has completely disappeared. From these and other first-hand observations we have noticed that the surfaces which were treated twenty years ago have consolidated and are much stronger than the surrounding rocks. We have examples of rocks that have been treated only on the areas of the surface with figures and a comparison can be made with areas on the same rock which were not treated. Our technique of recording was designed in a laboratory, and conservation specialists who have tested our method have established that it helps protect the rocks.

The transformation of “patina” colour may also be the result of prehistoric colouring pigments. While studying rock engravings with lenses we have found micro-remains of pigmentation indicating that some engravings had been filled in with colouring materials, lumps of which we have recovered at the base of rocks.

Patination varies according to each geographic region, like the Alps or the Sahara, as well as for the type of rock. The patination shade of the engravings may appear no different from that of the unworked surface. The patina crust of the engraved rocks in Valcamonica is quite even, only Medieval and recent engravings show a difference of colour as compared with that of the rock surface. The figures here become patinated with a shade similar to the ground in less than two thousand years. A thorough study of patination shades has been undertaken in the Negev Desert of Israel. In desertic areas this sort of study makes sense because it provides relevant information; but at the present stage of research it does not seem to be much help for the prehistoric rock art of Valcamonica.

WAINWRIGHT: To some extent the patination of silcrete is a natural barrier over rock art. In Canada we can remove paint left by vandals using ordinary paint remover with methylene chloride without harming the prehistoric art because it is protected by the patina.

MASAO: It is possible to take radiocarbon dates from an analysis of the silcrete? If this could be done, then researchers could take samples of incrustations on top of the rock engravings and have an estimate of the date of the figures.

WAINWRIGHT: This may be possible with certain types of travertines which have a high percentage of datable calcium carbonate. There are new methods of C14 dating using random an der Graaf accelerators which permit increasingly smaller samples to be taken. In our situation, though, you really do not have thick enough samples and they may be contaminated in a variety of ways (groundwater, seepage, etc.).

ANATI: If it is contaminated the date would be more recent. At least we can have a minimum date for the silcrete which would be a terminus ante quem for the figures located below it. This would give some clues as to the relative date of the rock art. If the silt is still being formed, or if it has accumulated over a long period of time, C14 dating of micro-levels may help in studying the rate of formation.

MASAO: Some laboratories have developed techniques of removing the contaminating particles through a process known as geochron. Previously students were told that when collecting samples for radiocarbon dating, they should not smoke around the area. This may no longer be a problem.

BELTRAN: The Cave of Altamira was the subject of a hundred page report by specialists which took into the fullest account all the causes of degradation that have already been mentioned. Based upon research with the most
advanced scientific knowledge and equipment, the authors strongly advised that the cave be closed. By this action it was hoped to draw the problem of rock art deterioration to the attention of both the international community and researchers. We approached the conditions at Altamira with a medical attitude: diagnosis and cure. The cave was discovered in 1879 and in the ensuing one hundred years the paintings have virtually disappeared. What caused this deterioration and what was the remedy? The development of cracks the ceiling and walls led to a method of conservation using cement columns. The building of both wood and iron doors at the entrance altered the ecological balance within the cave. By closing of some parts, and opening others, air circulation, humidity and temperature were changed. The conservation study used twenty modern systems employing probes to monitor temperature, humidity and Bern’s radiation. The Grand Salon was photogrammetrically prospected. Technical studies were made of the metalliferous substances, the rate of carbonates in water, internal dynamics through matter and energy, porosity and stability of the geological structure, and the physical, chemical and biological processes acting within the cave. Studying the chromatic stability of the paintings involved the examination of the composition of the paint, the discoloration caused by the dissolution of white salt deposits, and the effects of humidity. We found that the pigments were theoretically insoluble but that water and fluids can change the temperature, and although ion apportionment may not dissolve the pigments, it may modify them by adding calcium carbonates and micro-organisms. We have localized the effect of the salinity and have injected chemical solutions that separate carbonate ions to dissolve the carbonic acid, the main contaminant of the water.

The diagnosis has provided a satisfactory analysis of the problems, and by closing the cave we have been able to control the environment and stabilize the paintings. So now we know a lot more, but the cave is still closed to the public and may never reopen. Altamira is just one example, similar to Lascaux, but very different from the Tassili, from Tanzania or Valcamonica.

SCHOBINGER: Are the problems at Altamira similar to those of other caves such as Lascaux: should we study deterioration at these other sites also?

BELTRAN: At Lascaux they did not have the problem of micro-flora, which grows due to the influx of visitors, but they did have great problems with the chemical and physical elements. There are of course similarities but each site is a case on its own.

FONSECA ZAMORA: Is it possible to study the effects that a certain number of people would have on the destruction of the cave art?

BELTRAN: This would be both costly and time consuming. Certainly, by letting in small groups of people only, we can preserve the paintings longer, but ultimately the same problems would appear.

WAINWRIGHT: The conservation study made at Altamira demonstrates the importance of obtaining first-hand information by examining the rock surface in all its various situations. There might be inherent dangers in applying general conservation techniques. The vast literature on stone preservation for monuments does not apply to a large extent to rock art, and the layman may be misled if he does not have a specialist to study the site.

SCHWARTZBAUM: There are very similar problems with a large portion of rock art. Sites vary; there are caves, open-air settings and partially exposed surfaces. In conserving rock art, particularly with reference to the exfoliation of the pigmentation, the treatment rather than preserving the entire site.

WAINWRIGHT: There are obvious analogies but the chemical processes are quite different in the natural environment than in a monument. The application of preservatives to monuments and buildings is a widespread practice
but cannot be used with rock art. One makes use of the literature on stone conservation but at the same time takes into account the research that has been done specifically on rock art conservation.

SOLEILHAVOUP: It is difficult to compare the conservation needs of monuments or building where the stone is artificially prepared, and a rock art site where the biophysical and climatic environment is very different; two distinct strategies have to be developed.

PORTA: At Altamira the cave was treated like a monument and consequently the conditions are better, so there are exceptions. I can see the danger of having too broad generalizations, but refusing any general theory for conservation is equally dangerous. Some basic theories must be accepted as guidelines and as orientation. Previous experience must be used. We cannot start all over again in each case.

WAINWRIGHT: On opening this session I summarized the main causes of deterioration. We discussed then specific problems concerning the Scandinavian countries, Tanzania, Canada, Valcamonica, the Sahara, coming at the end to the major project carried out at Altamira. Some general information concerning the state of research has emerged, but universal recipes are not available for the preservation of rock art. Pilot conservation studies in different regions are needed to establish some standard rules, for which we must request the support of international organisations. Only then can we begin to understand fully world-wide problems of conservation.
XII - Presentation and display: museums, parks and ecomuseums

Chairman: E. Porta (ICOM)

Participants: E. Anati (Italy), P. Bardill (Lesotho), M. Duarte (Mozambique), O. Fonseca Zamora (Costa Rica), I. Hassan (Pakistan), Y. Isar (UNESCO), F. Leblanc (ICOMOS), K. Lilburn (New Zealand), F. Masso (Tanzania), T. Medhin (Ethiopia), K. Michelsen (Norway), O. Odak (Kenya), J. Schobinger (Argentina), K. Tripathy (India), I. Wainwright (Canada), V. Wakankar (India), N. Walker (Zimbabwe), B. Wanless (South Africa).

PORTA: In previous sections we have examined a series of issues concerning rock art: exploration and discovery, recording and inventory, study and interpretation, conservation and preservation, education and diffusion of information, publication, training of specialists and a world data bank.

In this session we are going to discuss how and where rock art can be displayed. The obvious locality to see rock art is the site itself, where man created it thousands of years ago. Sites may become parks or ecomuseums. ICOM, the International Council of Museums, is considering the creation of a special commission to support the public development of rock art sites.

LEBLANC: It is fortunate that UNESCO, ICOM, ICOMOS and ICCROM have developed a special concern for rock art. At this conference representatives of the four international organizations are participating with the national delegates to establish a general policy. Rock art sites are found in all five continents and constitute a perfect example of truly international cultural heritage. Further, we have seen that most countries have a keen interest in developing this field. The reasons are various: to discover and make the contemporary population aware of an artistic and cultural patrimony, development of an important source for historical reconstruction, educational use of the sites, or touristic and economic development. All these reasons are good, provided that they stimulate positive actions.

Many developing countries view rock art sites as Europeans view Gothic cathedrals; they may well bring waves of visitors, but they also constitute a first-hand source of cultural identity and awareness. A cave with prehistoric paintings may be no less impressive than Notre Dame but it may be twenty thousand years older. Exhibitions and displays are very important, but more important are the sites themselves, where rock art is preserved in the natural settings. The parks and ecomuseums we have seen here in Valcamonica constitute valuable examples of what can be done. There are numerous sites around the world where similar systems of parks and ecomuseums could contribute to cultural awareness.

WALKER: The term "eco-museums" has been used to describe the rock art parks in Valcamonica. How does this type of public exhibition differ from other forms of museums or parks?

ANATI: An eco-museum is an area that has been transformed into a multi-functional park where both the flora and fauna as well as the cultural heritage have been preserved. What distinguishes it from other parks or museums is that people continue to live there, so the environment is complete even to the inclusion of man. An eco-museum should try to enclose the character of the surrounding environment and preserve the natural setting. As conceived by Jean Henri Rivi ère, the principle is that everyone and everything survives off each other, maintaining a natural balance. This kind of museum could be developed in many parts of the world and is especially suitable for rock art sites.
MASAO: There are numerous roles that parks or museums can serve, from the education of the local population to the formal education of specialists. Displays and exhibits can provide a form of relaxation or recreation for the people, in addition to augmenting the tourist infrastructure in a country. This is particularly vital for Third World countries which rely heavily on tourism. Most importantly, however, a site placed under special care best preserves the cultural heritage.

ANATI: Displays are a means by which scientific information is transferred into culture. One aspect of research, aside from making advances in science, is that research today is culture tomorrow; if we had not had research yesterday we would not have culture today. Archaeologists should ensure that the results of scientific research are put into the service of culture.

WANLESS: Numerous parks which were created in South Africa for the protection of wildlife, also happened to contain rock art sites and are now under the control of ecologists and conservationists. It is very difficult to guard the rock art when the attendants have not had the training in the correct management of the sites. There needs to be some form of coordination between the museums and the park workers. If parks or reserves are created, then an administrative structure must be created as well.

ANATI: This is very true: if parks are established they have to be properly cared for. In South Africa it would be difficult to have the manpower to care for the large number of sites, and other countries are in a similar situation. In countries such as Canada the sites may be over fifty miles apart in the forest region which brings about its own difficulties for controlling and guarding them. Museums should prepare portable displays which can be used as travelling exhibitions. If major sites of rock art could be reproduced in these exhibits, they could tour the world causing an awakening of culture in various populations. The Centro Camuno di Studi Preistorici has produced such an exhibit in several copies in a series of eighty prints made from tracings, photographs and other raw materials of documentation on Valcamonica. Other displays could be made which include an introduction to rock art, a short description of the figures, distribution maps and synthetic charts. Such exhibitions should promote an appreciation of rock art and have an educational value. And we all would contribute to their distribution and display.

WANLESS: These types of displays should be done whenever possible, because their mobility increases education, which is one step towards creating a respect for rock art sites within the public. The greatest damage to rock art is being done by people; rock art sites on private property are in a better state of preservation because they are not accessible to the public. It is important to remember that the reason we are creating parks and reserves is so the rock art will last for at least another few years. Perhaps if we protect a few sites from the public then we will have something to offer future generations.

ODAK: If the cultural heritage which is found on private land is not to be seen by the public and not put into the service of the population it cannot form an integral part of culture. While it is necessary to think of the need to preserve the sites, it is also necessary to study how rock art sites can be used to promote public consciousness of this heritage. The Division of Antiquities in Kenya reserves the right to purchase any land that contains heritage resources, with adequate compensation to the owner, and to then make the site accessible to the public. Another arrangement can be worked out whereby the owner can declare that he will preserve and care for the site, with government assistance, and allow the public to visit the site.

WANLESS: In South Africa we cannot possibly do that because we have thousands of sites and the government could not afford to buy every one.
We have a National Monuments Act which states that all sites must be reported to the proper authorities so that they can be documented. The owners are made aware of the contents of this Act and, although the sites are not publicized, owners are required to allow visitors on to their property to view the art.

LILBURN: The destruction of property in New Zealand by visitors to rock art sites which are on privately owned land has reached the extent that malicious damage is being carried out. Cattle and sheep are being killed, fences broken and fires started, all resulting in a severe loss of property to the farmer who receives no compensation. The public really only needs to see a certain number of the best and most representative sites to receive an impact from the art. We can therefore be selective as to the sites we choose for public parks so that in future more parks can be created as interest arises. These parks should be part of an inclusive educational programme that coincides with their creation, and this in turn will aid in the future preservation of the remaining sites.

MASAO: The issue at stake here is what are the rights of the public. In New Zealand or South Africa the concept of private land ownership is different from that of other countries, and would seem to be enshrined in their legal system, with the rights of the individual reigning supreme. However, in Tanzania or Kenya the individual is asked to vacate the land for public good.

WANLESS: Could you afford to pay compensation to three or four thousand landowners to relocate their property?

ODAK: According to the law in Kenya you may be forcefully removed from your land if you refuse to sell it.

WANLESS: I do not mean for someone who refuses to sell, but could you afford to pay compensation to everyone who has rock art or other archaeological material on their property?

ODAK: Compensation is made to property owners who have lost land due to the construction of dams or other development projects. Why should we not compensate people who have archaeological sites on their land? After all it is the government that prints banknotes and it is the government that decides how to spend them.

MASAO: Compensation is a tricky business. How much should the compensation be, and will the landowner consider it a fair offer? The government can in essence pay what they want for the land.

ODAK: The appraisal of the land value should be done by the Lands Department who normally do these things.

WANLESS: If the government will not give enough money to record the sites properly, will they give enough money to buy the land simply because it has rock art on it? Dams and high technology projects are one thing, rock art and culture seem to be another matter when it comes to government spending.

TRIPATHY: All archaeological sites in India are covered under the Antiquities Law which determines certain rates of compensation. If the owner is not satisfied as to the amount allocated, then he may file a legal case with the Supreme Court. After a substantial period of time he may then receive the sum he is asking for, or the equivalent amount after devaluation.

MEDHIN: In Socialist Ethiopia everything was nationalized six years ago, including land ownership. Most of our rock art sites are located in uninhabited
places; we have not had the problem of relocating people. For the sites with small populations we would transfer them to other areas, providing the necessary housing and amenities.

ANATI: The legal problem of compensation may be solved in a number of ways. Compensation can be in the form of other land to replace the land that has been expropriated. Some countries compensate with government bonds and in other ways which fit the local habits. What is more crucial is to develop a workable system to open the land to the public. Once the land and responsibility for it has been taken over, this land must be taken care of, which is actually the most difficult part of the procedure. If the government takes the land away, yet does not establish any attendants to guard the site, they are not doing anyone a service. In Italy, the property owner, by law, has to be responsible for the protection of any antiquities found on his land. The Naquane National Rock Art Park in Valcamonica was privately owned land that the local authorities purchased for the specific purpose of creating the park. The government then hired the landowner as an attendant of the park, and he continues to live in the house on the property and uses the land for his needs (firewood, grazing etc.). A solution has been worked out where everyone benefits, and I am confident that elsewhere similar formulae may be worked out as well. Sound and accurate analyses should be made to study each specific case. Generalizations may raise new problems instead of solving the old ones.

SCHOBERGER: The problem really lies with the general protection of antiquities. Argentina has most of its archaeological sites located in the more remote regions of the country. Most of these areas are under state ownership. However, the problem is not so much vandalism, but the stealing and selling of cultural antiquities on the black market. The majority of the population in the country is not descended from the original inhabitants and hence do not have a sense of cultural patrimony. We spend more money investigating stolen antiquities than we do educating the public. We need to reverse this trend and have a massive educational programme to ensure the protection of Argentina's share of the world heritage.

WAKANKAR: Theft of artifacts from archaeological excavations is a most urgent problem in India. The stolen artifacts usually find their way to museums in Great Britain or the United States.

TRIPATHY: In order to control this problem, the Indian government has recently appointed Registration Officers for different localities. These officials are responsible for registering all archaeological material excavated at sites. Yet we still have continuing theft because these officers do not have the power to enforce the law.

MEDHIN: What restrictive measures can be taken to ensure that antiquities remain in the country to which they belong?

ANATI: Many countries have legislation which forbids the illegal traffic of antiquities, although there are certainly trespassers of the law. Some countries give authorization for the exportation of these materials, in which case there is a government official appointed to decide which artifacts may leave the country and which must remain. Small objects and souvenirs items are usually marked and recorded before being sold. However, it is usually the larger and more important pieces that surreptitiously find their way to private collectors or reputable museums. In cases such as this the country of origin should have the right to request the restitution of the stolen antiquities.

ISAR: UNESCO is very concerned with the fight against such illicit traffic and with measures to promote return or restitution of cultural property. The journal MUSEUM also covers this set of problems regularly in its pages.
HASSAN: The recipient countries have shown a lack of interest in matters like the importation of antiquities, either because they view it as a private affair, or because they have lenient legislation on such matters. If all countries were to cooperate and strengthen their laws on import and export of antiquities, then much could be accomplished.

ODAK: UNESCO introduced the Convention for the Return of Illicit Trafficking of Cultural Property in 1971, and many countries have since ratified it. At another UNESCO conference in Belgrade, in 1978, a committee met to apply moral pressure to countries which still persisted in abetting illicit traffic or who retained stolen antiquities. The original convention has not proved to be highly effective. After the independence of the African nations from the colonial powers there was an immediate mass exportation of cultural objects that are now scattered over many parts of the world. It would be fruitless to try to recover them all.

FONSECA ZAMORA: The trade of antiquities is big business and where big money is involved any legislation to restrict it proves to be inefficient.

ANATI: The major collections which have grown from the colonial period are now centres of world cultural research. The British Museum or the Louvre would contain almost nothing if their collections were returned to the countries of origin. The development of a national heritage in a country should be encouraged with the craftsmen and artisans who now carry on the traditional way of art, as well as with archaeological researchers working in the field of cultural patrimony. Much still remains to be discovered.

Most developing countries care for their heritage and develop fine museums and public collections. Such positive trends should be encouraged and whenever possible a reappropriation of stolen property should be implemented. But, from a world view we may question whether such important and basic institutions like the British Museum or the Louvre should be eliminated. Would this really be a service to world culture? No doubt, countries which have been systematically ravaged of their cultural heritage have the right to demand its return, but world culture needs world centres of collections for comparative studies and research with a broad perspective.

Luckily, rock art is very difficult to remove. Therefore, a few small pieces notwithstanding, all that could go to museums abroad are casts, tracings, photographs and reproductions. Displays of such reproductions constitute, in fact, positive contributions to the understanding of rock art.

Two parallel concerns should therefore inspire a world strategy: First, the right of each country to safeguard and develop its own cultural heritage, including the right to claim back any important antiquities that have been exported illicitly. Second, the development of culture at large as a service to all humanity, and this should concern us with a more international perspective. If all Eskimo figurines remain in Eskimo regions, or all Aboriginal bark paintings remain in Arnhem land or Kimberley, then they would never contribute to world culture. A wide appreciation of individual cultures encourages a respect for them at both a local and a world-wide level.

PORTA: We must all somehow find the balance between satisfying the world public's desire to see the actual rock art among the display of casts, tracings and photographs, without ravaging any country's culture. We see the case that must be taken to create informative yet non-destructive displays. As Professor Anati has said, an advantage of rock art is its non-removability. Therefore let us return to the discussion of what exactly is the best way to display rock art in its natural environs since display is usually the ultimate goal of museum people.

ANATI: In the transition between documenting rock art and understanding the value of its heritage, one must consider the accessibility of the sites. It
is of little use to study rock art if the public cannot benefit from the investigations. Almost every country has at least a major concentration of rock art that has potential as an open park or a reserve. Therefore this is a matter of international concern. These parks can provide cultural, historical, and social setting as well as a feeling of solidarity or identity for the population of the area. Unfortunately some countries lack sufficient technical and financial means to develop these parks, especially those countries who need this feeling of national identity the most. Careful planning is therefore necessary.

It should take into account the social, moral and spiritual demands of the population as well as their material capacity. Tourists’ desires can be incorporated if they do not conflict with those of the indigenous population; we should be able to define basic parameters within which these requirements may be satisfied.

In Valcamonica we are implementing the PAVES Project in an attempt to realize these aims. Five major parks are being created. Today’s visitors are over 250,000 per year. They will grow when we can be sure that the new areas to be opened to the public are well protected and safe. Local authorities are eager to stimulate such development for cultural and economic reasons. But we must be very careful to keep the situation under control. It is only one example and need not be followed strictly.

Every country and every site is peculiar in its needs and we must guard against making generalizations for all sites. The decision to establish national parks and ecomuseums in the valley was reached only after many years of exploration and excavation followed by studies. Through the survey and analysis of the rock art we have tried to understand the meaning of our discoveries. To convey our interpretations to a greater number of people we planned for the establishment of the parks with the municipalities taking a keen interest, especially in areas with significant concentrations of sites. By their nature all the depictions are related to one another and so there are not just isolated areas of rock art. The parks provide an opportunity for the protection of the archaeological sites and also an opportunity for people to gain knowledge from the art and establish their own identity with it and the environment.

ODAK: Are the visitors charged to enter into the parks of Valcamonica?

ANATI: There is no entrance fee. One park is under government supervision, the others are maintained on a part-time basis by volunteers from the municipality.

MEDHIN: What is the reason for not charging visitors? An entrance fee should help support the parks in various ways.

ANATI: We feel that this would be like running a high-standard-business which would require a well-trained administration. What we receive instead is a lot of moral support from the local population who help when aid is needed, although they do not assist financially.

ODAK: If something is free people do not consider it seriously. If you have even a token charge, while at the same time publicizing the site, people naturally become curious as to what is there. Paying an entrance fee gives an appearance of making a contribution to the park.

ANATI: Should culture cost money?

ODAK: A musical instrument costs money - that is paying for culture.

WAINWRIGHT: The admission charge is not to pay for culture but for the maintenance and preservation of culture. Whenever there is enough money for preservation there is no need to charge visitors for using the parks.
ISAR: Some Third World countries charge foreign tourists a certain sum of money as an entrance fee into the country. This is then directed into a central fund to be distributed to the different government departments. Tourists pay considerable sums of money simply to visit the country in the first place, so a token entrance charge really means little to them. In Sri Lanka the local population contributes to the maintenance of sites through a rather ingenious system: they buy symbolic bricks of the ancient buildings that are being restored. Five rupees buys one brick, while fifty rupees will buy a brick with their name on it. In this way even the poor can make a contribution to the preservation of historic sites, and it is still consistent with their tradition in the reconstruction of sacred buildings. If the concept of ecomuseums is to be strictly applied, you need the participation of the local population or it is not an ecomuseum.

WAKANKAR: You may not need an entrance charge, but protecting widely spaced sites or reserves requires restrictions of some sort.

MASAO: Is the purpose of an entrance fee to raise money because of inadequate government support, or is it a form of restriction? Until recently no admission fee has been charged in Tanzania, but current economic difficulties have made it necessary to charge people. However, it is only the tourists who pay and not the local population. Imposing a fee on the indigenous population restricts mobility, contradicting the aim of exposing as many people as possible to their cultural heritage.

WANLESS: Whether tourists pay or not depends on what funding is available to the parks. For instance, governments who levy tourist taxes to enter the country should use the money to finance the sites. The tourists should not have to pay twice to see the same thing.

DUARTE: The people in Mozambique have no money with which to pay the entrance fees. Tourists have money, though, and should have to pay. This type of situation is really determined by the conditions within a country and so a universal system cannot be properly established.

PORTA: A study carried out in the museums of Barcelona showed that each case is different. The results indicated that, although the salary of the ticket seller was greater than the total amount of money received, it is still better to have a small entrance fee because people do not appreciate things as much if they see them for free. There should not be any discrimination against tourists because cultural differences should not be emphasized.

MASAO: This is justifiable discrimination because the governments are keeping the parks running through the taxes. People who do not pay taxes should pay admission charges, which includes foreign tourists. Yet if not everyone is to be charged we must differentiate between foreigners and locals.

WALKER: Parks should be free for scholars. Tourists utilize hotels and local facilities, contributing to the community in that way.

ISAR: What are some of the specific needs of this overall category of prehistoric sites? This knowledge is necessary to work out guidelines for the development of parks and museums. In areas where it exists, is the rock art alone or does it coexist with other cultural aspects? The ideal ecomuseum is a nature-culture continuum, both human and ecological elements combined.

WAINWRIGHT: Simply by definition a rock art park should incorporate the natural surroundings of the site.

MICHElsen: A new rock art park is being designed in Norway and its special landscape is being preserved. No entrance fee will be charged.
WANLESS: Before national legislation concerning antiquities was introduced in South Africa, several museums displayed rock art removed from its original site. Now the emphasis is on creating parks where everything can be preserved in its natural setting.

FONSECA ZAMORA: The rock art should never be removed from the site because it then loses its historical and cultural context. When this happens, researchers can no longer study the relationship between the rock art and the environment. It is better for rock art to be preserved in the field than in the display cases of a museum. The museums should get casts and copies.

WANLESS: If a piece of art is so endangered that it will not survive in its natural setting then it should be removed for its own preservation, provided that its original site is properly documented.

BARDILL: I can cite an example in Lesotho where a painting on a boulder was in the direct path of a new road. Since the road could not be diverted the logical solution was to remove the painting.

ANATI: A general conclusion appears to be that parks should try to sustain themselves and to assure the preservation of the rock art and its environment. If other sources are inadequate, necessary funds can be obtained by charging fees. But practical problems indicate that this remedy cannot be universally applied.

PORTA: In this session we have discussed methods of display best suited for rock art and particularly the success of parks and eco-museums. We have also seen how museums can play a very important role in promoting the public's knowledge and awareness of rock art. One of the goals of this seminar is to identify the parameters to be followed for museum displays. No doubt exhibitions of casts, tracings and photographs are useful ways of disseminating knowledge without depriving a country of its cultural property. Furthermore, this may encourage people from around the world to come and see the original site. Of course, travelling is not possible for everyone and people always prefer to see the actual art rather than a copy. Displays should include originals whenever possible with due precautions taken so that they may be returned to their exact original locations.
XIII - Basic needs for the study, documentation and conservation of rock art.

Chairman: E. Porta (ICOM)

Participants: E. Anati (Italy), P. Bardill (Lesotho), A. Beltran (Spain), B. Gado (Niger), Y. Isar (UNESCO), S. Kerzabi (Algeria), F. Leblanc (ICOMOS), O. Odak (Kenya), I. Wainwright (Canada).

PORTA: In the past sessions we all agreed that rock art was a vital ingredient of our world-wide cultural heritage. It is important for international organizations to know what is necessary for the study, documentation and conservation of rock art. We must decide what is required in order to carry out the essential tasks of recording and inventory, protection and preservation, as well as cultural and scientific education. We should hear from as many areas as possible to see exactly where the problems lie and whether they are common or specific to certain regions.

KERZABI: The Tassili region in the North African sub-continent covers a vast area, nine hundred kilometres by two hundred. Although the entire region contains an abundance of rock art, primarily paintings, only one-tenth of this plateau has been thoroughly explored. The plateau is fairly isolated, the nearest large urban centre being Djebel, and a park was created in 1972 in the richest zone of rock art. Our objective is to survey the whole of the Tassili.

We urgently need a proper inventory of the sites to protect them from the influx of tourists. Collaboration with the local inhabitants gave us the maximum possible information because there are no true maps of the region. To record the discoveries we have now gathered a large quantity of photographs to form an archive which will be available to scholars in the near future. We have tried to identify the concentrations of rock art and have produced maps showing their location as well as that of other archaeological sites. The major problem of defining zones was overcome by referring to waterholes as landmarks since they usually have nearby settlements that can help as a reference point to survey the land in the vicinity.

A model inventory that everyone finds useful has not yet been devised, and a basic form should be agreed upon. From the existing techniques of survey the best methods should be selected. The tracings or reproductions of rock art require a certain amount of accuracy so that researchers may then make their own interpretations. For this reason colour should not be used as a basis for the inventory but we should use another medium, keeping colour data for an idea of what is there and how it developed. The experimental inventory we have begun in the Tassili is being followed very closely by UNESCO. It includes the state of preservation and other necessary information about the ethnography, the environment and the archaeological records. At present it is difficult to put all this information on one form and we would like to see an international inventory form that includes all of this information.

BELTRAN: A world inventory is the starting point for any further progress in the field of rock art. In Spain we are using an official file model approved by our government for the inventory of archaeological findings; for rock art we have adopted a modified version of the forms used by the Centro Camuno di Studi Preistorici. We would like to use a form that is common to other countries where there is rock art yet we need to come to some agreement upon a universal form. Until one is devised we could use a provisional form to gather the information, but with the intent of recording the final information on a standard form agreed on by all nations. It may be best to file the
forms on a geographical basis. The technical information that is contained on the form (e.g. the identification and photographic material) has to be balanced between a highly specialized set of data and a universal general form that contains a minimum of information. Out of all the information collected, a selection of items may be placed in a world data bank.

One important aspect is the graphic reproduction of the paintings and engravings. There are many methods for reproducing rock art, but it must be assured that we are not inventing art ourselves. We have to reproduce with high fidelity what has been created by the rock artists. It would be useful to develop a standard system of referring to colour and other technical data along the same lines as the Munsell Colour Charts used by geologists. Written characterization is useless when it comes to vague description; we must use the same words and the same codes when making records in order that our documentation can have value for comparison. We must rapidly develop a universal terminology in an effort to avoid subjective descriptions and naming of certain factors, which limits communication and makes the sharing of information arduous.

ISAR: Indeed, UNESCO is much concerned about the development of a common language and standard systems of collecting data so we welcome the efforts made at this seminar to promote standard procedures.

LEBLANC: The problem of terminology is particularly felt by ICOMOS and for this reason a new committee is being established to coordinate the efforts of specialists. Terminology is a basic need for study and documentation. Another problem we are interested in is the definition of a standard course of action to be taken with regard to monuments and sites.

ANATI: The procedure for rock art should be, first study and documentation, then conservation, and only after these should a site be opened to the public. One basic and simple file for inventory should be agreed upon and become the standard international document. There is need for rigorous graphic documentation (i.e. tracings, photographs) to give the details of paintings, peckings, superimpositions and more. It should include a total tracing of everything, on a 1:1 scale, with all the relevant elements of the art recorded. The Centro Camuno di Studi Preistorici is tracing on polyethylene sheets. For the engravings, every pecking is traced. For the paintings only the outlines of the figures are marked on the direct tracing while at the same time a mosaic of colour slides is made systematically covering the painted surface. This only takes a short time in the field and any doubts concerning accuracy can be written directly on the plastic sheets. This type of tracing does not harm the figures in any way; we use a soft felt-tipped pen enabling us to use different colours to illustrate certain features of the rock art (e.g. superimpositions, degrees of preservation, different ages, etc.). We then bring the tracing to the laboratory where it is attached to a screen while the slides are projected from the back, allowing us to study and reproduce each figure and assemblage in every detail.

The Munsell Charts are a universal scale to describe the colour of the figures. To get the correct colour in a photograph, place a small slip of paper with yellow, blue and red bands in the corner of the area that is to be in the picture. Comparing the results of the colour in the photograph with the actual colour of the slip lets you adjust the colour in the laboratory accordingly.

WAINWRIGHT: The recording and inventory of a site is clearly the first fundamental step that must be taken in the conservation of rock art. In Canada there is a fairly complete record of the known sites, much due to the diligent work of the late Selwyn Dewdney. "The American Committee to Advance the Study of Petroglyphs and Pictographs" has recently established a list of minimum information that should be gathered when documenting rock art, and we have been generally following the same lines. It would be worthwhile to compare it with other lists and if necessary adapt it to interna-
tional standards. The inventories of all the archaeological sites, including rock art, are on one central computer so that various investigations can have access to the data, both for archaeological and conservation studies, or for research of any other nature. Canada uses the Borden uniform site designation scheme, a universally accepted grid zoning pattern which can help others in modelling their own zone classification systems.

ISAR: The preparation of a common inventory is vital for every country. The reason for this is self-evident: to allow the comparison and study of rock art at a world level because of its universal significance. In many cases, site inventories are only beginning or have not yet been started. The simpler you make something the more likely it is to succeed. I do not wish to take the minimalist approach but we must be realistic as to our capacities for recording.

ODAK: Since we need a form that provides us with the minimum of data required for international use, I suggest that the Standard Rock Art Site Record File which was distributed to us at the start of the seminar to be basis for the inventory. We can make any proposed adjustments now, while we are here. Everyone can use a more detailed form suited to their own purposes while in their respective countries, but collection of information for the international survey must begin at once. In Kenya, rock shelters are rapidly deteriorating because of deforestation and we must record the rock art as quickly as possible, which means just recording the minimum of information so we can document all the rock shelters in the time available to us. This will allow us to see where investigation is most needed so we may then concentrate our research efforts in that area.

LEBLANC: We have discussed the inventory of sites, yet what is just as imperative is an inventory of human resources and research materials. There is sometimes a problem of finding out who is doing what in other parts of the world, or where to find the technical material necessary for research. As an example of what ICOMOS can provide, if an international inventory form is agreed upon, we could then print it for the countries unable to do this. Our International Committee on Rock Art is preparing a "Who's Who" of specialists in rock art studies and of their particular area of interest. This will aid in locating fellow researchers or needed experts for consultation and information exchanges.

GADO: In developing countries like Niger, the documentation and recording of rock art has only just begun. We rely on specialists from other countries to do research and it often happens that the scholars return to their own countries with basic materials and primary data from the research so it is not available for study by our own scientists. What is needed in this case is to encourage the education and training of professionals within the native population of a country and to stimulate joint research between local and international specialists.

BARDILL: It is apparent that the basic needs of rock art researchers vary from country to country and yet they have much in common. The type of assistance that the ARALA Project receives at a local level is moral support and permission to carry out fieldwork in the territory. Currently the work is being funded by the Africa Study Centre in the Netherlands, under the auspices of the National University of Lesotho. However, we have no archaeologist in the country who can help with the analysis and chronology of paintings. We have been able to document the art for a number of years now, but study and analysis is more difficult without the proper specialists. We hope that the international organizations will be able to provide some for us.

LEBLANC: What you have said is important and let me give you some guidelines for obtaining support from the international organizations. It is difficult to react to a request if it is only formulated in financial terms. We can
help you if you can be more precise: tell us what type of archaeologist, for what period, to go where, and what outline you are looking for. For equipment and money, give an idea of the kind of material and the quantity you need and then the international organizations may be able to assist you in finding what you need.

ANATI: It seems that the basic needs for study, documentation, and conservation of rock art may be summarized in two words: know-how and means. No doubt it should be possible to develop cooperation between national and local governments, international organizations and specialists, to obtain both and to make things move. Some effort and good will are, however, required from all sides.

PORTA: One basic need for documentation and conservation is display in museums and in ecomuseums, and the conservation of documentation. ICOM is very concerned with these problems and is prepared to set up an international effort for their coordination and promotion.

XIV - Towards an international strategy
for the presentation and preservation of rock art

Chairman: S. Kerzabi (Algeria)

Participants: E. Anati (Italy), A. Beltran (Spain), M. Duarte (Mozambique), O. Fonseca Zamora (Costa Rica), M. Hernandez Llosas (Argentina), Y. Ibar (UNESCO), F. Masso (Tanzania), K. Michelsen (Norway), O. Odak (Kenya), P. Schwartzbaum (ICROM), I. Wainwright (Canada), V. Wankisar (India).

KERZABI: We have been discussing throughout the seminar our problems and experiences concerning rock art. We now have to decide how these problems can be solved. UNESCO and other international organizations need to be presented with suggestions on how to assist with the preservation and presentation of rock art. Our aim in this session should be to formulate a broad, widely-based strategy to aid in developing these projects. We should define the roles of the different organizations; research institutes, individual scholars and private bodies. It is only by combining everyone's efforts that we can be sure that our generation will not be the last with the opportunity to study rock art.

FONSECA ZAMORA: Research institutes should be invited to send specialists to carry out surveys and recommend actions, especially in the countries just beginning work on rock art, like Costa Rica. We should also begin programmes for studies in different countries, coordinated through regional centres which in turn should be supported by a main, world centre. Specific problems could be brought to the attention of the world centre and solved through its greater wealth of knowledge. A world centre could provide invaluable experience and information for the organization of local and regional activities. Such cooperation is strongly needed.

MASAO: Institutions can be helpful in other ways than just giving grants of money. Local government authorities should endeavour to bring about an awareness of the existence of the rock art as a display of pride in their cultural heritage. Educational campaigns are needed at both local and regional levels. Research institutes should develop training programmes and research projects which will help in the recording and documentation of rock art sites. National governments should formulate and implement legislation for the protection and preservation of rock art wherever such legislation is needed.
ISAR: Two questions have been raised which UNESCO is directly concerned with. One is the strengthening of public awareness at several levels, which is a requisite given the sheer scale of preservation needs throughout the world. Tremendous amounts of work still need to be done to introduce people to the heritage that rock art represents before they can be expected to contribute to its preservation, if only to the extent of ending the kind of vandalism that has been spoken of here.

The other question involves legislation. UNESCO’s thirty years of work and recommendations in this field has not been entirely effective. Some times legislation is inadequate; many countries have an antiquities law but it may not cover the entire heritage; for example rock art or the underwater heritage may be ignored. Legal specialists have studied this problem for UNESCO and if anyone here is concerned or wishes to work with this problem at a government level please contact UNESCO in Paris.

ODAK: Legislation is only effective if it is enforced. A person should know that by defacing rock art he is liable to punishment and should also be aware that by ruining it he is destroying a part of his own patrimony. Culture is not static, it is in continuous transformation. These changes need to be reflected in legislation. When acts having to do with the protection of the national heritage were first introduced they did not allow for any new advances of changes in society. We must create new legislation where necessary and explain our reasons. People must know of and understand legislation before they can be expected to respect it.

GADO: Legislation is largely based on education. Even scholars who come to Niger to do research are sometimes breaking the law, not to speak of tourists who constantly behave like conquerors; they do not respect the local laws. Has UNESCO made any follow-up to see if legislation that they proposed is being implemented?

ISAR: UNESCO is aware that a law may be easy to ratify and difficult to enforce. We are now trying to learn the effectiveness of existing legislation. UNESCO is also steering away from formulating new International Conventions and instead is trying to consolidate the existing ones.

KERZABI: I would suggest countries exchange information on legislation. In Algeria we often find ourselves in a situation where convoys of landrovers coming from other parts of the Sahara have archaeological materials in the boots of the vehicles. The drivers explain to us that the material is from Niger or Mali, but from the point of view of rock art the entire Sahara is one. If we had knowledge of the laws of other countries concerned we could decide whether or not the law has been infringed.

MICHELSSEN: The five archaeological museums in Norway have been given the responsibility of preserving the prehistoric sites located in their regions. A national survey on the state of preservation at the rock art sites was conducted between the years 1977 and 1980. The report, published last year, showed that there was serious deterioration going on. We have now initiated a documentation project which includes in-field studies of weathering processes and conservation methods.

In the last fifty or more years, Norwegian archaeologists, working with the materials and aids that were available at the time, made quite good tracings, casts and photographs of the rock art. From these early records we are able to see what has happened to the rock art during this period. Because of the amount of deterioration that has taken place at several locations some rock art sites are quickly losing their value as scientific documents. Rock carvings that were well preserved under the turf for three to four thousand years began to decay shortly after they were uncovered. Engravings have been completely or partially destroyed, and the lines of the figures have been
altered by various weathering processes. The alteration in the weathered zones can give rise to such destructive forces as exfoliation or flaking of the surface, greater porosity of the surface layer, and stress between the weathered and the sound rock, all of which lead to further and accelerated deterioration.

We have not yet found a long-term solution for consolidating broken rocks or methods for protecting rocks from deterioration, but we do feel that future research should focus on: 1. improved and objective methods for documenting rock art; 2. a better understanding of the deteriorating elements; 3. testing methods of stabilization in the laboratory and following up of the artificial alteration; and 4. making stabilization experiments in the field using an ample variety of alternatives.

WAINWRIGHT: Before coming to this seminar I was not familiar with the work being carried on by the other conservationists present here, and this was not because I had not thoroughly investigated all the literature. There is no means of communication between researchers working in rock art studies in separate parts of the world. I would reiterate the need to have not only a world inventory of rock art sites but also one of human resources, without which there is inevitable duplications of effort in research. We cannot afford to waste so much time and energy. Thus better communication is vital.

HERNANDEZ LLOSAS: It is important to elaborate on the need for a universal terminology as part of the basis of world analysis. A description of a rock art site must have a conceptual definition of what a site is and what its limits are that can be applied universally. For example in Valcamonica the rock art continues over a wide area in the valley and hence it might be considered not as several sites but as one site with several concentrations, but then how do we classify a site with only one engraved or painted surface?

KERZABI: The solution to terminology problems depends on our various national situations and on the research centres operating in our countries. In Algeria we have stressed the importance of making a descriptive analysis of the rock’s physical characteristics before proceeding with any other investigation.

DUARTE: I would appeal for the necessity of regional centres for documentation of rock art. In southern Africa comparative analysis cannot really be started until all the sites are recorded and the information passed on to other researchers. Exchanging our learnings with others may aid them in solving similar problems, which can include tensions from harsh economic and social situations in underdeveloped countries or similar conservation needs because of equivalent climate conditions. The regional centres could act as a conduit in the promotion of rock art research. My only question at this point is, on which should we concentrate first, the regional or the world centre? Or must they be founded simultaneously?

ANATI: The kind of cooperation that is emerging between us here is something that several organizations should become involved with according to their capacities. It appears that there are two major levels: an international one and a local one. There are actions taken on a world level such as the training of specialists, the creation of the world data bank, diffusion of information, locating of experts, comparing essential studies; and then there are actions requiring regional centres which should be involved with fieldwork, recording, conservation, parks planning and promotion. It may not be profitable or economic to conduct many training courses at high levels in separate areas of the world, since one good training course a year may still satisfy all the needs. The training needed for scholars and field workers includes basic knowledge and intuition. The disciplines to be learned are much the same in every continent and good training requires wide scope. As a basic preparation the candidates should acquire broad technical knowledge and sound views on the world rock art situation: thereafter they may enter into the details of local problems.
On the other hand, coordination of fieldwork requires regional centres. It would be wise to join efforts and try to build research centres thoroughly equipped in all crucial fields of study. Centres should be created whenever there are specialists prepared to accept the responsibility and where there is sufficient interest from the nations involved. Specific problems should be learned locally; but it is also necessary to have a central base for the coordination and general training in rock art studies; a place for confronting and listening to problems from various parts of the world, meeting with different approaches and broadening horizons. Regional centres should be established to carry out recording, conservation, park planning, information, research and cultural promotion. Such local bases are much needed; the tasks would vary from area to area yet all these bases could complement and help each other while in turn being helped by the world centre. As to the question which should come first, I would say we must work towards both, for it is together that they are most profitable.

WAKANKA: The movement and exchange of specialists must be improved so as to give the best possible perspective to the fieldworker. An international flow of experts will spawn further projects in different countries who are receiving support from developed nations.

ODAK: In order to train a specialist in rock art it would be necessary to teach all of those subjects which directly contribute to our understanding of it. No discipline can really be isolated, all are interrelated and a specialist should have a background allied to archaeology, cultural anthropology, ethnology and ethnography, art history, history of religions, human geography, as well as geology, ecology, and conservation. Techniques that should be taught are recording, documenting, mapping and analysing the rock art. Opportunities should be made available for specialists from Third World countries to visit the developed nations to learn the more sophisticated methods being used. Specialists from the more technically advanced nations should acquaint themselves with the problems facing their colleagues in other areas. The circulation of recorded material between centres can overcome the problem of providing information first-hand when no published materials are available. The regional centres could sponsor such exchanges.

KERZABI: It is meetings such as this that allow us not to be overcome by the sheer range of specialization that seems to be required; we are able to choose according to our own priorities and it is precisely by discussing our problems together that we can arrive at a better understanding of what those priorities should be. A regional documentation centre has been established for the African sub-continent of the Sahara. It is located in Djanet, Algeria and will serve the purposes already outlined.

ODAK: A regional centre for East Africa could be created in Kenya.

ANATI: The possibility exists for these centres to be developed in many parts of the world. A central data bank could receive from, and provide to all the regional centres information to help coordinate and orientate rock art studies. Difficulties in publishing rock art reports are often a result of the work being a monograph of five hundred pages, fully illustrated and of interest to only a small group of specialist, therefore requiring special and expensive funding. However, short reports dealing with recording, interpretation, analysis and the technical matters of restoration and conservation, may be published in a scientific journal such as the BCSP, the "Bollettino del Centro Camuno di Studi Preistorici", which is a world journal of rock art studies. If this idea gains support we may then receive aid from the international organizations to produce a journal with a more extensive scope of articles, which would be accessible to more people from many nations. The idea for a world monographic series that would synthesize the research of many important sites and regions may also be considered.
ISAR: UNESCO fully recognizes the importance of publishing information and if the "Bollettino" were to make this transition to a more universal magazine such as being discussed here, UNESCO will gladly support the move in any way possible.

SCHWARTZBAUM: ICCROM was created by UNESCO and charged with studies in the conservation of cultural property and exchange programmes between different nations in training specialists in the restoration and preservation of monuments. We have had constant training courses in all aspects of conservation of different cultural materials. Unfortunately we have done very little up to now for the preservation of rock art. We can, however, offer a certain amount of experience in arranging training courses for people, either by them coming to our centre or, more frequently, us going to the developing countries and adapting the lessons to their specific problems. The ideas that may have been developed and knowledge formed from experience with conservation may be applied to most areas where the conservation problems are similar. There is a great number of researchers working on the preservation of stone, not for rock art specifically, but for statues. An enormous amount of study has been completed and there is now a large quantity of published material and information. ICCROM has the largest library specialized in conservation. To make this accessible, we are programming our computer with the entire collection from the library by key words and by subject. Everything published after 1975 has been entered into the computer and the bibliography can be purchased from ICCROM. If the book you want is not available through us we will help you obtain a copy somehow. We also have a xerox service and if you need an article that is out of print, inform our library and they will forward you a xerox copy.

KERZABI: In 1978 a seminar on the problems of deterioration at rock art sites was organized in the Tassili, with the cooperation of UNESCO and was attended by conservationists, prehistorians and archaeologists. The report is available as to the details of what was said, but it was felt that an inventory was needed not only of the rock art depictions, but of the state of conservation and the alterations the rock art had undergone. To follow up on the recommendations of the seminar we installed equipment to monitor and study the continuing state of health of the rock art and to diagnose its past and continuing problems. Such phenomena as the exfoliation and cracking of the rock surface due to temperature variations and other natural factors could obviously not be controlled, but what we could do was to make in depth studies of the actual processes of deterioration. The experimental station serves as a model research camp because it deals with natural weather conditions as well as a variety of rock art suffering from different types of alteration.

SCHWARTZBAUM: In addition to training people and exchanging information, ICCROM has a great many field projects for conservation throughout the world which are on-going pilot research efforts combined with a training component for the local population, like at the Tassili or in Ethiopia. We receive a formal request from an interested source asking us to help solve a particular conservation problem in a country where the expertise does not exist. We then send scientists to make long-term preservation treatments and to train local people in the technique of conservation.

ODAK: Training in the conservation of rock art is an aspect which ICCROM might then be interested in organizing. Concepts and procedures in preservation are already taught at ICCROM and a number of specialists could be brought together to assist the centre in drawing up a curriculum for the projects which need people trained for the conservation of rock art.

SCHWARTZBAUM: ICCROM would like to be involved in this sort of conservation training. The best role for us to play is that of the organizers of a
session on a technical level on conservation training in a location where rock art exists. We could arrange courses in various areas and bring in specialists to present lectures on modern conservation theory.

MASAO: To be serious about conservation we must initiate fieldwork, which means selecting areas in terms of their geographical or regional distribution. The problems of conservation differ from one region to another; for example, the problems in the Sahara are different from those in the South African sub-continent. Tanzania has already taken an interest in identifying their particular problems and I would recommend that the rock art sites in Tanzania be considered for a regional pilot research.

WAINWRIGHT: The Cave of the Holy Ghost in El Salvador is a rock shelter heavily inundated with mineral deposits and the people there do not have the technical expertise in conservation to handle the situation. The Canadian Conservation Institute is analysing a large sample of cross-sections of the mineral incrustations and the pigments. Depending on the results we obtain from this study it may prove useful to extend the programme into a long-term pilot research project.

WAKANKAR: The Bhimbetka Site in India is in immediate danger of disappearing because the rock paintings are so vulnerable to any sort of vandalism by the thousands of tourists who visit the site each year. Forests formerly protected the rock surfaces from this and sudden changes in the climate by deforestation has now exposed the art to the destructive elements of nature and man. The most important action to be taken, besides the actual preservation, is a full recording. This is the most important site of rock art in India and should be properly documented.

BELTRAN: In light of the discussion here I suggest that, apart from the technical questions of conservation, we make a clear recommendation to the international organizations for the simple protective measures necessary at sites, such as proper maintenance and physical protection, as well as adequate documentation.

As a general rule of conservation we need to know what is the consistency and content of the site what are the causes of alteration and the various reactions or influences on the painted or engraved surfaces and also on the binding medium itself. The causes of degradation are many and variable and conditions include humidity, vegetation, temperature changes, sedimentation and dust suspension in the air as well as any combination of these factors. It would be necessary to complete the item on humidity, for instance, by distinguishing between the phenomena of infiltration, capillary action of water and atmospheric humidity. In the category of vandalism we must add the deliberate acts of defacing rock art to the unconscious effects of human intervention, meaning the effects of our own research, opening the rock art caves to tourists, constructing tunnels and galleries, closing natural accesses and installing fixed lighting.

The problems of conservation are general but the solutions must be adapted to each individual site. For example, the Fontaneé Cave in the Dordogne has been closed since it was discovered ten years ago and it is still in a extraordinarily good state of preservation, though only about one hundred and fifty people have entered it. Lascaux was also saved from destruction by being closed and is now perhaps closed forever. Another terrible example is Bédeilhac, which was almost completely destroyed by the combined effects of tourism and being used as an aircraft factory in the last World War. Another case of malicious destruction by man is that of the Stuttgart paint factory that removed paint samples from rock art in order to know why the paint had lasted for so long.

SCHWARTZBAUM: It seems the question that should be asked concerning conservation is "What should not be done?" Rock art that exists now was created in an environment that maintained an equilibrium. It has not dete-
riorated that much over the past few thousand years because it was in locations where the conditions were such that the rate of deterioration was considerably slower than it would appear to be now. The rock art that has been exposed to the agents of deterioration has nearly disappeared, while the remaining rock art should continue its slow rate of weathering unless something happens to change the equilibrium in the environment. There can be natural causes or disasters that expose the rock art to the elements of deterioration, but more commonly it is man who alters the balance of nature and leaves the rocks unprotected in the face of destructive elements. Lascaux is a good example where opening the cave to tourists caused conservation problems. They installed air conditioners which lowered the relative humidity and air circulating in the originally closed environment. They allowed masses of visitors to enter the once stable cave who brought in microorganisms that then attacked the paintings.

The work of research must not increase the work of the conservator by inadvertently destroying the rock art. In the Tassili there formed a strange crust created by humidity in an area where it had not rained in the last thirty years. Most likely the change was due to the archaeologists constantly wetting the paintings to document them. People began to talk about the paintings fading and deteriorating but the fading was probably the difference between the wet state in a photograph and the natural dry state because these paintings are composed with a mineral pigment that basically does not fade. Deterioration did begin after these applications of water. With the water were soluble salts that were deposited on the surface of the rock after evaporation. As well, airborne particles, some hydroscopic, became attached to the surface and little by little a microclimate is formed which could support a humidity-related attack on the work of art. The crust gets larger and larger until it falls off the rock, destroying the paintings. Therefore, to preserve the art you really must do nothing to change the original environment.

MASAO: Mr. Schwartzbaum seems to suggest that archaeologists should keep away from archaeological sites, and conservators should stop being concerned about them. But we know these are not his intentions. In Tanzania we see our sites becoming more and more deteriorated and we urgently need to do something to stop this alteration. To do nothing would mean to have no more rock art, in a few years.

ANATI: Problems differ from one region to another, but often problems are similar. While dry desert environments, tropical forests and arctic regions obviously present different conservation problems, some sites in the tropical forests of Tanzania and of Brazil do present the same problems; the same can be said of sites in the Sahara desert, in the Negev and in the Central Australian desert, or of sites in Norway, in Siberia and in Canada. It would be wise if pilot projects on conservation could be developed in different kinds of environments so as to produce a broader range of knowledge. The experience acquired could be of real international value and at the same time could serve specific national and local problems. No doubt joint efforts are required to save an invaluable world heritage.

One major aspect of preservation and presentation strategy has not been given enough consideration in this section: the preservation and presentation of documentation. Yet, for a world strategy, documentation is a basic requisite for knowledge, information, research and for the promotion of culture.

KERZABI: This session clarified some important aspects of rock art. It has set the path for starting new directions in the preservation and presentation of early artistic expressions. Preservation encompasses a wide scope, from the conservation of the natural elements to protection by moral and legal means. It could be stressed that there should be an emphasis on presentation for preservation. Letting the public admire and enjoy rock art is a primary step in preserving this world heritage, not just in its physical aspect but also in its cultural and human messages.
LEBLANC: A team has worked the past few nights preparing a draft of recommendations from the information, proposals, debates and discussions that have been supplied each day by the working sessions. These are your proposals and therefore we must be explicit as to what your recommendations are. If after reading the draft you have some comments on the fundamental issue of a resolution, then we may jointly adjust it. I might warn you also against making international resolutions that have an air of "celestial music" as it is sometimes called - people tend to develop resolutions which are so high in the sky that nobody can really apply them. Try to think of resolutions that can be enacted by an authority or by yourselves.

I will follow through the document naming the number of the resolution and, if there is disagreement on that particular number, please raise your hand and we will return to that section after we have gone through the entire compilation.

The major issues that have been faced by the debates have been divided into six main chapters:

1. Study and exchange of information.
2. Inventory and documentation.
3. Conservation
4. Training of specialists
5. Education and public awareness.
6. Role of the Centro Camuno di Studi Preistorici.

Each chapter includes several recommendations so that, in all, some 30 proposals of resolutions have emerged from the sessions.

ISAR: I would like to explain the last resolution. All of us are aware of the role that the Centro Camuno di Studi Preistorici has played in bringing us together and in the work that is going to continue, and we all understand how difficult it is to obtain support for this kind of conference. This final resolution is called in Anglo-Saxon terms a "vote of thanks", noting our appreciation to the various people of the Centro, and also to bring to the attention of other organizations, particularly the Italian Government, the work that the Centro will carry out in the future and the need to provide support for it.

*Note: Two sessions were devoted to the discussion and editing of the recommendations point by point. The resulting text is published here.*
RECOMMENDATIONS

Introduction

The participants in the Consultation were unanimous in considering that rock art is an extremely important part of the cultural heritage of humanity. Found throughout the world, rock art is a truly universal human heritage. It is one of the earliest manifestations of the uniquely human capacity for abstraction, synthesis and idealization.

It is the principal evidence for the earliest stages of man's cultural history before the invention of writing: creative expressions, economic and social activities, ideas, beliefs and practices. It reveals aspects of the imaginative and emotional life of man, which no other available evidence of early civilization is able to do. It represents successive stages of the human adventure, from the Stone Age to present-day hunting and gathering, pastoral and incipient agricultural societies whose cultures are threatened with extinction.

Through its common characteristics, it demonstrates the unity of the human spirit and thereby contributes to mutual understanding and to the elimination of racist stereotypes.

In addition, it can provide precious information for the advance of knowledge in various disciplines:
- human geography, in terms of man's relationship to different environments, his economic resources and technology, ideology and social activities;
- the study of material culture, its uses and functions;
- art history, by revealing archetypal forms of world-view, religious expression and practice, mythology;
- palaeo-ecology, particularly through the depiction of animal species which, together with other evidence, permit the reconstruction of past environmental conditions.

However, the worldwide heritage of rock art is still insufficiently studied, documented and conserved. It is little known beyond a small but rapidly increasing circle of specialists in all parts of the world. Its significance for our common identity and cultural understanding in the world today has not been adequately made accessible and explained to a wider public. For all these reasons, the participants formulated the following Recommendations, addressed to all specialists concerned with the preservation and presentation of the cultural heritage, to national authorities responsible for its protection and to the international organizations concerned.

1. Study and exchange of information

1.1. More scientific energies and resources must be devoted to the systematic study of rock art, which should involve cooperation among the various disciplines mentioned above, as well as in the sectors of documentation and conservation.

1.2. Specialists currently working in the field of rock art face acute professional isolation and have inadequate means of being made acquainted with the work of colleagues in other countries. Hence the strengthening of communication and exchange among specialists should be given the highest priority. The exchange of visual materials such as slides and tracings should be encouraged. The Centro Camuno di Studi Preistorici, which through the present Seminar, other Symposia and various publications, has played a major role in the professional interchange achieved so far, should continue to perform a coordinating function in this respect.
The following specific measures are recommended:

i) The ICOMOS International Index of Specialists working in the field of rock art should be completed as soon as possible, with the help of ICOM and ICCROM, and circulated to the specialists concerned as well as to cultural heritage preservation institutions, to university departments and to governments;

ii) An annual report on the state of research in all aspects of rock art should be prepared by the national specialists or institutions concerned and forwarded to UNESCO by the competent national authorities; UNESCO should ensure that the respective national reports are collated, published and circulated;

iii) In consultation with ICOM and ICOMOS, UNESCO should examine the question of national legislations to protect rock art and make comparative data available to specialists.

iv) International seminars for exchange and comparison of information should be held regularly at least once every two years. Governments in whose territories rock art is found, UNESCO, ICOM, ICOMOS and ICCROM are urged to provide continuing support for the holding of such seminars.

v) Specialists and institutions who have carried out research on rock art in developing countries, to whom the results of such research are often no longer available, should make every effort to return this documentation (e.g. in facsimile) to the countries where the rock art is found. Specialists who carry out rock art research in other countries should work with national researchers in the field so as to share with them the knowledge gained and any special techniques developed. Specialists aware of failures to respect such principles of professional ethics are urged to bring them to the attention of ICOM, ICOMOS and UISPP, who should take the appropriate steps in this matter;

vi) Welcoming the proposal of the Centro Camuno di Studi Preistorici to adapt its Bulletin as an international forum of information and reflection on all aspects of rock art, the meeting requests UNESCO to assist in making the Bulletin available to specialists in all countries;

vii) ICOMOS is requested to draw up and circulate a list of institutions willing to share equipment, materials and services with other specialists in countries where such facilities are not available;

viii) Governments and international organizations concerned should promote the creation of regional centres devoted to the study, documentation and conservation of rock art and should further support such regional centres as may already exist.

2. Inventory and Documentation

2.1. Inventories are a basic pre-requisite for the understanding, comparison and protection of the cultural heritage as a whole, both nationally and internationally. The inventorying of rock art is still at a very early stage and for this reason it is indispensable to adopt a common methodology and terminology.

2.2. It is therefore recommended that:

i) The Centro Camuno di Studi Preistorici, the International Committee on Documentation of ICOM and the International Committee on Inventories of ICOMOS should produce a draft inventory form for the recording of rock art sites. Since ICOMOS has agreed to distribute such a form internationally, this draft should be circulated for comment to all the specialists concerned. The future computerization of the data collected, on a world scale, should be considered when drawing up the form;

ii) In addition, the bodies referred to above should produce a draft proposal of a basic terminology to be distributed for comment;
iii) In view of the limited resources available for such work, the support of all institutions and government agencies, particularly antiquities services and archaeological museums, should be sought wherever necessary.

3. Conservation

3.1. By its very nature the world's heritage of rock art is vulnerable to a great number of agents of deterioration. These include many kinds of geophysical and geochemical weathering which are encountered in varying degrees at all rock art sites. In addition the complex interactions of various animal and plant species, including microorganisms, with the rock art must also be considered for they are not only detrimental in their own right but also accelerate rock weathering. To this list must also be added the threat posed to rock art by man. Vandalism is all too often encountered and many rock art sites have been destroyed or irrevocably defaced in this way. Other sites have been lost through the encroachment of civilization, by deforestation, by road construction and by hydroelectric development, for example. In other cases the effect of man's presence has been more subtle as in those instances where the delicate ecology of caves has been altered by the presence of many visitors resulting in a serious threat to the art contained therein.

3.2. The most urgent requirement for many rock art sites which are readily accessible or are centres of tourism is for their immediate physical protection. The experience of Lascaux and Altamira as well as countless other sites around the world which have been damaged either through malice or through the legitimate desire to open them to visitors is certainly proof of this fact. The importance of public awareness and of legislation for rock art site protection cannot be too highly stressed.

3.3. These problems have been the subject of intense research by scientists in many countries where the need for understanding the processes of rock art deterioration has been recognized. These efforts must be redoubled and every encouragement must be given by local authorities, national governments, UNESCO, ICOM, ICOMOS and ICCROM to conservators, conservation scientists and others who are involved in this research.

3.4. The recording of rock art must also be recognized as being essential to its conservation, especially since many sites will disappear either through slow attrition by nature or rapid destruction by man. The recording of rock art poses many technical and logistical problems which have not all been solved. As an example one could cite the methods of photogrammetry which have recently been applied to rock art in several countries. The study of such new applications of established techniques should be encouraged as should the development of new methods to cope with the wide range of situations encountered.

3.5. Another aspect of recording must also take on greater significance. Since the long term outlook for much of rock art is bleak and it is destined to an inevitably complete natural weathering, consideration must be given to the archival storage of records that are made. This will ensure that these images will be available for future study by scholars and for enjoyment by future generations.

3.6. In particular it is recommended that:

i) Priority attention should be given to conservation in the study and exchange of information recommended above;

ii) Since there is no international grouping of conservation specialists working in this specific field, the International Committee on Conservation of ICOM is requested to create a "Working Group on Rock Art", in the hope that this group might be able to prepare a booklet on problems of conservation of rock art;
iii) Governments and people everywhere should accept the urgent necessity, in certain cases, to close rock art sites for conservation purposes (e.g. Lascaux, Altamira), it being understood that the institutions concerned should make every effort to open them as soon as progress in conservation science permits.

4. **Training of specialists**

4.1. The lack of trained specialists is an acute problem, especially since many rock art sites are located in countries which lack the necessary "knowhow" for study, recording, documentation and conservation.

4.2. Specialists, specialized institutions, governments and international organizations should step up the training of specialists in this field. Such training must inevitably be the result of cooperation among the various disciplines concerned.

4.3. In particular it is recommended that:
   i) UNESCO should provide fellowships for training in the field of rock art;
   ii) ICCROM should provide scope for training in the relevant conservation areas; in cooperation with national or regional institutions it should organize training courses on the conservation of rock art in various regions.

5. **Education and public awareness**

5.1. It is imperative to sensitize the population at large to the cultural heritage as a whole. Such awareness is particularly needed with respect to the universal significance of rock art, to the grave dangers to which it is exposed and to the responsibility for its protection that should be assumed by every citizen. Disregard for national legislation, for example, is a worldwide problem of civic education. Similarly, the ravages of vandalism can only be halted if people appreciate and respect their heritage of rock art.

5.2. It is therefore recommended that:
   i) the significance of rock art be included in educational curricula at various levels;
   ii) School teachers, university students, youth groups, cultural associations etc., should be involved in public information activities to this end.

6. **Special resolution concerning the Centro Camuno di Studi Preistorici**

The International Consultation of specialists:

*Recognizing* the efforts made since 1964 by the Centro Camuno di Studi Preistorici to promote the understanding of the universal heritage of rock art and to stimulate international cooperation among specialists;

*Conscious* of the significant fact that the Centro functions within an area that has been placed on UNESCO’s World Heritage List;

*Deeply grateful* to the Italian Government, the Government of the Region of Lombardy, the Comunità Montana di Vallecamonica and the other local authorities for the support extended to the Centro, particularly for the organization of the present Consultation;

*Believing* that the Centro Camuno di Studi Preistorici should have a coordinating role in the measures of international cooperation recommended above;

*Requests* the above-mentioned Italian authorities, UNESCO, ICOM, ICOMOS and ICCROM to continue their support to the Centro so as enable it to carry out its indispensable international task.
LEBLANC: All the information and thinking that you have been doing in the last few days will be of help to us all. We would like to thank Professor Anati and all the staff members of the Centro Camuno di Studi Preistorici for the substantial help they have given us. I would also like to warmly thank UNESCO and the other international organizations who were indispensable companions for this meeting and to whom we owe a lot of gratitude. May I wish you all the best when you leave this Seminar.

ANATI: May I thank you all for having participated so intensely in the production of this document. May I express my special gratitude and that of my colleagues for the consideration you have shown in your recommendation to the Centro Camuno di Studi Preistorici.

XVI - General debate and conclusions

Chairman: E. Anati (Italy)

Participants: M. Duarte (Mozambique), I. Hassan (Pakistan), B. Gado (Niger), F. Masao (Tanzania), T. Medhin (Ethiopia), O. Odak (Kenya), V. Wakankar (India), N. Walker (Zimbabwe), B. Wanless (South Africa).

ANATI: After a fortnight together, discussing rock art research, we have reasons for being optimistic. Work is being conducted all over the world and there is an increasing awareness of the value of rock art as a cultural resource, enriching the universal heritage of mankind and providing a sense of national identity, particularly to the developing countries. We have agreed on a series of recommendations and now we should make efforts to have them implemented.

During the seminar, two general requirements were often repeated. One was the need for parks, museums and exhibitions on rock art for public consumption as the most effective means of communicating to people the value of rock art. The second was that further symposia and seminars should be held as often as possible so that scholars may share their ideas and information about rock art.

We have all agreed that improving communication among researchers is vital if we are to be effective in transferring the conclusions of rock art research into the service of culture and education. It must now be decided what more specific suggestions we can propose to our national governments, in order that they may assist us in carrying out this task. But first we should decide among ourselves just what are the priorities in rock art studies. We must now formulate further suggestions on how we want to proceed from this seminar. We should agree upon certain standard procedures for cooperating in the collection of data on a world-wide basis. To this end we have discussed the recording and conservation of rock art, the preparation of a world-wide register of specialists, a world-inventory of rock art sites, and a world publication containing a "state of the art" report on projects being carried out to study, document or preserve rock art. We have consulted with UNESCO and the other international organizations about their role in assisting with the development of these major issues. In this last session we should determine how we, as individuals, can contribute to the undertaking of international cooperation in the above tasks.

One of the first goals is to arrive at common definitions and terms regarding rock art, to avoid the problems of conflicting terminology. A commission consisting of Bardill, Masao, Odak, Schobinger, Tripathy, Wakankar, Podesta de Wechsler and Hernandez Llosas have drafted a list of words, and in some cases attempted to define them. These are terms commonly used in rock art
research and we shall pass over to ICOMOS this terminology list so that is
may be drawn up in English, French, Italian and Spanish and circulated
among specialists for their consideration.

Other goals include establishing a world archive and data bank with docu-
mentation on rock art sites, based upon the information collected for the
world inventory. From a world coordination centre researchers can acquire
all the necessary data of comparative studies between rock art in different
regions, countries or continents. A centre such as this would be a useful
channel of information and should produce the reports talked about earlier.
This centre could work with representatives in country which have rock art
sites, to build up the world archive.

We now need your suggestions to help organize a world strategy to fulfill
these aims.

**MASAO:** The workload involved in obtaining the necessary information just
for a single country is immense and would be a job more suited for a centra-
лизed organization, for instance a government body or ministry, who normally
has responsibility for these matters.

**ODAK:** This would be better than relying on individual researchers. The ap-
propriate government departments should be prepared to take charge of this
project.

**DUARTE:** The informations required by a world data bank may create more
problems than it solves. To coordinate all the data and material for rock
art throughout the entire world is a gigantic task. Perhaps it would be better
to have smaller regional or continental centres in which to collect and store
information so that there would be less processing of the material, making
communication and dissemination more efficient. This, of course, would
not allow a world view on rock art and world comparative studies, but would
allow for the local development of research.

**ODAK:** The ideal approach would be to have detailed data collection at a re-
geonal level, which could then be compressed into a more generalized format
for a world centre.

**MASAO:** It is in the interests of the developing countries to establish a re-
geonal centre before considering an international centre. In this way we may
make a contribution to African culture as a whole first, which we desperate-
ly need, before attempting to accommodate for a universal culture of man-
kind.

**ANATI:** One problem with regional centres is that they are often unable to
function fully as coordinators of neighbouring countries for political reasons.
A world centre overcomes such a problem. If possible, however, regional
centres should be established to facilitate fieldwork and the diffusion of
information.

**DUARTE:** The political problems involved in creating regional data banks
are likely to occur also at an international level.

**ODAK:** For political reasons we have found it difficult to get information
from neighbouring African countries. Having a world centre would avoid
such political complications - scientists can cooperate in this way.

**WAKANKAR:** From our experience, having made data available to Euro-
pean centres, scholars have arrived in our country, without any prior notice,
to study areas we are already working on ourselves, and they have proceeded
to do research independently, often in conflict with our own work.
GADO: Political differences need not inhibit research; rather scholarly cooperation should be an example of overcoming such barriers. Many countries could hardly do any scientific work in rock art without some sort of cooperation from international experts and institutions.

WANLESS: We are making things more complicated than they need to be. As individuals we should contribute if we want to have a data bank. If a researcher studies a rock art site he should fill in one form but make a copy for his own purposes and a copy for the international inventory. We can deal with problems as they arise; the important thing is to get started on this project.

ANATI: May I say that, with this seminar, we have started already. For a world-wide register of specialists a questionnaire can be elaborated and distributed to researchers. For a world inventory of rock art sites we can correspond with the specialists in different countries in order to collect and classify data concerning sites throughout the world. The inventory can start at once by processing the available data. Individual researchers can submit current project reports to keep others informed of their activities and then a Journal can publish major articles about rock art. All this can be started without delay. When information is published it cannot be hidden any more and it becomes available to all.

HASSAN: It would be necessary to make as many groups or organizations as possible aware of the project. A centre would have the responsibility of contacting research institutes, universities, national ministries and governmental departments, scientific organizations and other interested bodies to support our efforts. For those countries which are represented here, we can set an example for other countries by supplying the required information when we return to our homes.

WALKER: There is always the question of finances and personnel. Who is going to do all these things and who will pay for them?

ANATI: The main contribution will come from the individual researchers, but each country should prepare its own reports on projects or activities concerning rock art. International organizations can, and hopefully will play a vital role. ICOMOS will support the preparation of a "Who's Who" register of specialists, UNESCO appears to be interested in having a world inventory of rock art sites because of its contribution to the universal human heritage; ICOM and ICCROM have shown their willingness to participate actively; and the Centro Camuno di Studi Preistorici has agreed to develop its Journal, the Bollettino, into an international forum to include the publication of scientific articles and the "state of the art" reports. As to the question of who is going to fund these projects, money may come from a variety of sources. But what we need most is cooperation and goodwill, and once an initiative has been started other resources will eventually become available.

MEDHIN: It is important to commence. Some base can be quickly established and provide a start for the far-reaching projects that have talked about here. We should have seminars and symposia every two or three years. We should have exchange of publications and exhibitions. International training courses should be designed to teach the principles and methods of rock art recording and analysis. Students would then return to their countries as specialists who would study and document the rock art. And we should be able to obtain informations and specialists from a world centre. If all this is done, after this seminar the study of rock art will start a new age for culture.

ANATI: May I conclude this last session by thanking you all: delegates, representatives of international organizations, observers and members of the
secretariat, for having given us the privilege of meeting here at the Centro. We may say confidently that in the last two weeks some progress has been made in rock art studies, in world cooperation and in keen friendship.

We also thank all those people and institutions that have made this seminar possible: the international organizations, UNESCO, ICOMOS, ICOM and ICCROM, the Italian Ministry of Culture and the Italian Ministry of Foreign Affairs, the regional government of Lombardy and the local administrations and authorities. After fifteen days of intense debates, discussions, commissions, field-work and laboratory work, it was a pleasure to hear that "it has been too short".

No doubt we shall meet again soon. Meanwhile we must return to our current work: this seminar and consultation has formulated resolutions and recommendations and they have to be carried on. Our joint efforts will go beyond this conference. When we meet again each one of us will have to report on the progress made by himself, his organization or his government in applying the recommendations and in contributing to the further development of rock art studies and international cooperation. May I say, to close this meeting, that the Alpine Camonica Valley and its 100,000 inhabitants are very proud and grateful for having had you here, and they hope to see you again, soon.
THE STATE OF RESEARCH IN ROCK ART

A WORLD REPORT

By

Emmanuel Anatl

The author is responsible for the choice and the presentation of the facts contained in this document and for the opinions expressed therein, which are not necessarily those of Unesco and do not commit the Organization.
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STATE OF RESEARCH IN ROCK ART: A WORLD REPORT

By Emmanuel Anati, Director, Centro Camuno di Studi Preistorici, Italy; Chairman, International Committee on Rock Art, ICOMOS.

I. INTRODUCTION

The painted caves of Lascaux in France and Altamira in Spain are well known to the public because of their geographic location and their inclusion in art-history textbooks. What is less known is that these sites represent only a small fraction of the world's heritage of rock art. Recent discoveries show that in many parts of the world early man chose to depict and engrave on rocks. Although exploration has by no means been thorough, rock art is reported from thousands of sites. Scientific evidence such as Carbon-14 dating, palaeo-climatic data and archaeological analysis indicates that the oldest rock art known today was executed ca. 40,000 years ago.

This art reveals the human capacities of abstraction, synthesis and idealization; it describes economic and social activities, ideas, beliefs and practices and provides a unique insight into the intellectual life and cultural patterns of man. Rock art contains the most ancient testimony of human imaginative and artistic creativity, long before the invention of writing, and constitutes one of the most relevant aspects of the common cultural heritage of humanity.

This endowment is rapidly deteriorating due to such processes as deforestation, pollution, the escalation of building and the spread of roads and development areas; vandalism and other human direct actions are by far the major cause of degradation. Most of this heritage has not yet been recorded or studied and humanity may lose it forever. It has become urgent to operate on an international scale for the recording, inventory and salvage of whatever may still be preserved for future generations.

II. DIMENSIONS OF THE LEGACY

A. Preliminary survey

In less than one year, a preliminary survey of rock art, including the existing documentation in the archives of the CCSF (Centro Camuno di Studi Preistorici, Italy) and the reports received so far, has enabled us to locate some 780 areas of rock art in the world, including thousands of sites.

It was felt necessary to define what is an "area" and what is a "site". Definitions were provided by different researchers but a formal and final definition is still to come. On the whole there seems to be a general agreement about two points:

1. A rock art site is any site where there is rock art. Its boundaries are traced 500 m. beyond the last decorated rock in each direction. Two clusters of figures which are separated by a figureless distance of over 500 m. are two different sites. Over 20,000 sites are documented around the world.

2. A rock art area may include several sites. It is defined primarily by its cultural and typological characteristics. Rock art areas coincide with geographical features such as valleys, plateaus, mountain ranges, etc. In order to be separated from each other and form different "areas", two assemblages of rock art should be at a distance of at least 20 km from each other, which is the distance that requires about one day's walking. As mentioned already, some 780 "areas" have been located, but this figure depends primarily on the information that has been made available.
B. Major Areas

A selection of areas was attempted in order to identify "Major Areas". A Major Area is one which provides an outstanding contribution to the knowledge of the intellectual identity of Early Man. Most of the Major Areas have over 10,000 figures in a zone of less than 1,000 sq. km but this is not a prerequisite.

Such areas are surprisingly evenly distributed: so far in no continent are these less than 10 Major Areas or more than 40. 144 Major Areas have been identified and they are distributed as follows:

<table>
<thead>
<tr>
<th>Region</th>
<th>Countries</th>
<th>Areas</th>
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</thead>
<tbody>
<tr>
<td>Africa</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>Asia</td>
<td>14</td>
<td>38</td>
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<td>Americas</td>
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<td>Europe</td>
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<td>29</td>
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<tr>
<td>Oceania</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td><strong>World</strong></td>
<td><strong>77</strong></td>
<td><strong>144</strong></td>
</tr>
</tbody>
</table>

Rock art indeed appears to be a world-wide phenomenon.

C. Size of the artistic production

Some of these areas have an enormous quantity of figures. The Drakensberg range in Lesotho and South Africa includes over 1,000 sites with an estimate of over 1,000,000 figures. Arnhem Land, in Australia, has over 1,000,000 figures. The Tassili N'Ajjer, in Algeria, has over 400 sites, with at least 400,000 figures. The Negev and Sinai, in Israel and Egypt, include 17 areas, with over 300 sites and at least 350,000 figures. The Alpine Range in France, Italy, Switzerland and Austria, counts 16 areas. Just one of them, Valemonica (Italy), counts 76 sites with over 180,000 figures recorded and with an estimated total of over 300,000 figures. Various areas in Arabia, India, the Soviet Union, Brazil and Argentina may count as many figures though precise surveys are not yet available.

The world production of rock art documented so far, counts over 20,000,000 figures, but we may safely evaluate that the total number of rock art figures still preserved should be well over 50,000,000: this turns out to be an extraordinary documentation of man's intellectual adventures and an outstanding world heritage and source for historical reconstruction.

III. HISTORY OF RESEARCH

A. The beginning of research

Since 1627, when the first tracings of prehistoric rock art were made in Bohuslaen, Sweden, by a Norwegian school teacher, Peder Alfsen, the study of rock art has gradually developed to interest both scholars and laymen.

In the last century the number of publications concerning the subject has steadily increased. Even so, methodical study of rock art is still a relatively young and undeveloped field of archaeological research. Today the subject is awakening an ever growing interest among researchers but well-tested recording systems and fully assimilated patterns of aims and purposes are still lacking in many regions of the world.

Sporadic reports on rock art appeared throughout the 18th and 19th centuries; however major studies were not undertaken until the end of the last century. In America, an invaluable book by G. Mallery, "Picture-writing of the American Indians", was published by the Smithsonian Institution in 1893. From the beginning of this century there have been relevant reports and data collection on rock art in South Africa, the Sahara and Australia. In Sweden, rock art studies were pioneered by O. Almgren and in the Alps by the English clergyman Clarence Bicknell.
After the discovery of Altamira, about one hundred years ago, a wealth of Palaeolithic cave art in France and Spain was brought back to light. From the beginning of this century recording and description was carried out, primarily by the Abbé Henri Breuil and by Hugo Obermaier. These two scholars, followed by Teilhard de Chardin, created a challenging school of thought that contributed to a new cultural approach in rock art studies. "Research" at that time consisted of a combination of descriptions plus theories. They attempted to establish dating for prehistoric paintings and to explain their meaning, relating them to habits and tales of present-day tribes. There were many more or less factual accounts yet little analysis and no synthesis in these preliminary studies; but they provided an astounding intellectual base that stimulated curiosity and pushed further research.

B. The development of research methods

Methods of recording and analysis have been and still are in a continuous state of refinement. There is no doubt that they will further evolve as modifications are caused by the progress of science; the evolution of the research itself generates deeper aspects of study with a consequent need for new systems of documentation and new features of analysis.

For each project methods must be adapted to ensure that the basic data required for analysis can be obtained; that is, analysis planned in accordance with the questions to which the projects intend to provide answers. Recording paintings requires different techniques from recording engravings; where both occupy the same surface, still different considerations should be made. In addition the dimensions of figures and decorated surfaces, their state of preservation, the type of rock, the presence or lack of various techniques of execution and stratigraphic superimposition, irregularities in the rock surfaces, and differences in patination (that is, the colour of the naturally oxidized surface of the rock that changes hue with age) demand, in each case, special approaches for study and research. Today the methods of recording developed in Italy by the CCSP have been adapted for use in several major rock art sites in Europe, the Near East and Africa, yet there are no recording methods which are universally applicable.

Recording also includes a concern with superimpositions and stratigraphy, quantitative analyses of subject-matter, evaluation of stylistic patterns, the study of the raw materials and the tools used by the artists, and numerous other items that enable an in-depth appreciation.

Differences obviously also exist in the methods of researchers due to variations in approach and training. Nevertheless it is imperative to develop and establish a conventional system frame to enable researchers to understand each other, to compare results and to identify common elements and peculiarities in each area.

Once an area is accurately recorded, the main question that arises is what should be done with the collected data: in other words, what are the aims and purposes of rock art study? As with the methods of recording, the goals of research are also developing. In the last few years wider scopes and new content have emerged.

Matters changed when it was found that rock art, like writing, is a very important source for historical reconstruction. Because of this consideration research in rock art has grown both in dimension and in outlook. In the last generation it has ceased to be just a descriptive subject and has become a research discipline.

Twenty years ago there were very few specialists in rock art, concentrated in a few countries. Today there are over 200 specialists in many countries throughout the world, and thousands of laymen make "pilgrimages" to rock art sites. In Valcamonica alone over 300,000 people visited the rock art in 1982, while in 1964 visitors numbered less than 10,000. Rock art is being discovered by the public at large, and yet scholars have still to define the broader aims and purposes of their research.
C. International Cooperation

The CCSP, a non-profit and non-governmental institution, was established in 1964. Its purpose is to study prehistoric and tribal art and related subjects that concern the economic, social and intellectual life of prehistoric and tribal man. In 18 years it has had participants from over 60 countries and has undertaken research throughout the world. In 1968 it organized an International Symposium on Rock Art under the auspices of the UISPP (International Union of Prehistoric and Protohistoric Sciences). At this event over 100 rock art specialists from 26 countries gathered and began a new stage in world cooperation for rock art studies. Since then three major international symposia and numerous conferences and seminars have been held at the CCSP.

In November 1979, ICOMOS (International Council on Monuments and Sites) created the "International Committee on Rock Art" which has now over 150 members. Through its members the committee is promoting communication and information and is contributing to the world data bank.

A Training Seminar and International Consultation of Specialists on Rock Art was held by UNESCO at the CCSP in September 1981, with the participation of ICOMOS, ICOM (International Council of Museums), ICCROM (International Centre for the Study of the Preservation and Restoration of Cultural Property), and representatives from 24 countries of five continents.

The purposes of the Seminar have been:
- to provide professional training in research, documentation and conservation of rock art;
- to promote cooperation and to develop standards of procedures in the above mentioned items;
- to lay the foundation for a world strategy to safeguard, evaluate and promote knowledge and information in the field of rock art.

During the Seminar, the UNESCO Consultation of Specialists agreed upon a series of Recommendations which provided basic orientations for international action and cooperation (Appendix 1).

The aims emerging from the Recommendations are:
- to achieve a world inventory and Data Bank of rock art;
- to prepare and circulate an International Gazetteer of Specialists in rock art studies;
- to develop an International Journal of Rock Art Studies for the advancement of research, promotion of the cultural heritage and the updating of conservation techniques; and to publish an annual report as a forum for these issues;
- to examine and advise on problems of legislation concerning the protection of rock art sites and make comparative information available to the concerned specialists and governments.
- to provide specialist where required, especially for urgent salvage projects.
- to hold international seminars and symposia for the interchange of ideas and comparison of information, and for professional training in the field.

D. Current Action

Efforts are presently being concentrated in three fields:

1. DOCUMENTATION: Producing a World Inventory and Data Bank on rock art. In a joint effort of ICOMOS and CCSP, a draft Standard Rock Art "Site File" as agreed upon by the participants of the 1981 International Seminar has been circulated for further comment and approval in order to be adopted on world basis. Sample tests have been made in Italy, Israel, India, Mexico and Tanzania, where it proved efficient and quite easy to use. It has taken into consideration various existing forms, currently in use in the USA, Canada, Lesotho, Sweden, Italy, France and Spain trying to unify the system and adapt it for world use. The standard "Site File" form provides a minimal amount of data. At a later stage this information will be collated, computerized and made available for study of individual sites. The
CCSP's archives already contain the largest documentation of rock art in the world: data from some 100 countries over 500,000 photographs, numerous tracings and reproductions.

Together with the cartography and field reports of research expeditions they make up the initial core of the World Inventory and Data Bank.

2. PUBLICATIONS. Several projects are under way:
- publishing a volume on the Proceedings of the International Seminar and Consultation held in September 1981 which is now being edited;
- adapting the *BCSP* (Bollettino del Centro Camuno di Studi Preistorici) to fulfill the recommendation of becoming an International Journal of Rock Art Studies. Volume 21 will incorporate these new aims;
- producing a "Who's Who in Rock Art". A form has been mailed to scholars and specialists for this purpose. The first edition is nearly ready for the printer;
- setting up a "World Inventory" to be published and distributed. The first stage would include short entries concerning the "Major Areas".

A broad international cooperation, including UNESCO support, is necessary for this publication programme.

3. EDUCATION: developing an educational structure to provide training programmes for professionals and for international symposia and seminars on rock art. Disseminating information to specialists and to the public at large. The actions taken so far are modest because of financial limitations. Symposia/seminars should be planned every two years, following the 1981 seminar.

E. Research projects in progress

Research projects concerning rock art are being carried on the world over. In the last few years a significant increase in field surveys and rock art studies has been noted. In 1982 alone some 35 research reports have been received, together with nearly 40 regional reports, which provide a great deal of new information. The response has not been consistent, however, and it is doubtful whether the reports received so far accurately reflect the actual world-wide distribution of rock art presently under investigation. Information collected from publications and from sources other than research projects serves to round out a yet incomplete view of the current world situation. A general appraisal of the state of research in the world and in each continent is presented in subsequent chapters.

New waves of activity in rock art research appear to be particularly strong in Africa and South America, while a consistent increase may be noted also in Asia, Australia, Europe and North America. A chart of the reports is given in Appendix B. The extent of their coverage is far from exhaustive. Reports continue to come in and it is certain that additional ones will become available in the near future. Furthermore, not all researchers may have been contacted, while several of those who were, may not have answered. But already, from the reports received, we can see the extensive efforts currently being made the world over in the field of rock art.

IV. AN EVALUATION OF ROCK ART

A. Historical reconstruction

The appearance of Homo sapiens on Earth marks the emergence of a new species; one able to communicate through a complex assemblage of vocalizations that we call language. This is Humanity spread over Earth, and we are its issue. Early vocalizations, gesticulations and other communicative expressions either oral or visual were not preserved. But their graphic messages did reach us. While some art objects have been unearthed in early archaeological sites, the bulk of prehistoric creative expressions preserved is in the form of rock art. Its study and evaluation provides a unique insight
into man's intellectual life in the last 40,000 years and reveals his imagination and conceptual adventures. The consistency of characters and subjects exhibited in rock art throughout the world testifies to the common origin of human intellect.

In all the territories which have been inhabited by human beings, rich concentrations of rock art provide new perspectives into the history of mankind, from Palaeolithic hunter-gatherers to contemporary collectors, fishermen and pastoral societies. As a result of the information gleaned from these creative registers we have gained a greater historical awareness of the remote past in many countries of Asia, Africa, the Americas, Europe and Oceania. Because it falls well before the advent of writing, rock art constitutes a major testimony of early man's expression of himself and his world view. While even the most ancient script is just over 5,000 years old, rock art provides a record of the way man lived many thousand years earlier. Yet despite its value as a source of cultural, social and historical information, in most regions of the world this wide expression of human creativity has been badly neglected. For one reason or another much of the knowledge of regional scholars does not become available to the rest of the world. In order to establish a more cooperative and receptive arena for thought it is vital that researchers share with the international community their conclusions on the state of rock art.

Technical aspects of culture progress in a more or less coherent evolution. New inventions and innovations constitute the base of the following step in the evolutionary sequence, and result from experiences which motivate subsequent progress. It is questionable, however, whether such logical evolution occurs in the artistic aspect of culture as well. Current cultural standards influence the evaluation and appreciation of art and creativity. Aesthetics change from person to person and from culture to culture according to fluctuations in style and taste. This concern should be kept in mind when rock art styles are described as realistic, descriptive, abstract or symbolic, for such terms reflect our own degree of comprehension and our own cultural criteria which are the result of complex, dialectical and personal capacities.

However the artist never represented everything he saw or knew, but rather made specific choices. Although it varies consistently from one age to another, the subject matter is always rather circumscribed; thus the frequency and assemblage of subjects allow us to construct a rudimentary hierarchy of his values. The gamut of subject matter is always well-defined and consistent within specific cultural and tribal patterns. No doubt there have always been defined impulses to paint, draw or engrave a certain way, and both subject matter and style are reflections of deep motivations.

Rock art may help in defining patterns of culture. When assemblages can be located chronologically, each represents a different stage in the cultural sequence, and hence through subject matter associations rock art can divulge many aspects of human life. The depiction of the species of animal hunted and of the food gathered tells us much about the ecosystem in which man lived. The depiction of weapons, tools and other objects, reveal his technical abilities. The illustration of his myths and beliefs bring back to our consciousness essential aspects of our intellectual roots and displays the existential relationship between Man, Nature and the "Supernatural".

Comparative studies indicate specific kinds of societies the world over. Certain kinds of hunting societies, for example, tend to depict animals in a particular style and to use a consistent assemblage of symbols the world over. Pastoral societies from different regions again have stylistic characters in common and focus their representations on the animals they breed. The art of fishermen, or that of pastoral populations may show similar traits of character in far distant areas. No doubt, daily concerns and specific patterns of activities have had parallel impacts on people with similar activities and background, so as to result in similar trends of figurative output. It seems,
therefore, that patterns of style and subject matter indicate specific horizons of mentality and hence enable us to detect stages of culture. It thus seems possible already to define the meaning of style in a very general way, though the details of each figure may reveal much more about the artist's state of mind, preoccupations and motivations in his cultural horizon. Rock art studies may have, in the near future, a tremendous impact in reconstructing the history of mankind at large and of specific ethnic and cultural entities. Such studies are today at an incipient stage and a fast development is expected in the next few years.

B. World Distribution

While today, as it seems, we live in a world where the arts have an ever-decreasing role in day-to-day living, early man seems to have viewed them as an integral and essential part of his daily life. In every part of the world, quite separate human groups practiced the habit of making rock art. Indeed, rock appears as the first canvas of man and has been used profusely all over the world.

As mentioned already, major concentrations of rock art are found more or less evenly distributed on Earth's inhabited land. We shall start our survey in Southern Africa which, according to present reports, has the greatest profusion of rock art in the world. There are major concentrations in Angola, Botswana, Kenya, Lesotho, Mozambique, Namibia, South Africa, Tanzania, Zaire, Zambia and Zimbabwe. In Northern Africa major concentrations are located in Algeria, Chad, Egypt, Ethiopia, Libya, Mali, Mauritania, Morocco, Somalia, and the Sudan.

In Asia, major concentrations in the Near East are known in Afghanistan, Iran, Iraq, Israel, Oman, Pakistan, Saudi Arabia, Sinai (Egypt), Anatolia (Turkey) and Yemen. In Central Asia and the Far East they are known in India, China, Mongolia and in several republics of the USSR.

Major rock art sites in North America are located both in Canada and the USA. In Latin America they are known in Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Guatemala, Mexico, Peru and Venezuela.

In Europe, major concentrations are found in Austria, Bulgaria, Denmark, Finland, France, Greece, Ireland, Italy, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, the USSR and Yugoslavia.

In Oceania, by far the major concentrations known are in Australia, but others are found in the Easter Islands, Hawaiian Islands, New Caledonia, New Guinea, New Zealand, the Solomon Islands and Tasmania.

Recent research indicates that the beginning of rock art in each continent is much older than was believed a few years ago. In Africa the oldest art dated so far is from the Apollo 11 cave in Namibia, where painted animal figures on stone slabs have been found at an archaeological level, defined by W.E. Wendt as "Middle Stone Age", which is dated by three C-14 tests to 28,400, 26,700 and 26,300 B.P. In Tanzania, the earliest rock art, found in the Kondoa and Singida districts may be even older, but no C-14 dates are available so far. A sequence of different styles of Early Hunters' rock paintings recorded during an UNESCO consultancy in 1981 is likely to have started earlier than any other rock area so far dated the world over and, stated in a subsequent chapter, may well be over 40,000 years old. In Northern Africa, the earliest dates so far available for the beginning of rock art are much later than in southern Africa, they refer to Early Hunters' art from the Acacus Range in Libya, going back to the late Pleistocene and dating according to F. Mori to ca. 12,000 B.P. Similar stylistic assemblages are known from the Tassili in Algeria and from the Ennedi in Chad.
In the Near East the earliest hints for dating are from central Arabia (Dha-thami Wells), likely to belong to the late Pleistocene epoch, from 14,000 to 10,000 B.C. In central Asia and the Far East data are so far more limited than elsewhere. Mobilary art from Malta in the Baikal region of central Siberia has been dated to ca. 18,000 B.C. By comparison, A.P. Okladnikov has proposed an early date for ancient rock art sites of similar styles in various parts of central Siberia.

In India, in Madhya Pradesh, at Bhimbetka, V.S. Wakankar detected a series of rock paintings from the Stone Age which he located in the Pleistocene, while decorated ostrich eggshells from the same area have been dated by C-14 to 25,000 B.P. This may also be the approximate date for the origin of rock art in India, and possibly in some parts of Soviet Siberia; thus far it is the earliest dated art yet discovered in Asia.

In Europe the early evidence of cave art goes back to the Aurignacian period, some time between 33,000 and 25,000 B.P. Some graphic markings have been attributed to the Mousterian period and considered as a "prefigurative" stage in graphism. This hypothesis is controversial, but should it prove to be correct the earliest graphic markings in Europe would turn out to be older than 40,000 B.P. No figurative images are so far demonstrated to be present at that stage.

In the Americas the earliest art dated so far comes from the southern continent where in Lagoa Santa, Brazil, anthropic layers, connected with rock art and including fragments of painted rock surface, have been dated by C-14 to ca. 17,000 B.P., while in the far south of Argentina at Rio Pinturas, in the Province of Chubut, C-14 datings have again enabled to locate early representational assemblages as far back as 12,000 B.P. Nothing as early as that has been dated so far in northern and central America, although stylistically Early Hunters' rock art assemblages in Baja California, Mexico, and in the states of California and Washington, USA, may well turn out to be of a comparable early date.

In Australia and Oceania the earliest evidence of art is so far provided by graphic markings at Koonalda Cave near the southern edge of central Australia, west of Adelaide, which have been dated by C-14 to ca. 20,000 B.P.

This brief summary of the earliest dates of rock art available so far seems to indicate that the earliest rock art we know of may have come into existence more or less in the same time span; that is, between 40,000 and 30,000 B.P., both in western Europe and in southern Africa. In two more continents, Asia and Oceania, rock art was already presented before 20,000 B.P. There is evidence of rock art in Latin America dated around 17,000 B.P., although future research may prove that it appeared on the American continent earlier than that.

On the whole, rock art appears to be a common characteristic of Homo Sapiens, evident from the time of his emergence.

C. Ecological Setting of Rock Art

A high percentage of the 144 "Major Areas" of rock art detected so far is located in areas now desert or semi-desert. We may define these areas as peripheral and/or isolated zones in the present ecological situation. The general pattern of setting recurs, from the Dahthami Wells in Central Arabia to Tromso in Arctic Norway; from the Acacus in the Libyan Sahara to Parnamitee Hill in southern Australia; from the Kalahari Desert in southern Africa to Saint Ignazio in Baja California, Mexico; from Valcamonica in the Italian Alps to the Middle Yenisei River in Siberia; and from Rio Chubut in Argentinian Patagonia to Har Karkom in the Israeli Negev desert. On the other hand, the data available so far indicate that the less dense areas of rock art are confined to the regions covered today by large tropical forests. We find very little evidence of rock art in Brazilian Amazonia, in the Congo and in other west-central African countries, and in south-eastern Asia.
The term peripheral is, however, not always fitting. The major concentrations of Palaeolithic cave art in Europe for example are in the dead-end which faces the Atlantic Ocean; in the Franco-Cantabrian region, man is likely to have moved about much less than in eastern Europe, in the Balkans and in the Mediterranean areas, where later civilizations flourished. It is peripheral only when Gibraltar is a barrier. Koonalda Cave in Australia is located again in a dead-end facing the Southern Ocean. So far nothing that early has been located in northern Australia, where man is likely to have arrived on that continent and to have moved about much more.

In Africa, again, the major concentrations of the earliest art horizons come from Tanzania and Namibia, which are both rather marginal areas in later Pleistocene human movements. The same may be said about places as Rio Pinturas in southern Patagonia, or about the peninsula of Baja California in Mexico. Such recurrent ecological and topographic settings for rock art still demand an explanation.

V. REGIONAL DISTRIBUTION

A. Differences in evaluation

From one area to another scholars reveal different concerns and varying degrees of knowledge about sites. It is not only the lack of adequate training which limits data collecting and prevents sharing information with others. There are differences in professionalism and also in the willingness of communicating knowledge to other. Frequently, the less people know, the more they want to keep their "secrets"; the pattern may also reflect local habits. While in some regions there is eagerness to communicate knowledge and to obtain information from other areas, other regions of the world are still reticent in disseminating interest in their cultural patrimony and in becoming interested in what is found elsewhere. Some researchers tend to focus their interest in local details, disregarding basic concerns which are necessary for comparative studies.

An additional problem arises when attempting to compile a world view of rock art: there are different approaches to evaluation in different areas which condition the information received. Data considered relevant by one researcher may not be by another. To one, the most important aspect of a site might be its monumentality; to another, its age; to another the quantity of finds or their degree of visibility; to a fourth, the holiness of the place, to a fifth, its impact on the local cultural and historical awareness. In order to complete a world view of rock art distribution, it would be useful to rely to a large extent on first-hand information and on the-spot visits. Several of the areas mentioned have not been visited as yet by the author. The present report is therefore far from exhaustive.

For the future it would be advisable to focus interest each year on different geographical areas, so that at least some areas would be sufficiently covered. This would both stimulate local researchers to cooperate better and help bring the basic information to a world forum, and would allow the acquisition of a deeper insight into regional problems.

B. Africa

The African continent may be divided into two major regions, as far as rock art is concerned, which represent roughly the north and the south. In the south, major concentrations follow the general geographical area of the Rift Valley from Kenya and Tanzania, down to Johannesburg. Further, there is a broader spread in southern Africa and major sites are found in Zambia, Zimbabwe, Mozambique, Namibia, Botswana, South Africa and Lesotho. Malawi, the Katanga province of Congo and southern Angola have
provided preliminary reports of sites which may result to be of considerable consistency.

In north Africa most major concentrations are located in the central Sahara region. Some are profusely known and publicized, such as the Tassili in Algeria, the Fezzan and the Acacus in Libya. Others, no less relevant, in the Tibesti and Ennedi in Chad, in Niger's Tenere and in the Adrar range of Mali, are yet to be adequately explored. Other major sites are found in the Moroccan and Algerian Atlas range, along the Nile valley, both in Egypt and in Sudan, and in the Canary Islands.

A distinction must be made as far as southern Africa is concerned, among four assemblages which appear to reflect four major historical eras. From the oldest to the latest they illustrate human group practising: 1. Early Hunters of big game who did not know the use of bow; 2. evolved hunting with the use of bow and arrow; 3. pastoralism; 4. mixed economies.

Rock art reflecting a mixed economy appears to be primarily connected with Bantu-speaking people. It is broadly spread in South-Eastern Africa, including vast areas of Kenya, Tanzania, Mozambique, Uganda, Malawi, Zambia and Zimbabwe. Most of these sites appear to be connected with initiation practices and ancestral worship. They are comprised primarily of schematic designs principally in white, and cover most of the last 2,000 years.

Pastoral rock art is mainly concentrated in Kenya and Tanzania, with isolated locations in other countries. Domestic oxen, some humped, are the main subject matter, while the common colours used are black, white and brown. Most of this art is parallel chronologically to the early phases of the last stage, although its early phases are older and some may go back as far as the second millennium B.C. A series of local styles, still to be defined, are presented in the area in the last two millennia B.C.; they seem to indicate the presence of a variety of patterns of life.

Late Hunters' art includes scenes of mythology, hunting, and other daily activities. Numerous anecdotal depictions are present. Stylized and dynamic human figures with bow and arrow constitute the most widespread pattern found all over and are particularly well-represented in Zimbabwe, South Africa and Lesotho. The Matopo Hills in Zimbabwe, the Drakensberg in Lesotho and Natal, each count well over 200,000 figures of this style. The total number of figures is estimated to over 2,000,000. Artistic creation reached a high peak of creativity with polychrome depictions with exceptionally well-conceived, elegant and harmonic assemblages. The beginning of this type of rock art may go back over 10,000 years as confirmed by recent finds of painted tablets in the Cape Province, from excavated funerary caves; and in some areas it was still practised as late as the last century by San tribes.

The earliest stage, that of Early Hunters, is frequently found superimposed by later drawings. Unfortunately, because it is sometimes faded and badly visible, it has been consistently neglected. The only area where the art of early hunter-gatherers is known to be well-represented and can be studied thoroughly, appears to be the Central Highlands of Tanzania in the districts of Kondo and Singida. Here UNESCO consultation in 1981 allowed us to identify a consistent series of overlapping styles which may well result to be the earliest rock art examples known so far in the world. This style is primarily made of large animal figures, and by a limited typology of recurrent symbols. At least eight stylistic phases have been detected; and one of the later shows depictions similar to those represented in the slabs of Apollo 11 cave which, as mentioned already, have been dated by C-14 at 28,000-26,000 B.P. In some sites with rock art, strata with material culture have been excavated, with sequences covering all the Late Stone Age and part of the Middle Stone Age, for a time range of over 40,000 years.

Somalia and Ethiopia have revealed so far a mostly pastoral art, with the exception of one site in Ethiopia (Porck Epic) which may include some figures from the Late Hunters. This area is clearly connected stylistically and
conceptually with the Sudan, as well as with southern Arabia. It appears to be a transition region with little stylistic autonomy as far as the known sites are concerned. This region is, however, largely unexplored and future research may modify this view.

In northern Africa, as mentioned already, the most important rock art sites are in the mountain ranges of the central Sahara, in territories belonging to Chad, Libya, Niger and Algeria. Here the early stage appears to belong to a final phase of the Early Hunters, and to have been made in the late Pleistocene, before or around 12,000 B.P. It consists of engravings of large animals. Elephants, giraffes, wild oxen are profusely represented in what is now a desert area. It is followed by a widely diffused and extremely peculiar horizon which some researchers define as "round-heads" because of such specific feature in anthropomorphic depictions. Most of the figures are painted, in monochrome or bichrome but using a large variety of colours. It illustrates a wealth of mythologies constructed by people who relied principally on a gathering economy, living in a sort of "Paradise on Earth", when the central Sahara mountain plateaus may have been very fertile gardens, with lakes and forests, and with a flora similar to that which characterizes the tropical forest.

The human groups of this cultural horizon appear to have lasted until approximately 8,000 B.P., after 5 or 6,000 years of survival, when the earliest pastoral people reached the area with domesticated oxen. The central Sahara was then, for nearly 4,000 years, a land of semi-nomadic pastoral people that had come from outside. They produced a very skilled rock art, both paintings and engravings, primarily characterized by large herds of cows and by detailed descriptions of family and social life.

The second millennium B.C. saw another change, with the introduction of the horse and with rock art reflecting intensive trading and warfare. Shortly thereafter also the camel was introduced. It arrived with nomadic people, some of whom may still survive in the area. The rock art reveals the drastic changes that took place in the ecological conditions and in human life in the Sahara where populations succeeded each other for ages with different traditions and using different resources.

C. Asia

For the purpose of the rock art world inventory, Asia has been divided into two uneven regions. One from the Bosphorus to the Hindu Kush range roughly corresponds to the Near East. The other, much larger in size, includes the rest of Asia: central Asia, Siberia and the Far East.

In the Near East, rock art is widely spread in the Arabian peninsula, Sinai (Egypt), the Negev desert (Israel), Jordan and Anatolia (Turkey). Isolated relevant concentrations have been reported also from Syria, Iraq, Iran and Afghanistan. The fullest sequence is found so far in central Arabia. A study of the documentation collected by the Ryckmans - Lippens - Philby expedition has enabled us to recognize over thirty five subsequent stylistic horizons of rock engravings which have been grouped into four major chronological groups: 1. Early Hunters; 2. Hunting-Pastoral; 3. Literate; and 4. Islamic. The Islamic period, starting after the Hijra, in the 7th-8th century A.D., is mostly schematic, with numerous tribal marks (wassum) and Arabic scripts. The Literate period illustrates a way of life based on trade and pastoralism. The figures are accompanied by a variety of Semitic writings. Thamudic, Lihyanite and Sabean inscriptions are the production of these tribes, covering most of the first millennium B.C. Hunting, pastoral and ritualistic scenes include figures of domestic camels and goats. In the second half of this millennium it developed further, showing Nabataean and Hellenistic influences, and then in the first half of the first millennium A.D., received clear stylized contributions from the Roman and Byzantine world; then the presence of the domestic horse is well documented.
The Hunting-Pastoral period lasted for at least 4 millennia, till the second millennium B.C., with the camel introduced as a domestic animal toward its end. The Hunting-Pastoral is by far the most complex and diversified age of Arabian history, as reflected by rock art, ranging from the 6th to the 2nd millennium B.C. and producing a very rich sequence of cultural episodes: different ethnic groups of a very broad variety included various races and testifies differentiated cultural backgrounds showing at times connections with Mesopotamia, Syria, Palestine, Egypt and Ethiopia. Domestic cattle are the main subject represented, followed by goats and sheep, and at the end, by the camels. A variety of assemblages describe hunting, pastoralism, daily activities. Cult and mythology are the main subjects illustrated and they reveal an intense and very rich intellectual life.

The earliest horizons are grouped as Early Hunters, and reflect a way of life of hunting-gathering bands who relied primarily on ibex and wild oxen as basic sources of food. Both animal and stylized anthropomorphic figures are common in these horizons. A few elephants and hippopotami are represented. It has been hypothesized that the earliest rock art known in Arabia may go back to ca. 14,000 B.P., but these figures are supported so far by the sole consideration that they reflect a fauna of Pleistocene type.

In the Negev and Sinai another relevant sequence has been detected. Seven major stylistic periods are defined as: I. Early Hunter; II. Realistic Dynamic Hunters; III. Hunters and Pastoralists; IV. Pastoralists-traders; V. Roman-Byzantine; VI. Early Islamic; VII. Recent. This sequence is parallel to that detected in Arabia though less diversified and is likely to cover the last 10,000 years, continuing into present.

Central Asia and the Far East may be divided into two sub-groups, one in India and the other in Soviet Central Asia, Siberia, and in Mongolia. Very little information is presently available from other countries of the Far East. Despite substantial stylistic differences, both sub-groups appear to follow a parallel evolution from Early Hunters' expressions that can be safely attributed to the Pleistocene epoch, starting before 12,000 B.P., much like in the Near East. Then follow Hunting and Pastoral groups, and finally there appear art expressions of populations with a mixed complex economy. Both in the Indian subcontinent and in Soviet and Mongolian territories very consistent concentrations of rock art are found. Some of them are of immense extent and quantity, though detailed reports are not yet available.

The largest site so far known in India is Bhimbetka, in the state of Madhya Pradesh, not far from Bhopal, which contains over 1,000 decorated rock shelters and caves in a few square kilometres. Bhimbetka is relevant for its exceptional sequence of some twenty different styles of paintings covering the Upper Palaeolithic, the Mesolithic and the Chalcolithic periods. Later scenes of religious and mythological character illustrate the introduction of the early developments of Hinduism and Buddhism. Over 20,000 years of Indian history are described on the walls of these caves. Excavations in the decorated rock shelters have brought back to light layers with artifacts including decorated ostrich egg-shells, and have provided a sequence of C-14 dates starting from 25,000 B.P.

In the Soviet Union, the major concentrations known so far are disseminated primarily along river valleys, the Amur and Usuri on the South-eastern borders with China; in the Chiuatkha, in the valleys of the Lena, the Yenisei and the Angara, around Lake Baykal, in the upper Ob river, in numerous sites of Kazakhstan, Uzbekistan and Tadjikstan, and in the Ural range.

At the Kapovaya Cave, in the southern end of the Urals, are present the only Palaeolithic paintings of Franco-Cantabrian style known so far from Asia. Along the Lena, the Yenisei and the Angara rivers, the early phases of rock engravings in open air sites have been attributed to the Pleistocene epoch, before 12,000 B.P.; and they show a stylistic approach different from the Franco-Cantabrian, which indicates already the specific trend further develop-
ped by later rock art assemblages in the same areas.

A thorough stylistic and chronological sequence for these Siberian valleys is still to be elaborated. Nevertheless the rock art of the hunting tribes appears to have persisted till quite late, probably until after the Amur and Usuri people had already developed agricultural patterns with a complex mythological world reflected by rock art in the fifth millennium B.C. Kazakhstan has revealed an extremely varied conceptual rock art, with engravings focusing on imaginary beings and on scenes of sun worship, which is likely to have reached its peak of creativity in the third millennium B.C.

Both in Mongolia and in the Soviet republics, a great quantity of rock art sites reveal the persistence of this traditional method of recording, into literate periods and into the Middle Ages. Records of caravans, trade, warfare and the cult of various religions, including Buddhism, Christianity and Islam, are widely represented.

It is noteworthy that outside India and the Soviet Union, the other countries of the Far East have produced very little information on rock art. Only sporadic and fragmentary data are available on prehistoric rock art sites in Pakistan, Korea, Hong Kong, Indonesia, Timor, and Sri Lanka, while no information is so far available from Japan, the Philippines, Burma, Thailand, Cambodia, Laos and Vietnam. From China, Nepal and Burma reports concern primarily Buddhist and later rock sites whereas it is not unlikely that major concentrations of prehistoric rock art may exist in these territories.

**D. Europe**

In Europe the rock art sequence is conventionally divided into two chronological cycles, the earlier being the art of the hunters of Franco-Cantabrian style, and the later, the art produced by people with complex economies. Such stylistic division appears to be sharper in Europe than elsewhere.

The art of the hunters is found primarily in caves, and its starting age is earlier than 30,000 B.P. The major concentrations are in the Franco-Cantabrian region in southwest France and in northern Spain. There are also sites elsewhere in France and Spain, and in Italy, Romania, Portugal and as far east as the Kapovaya cave in the Soviet Urals. The subject matter is primarily made of associations of animals and symbols; in an advanced stage which is identified with the Magdalenian period (16,000-10,000 B.P.), the polychrome paintings are of very sophisticated craftsmanship.

Later hunters persist in the Scandinavian countries, with open air rock engravings recorded all the way up to the Arctic Circle in the Tromso province of northern Norway.

A rather schematic and symbolic stage of rock art is detected in the final Paleolithic and Mesolithic age in the western Mediterranean region. Several local styles focus on mazes, patterns of lines, dots and other marks likely to have numerical values. This stage is mainly represented between 11,000 and 8,000 B.P. It includes so-called Romanellian rock art in Italy and La Cocina style rock engravings in Spain and Southern France. Similarities are found along the Mediterranean coast in Turkey, Israel, Morocco and Algeria. All this artistic creation is connected with material culture and living sites which enable correlation with archaeological artifacts and provide dating.

The second cycle appears to have started while the first one was in its last phase and is characterized by open-air rock engravings found widely spread in numerous countries of Europe: Portugal, Spain, France, Ireland, Scotland, Bulgaria, Switzerland, Italy, Austria, Yugoslavia and Greece. The earlier phase is determined as Epi-Palaeolithic, showing the persistence of earlier range of subject matter in a decadent Palaeolithic stylistic consistency of patterns. It is the early stage of a subsequent sequence of rock engravings styles and periods in Spanish Galicia, Italian Valcamonica and Austrian Totes Gebirge and of rock paintings in the Spanish Levant. The beginning of domestication
of animals and of incipient agriculture is evidenced in the subsequent phase where human depiction becomes the main subject matter. From then on, a parallel stylistic evolution showing local characteristics may be followed both in Mediterranean Europe and in the Northern countries. Almost everywhere in Europe rock art came to an end with the Roman Empire, but in some areas traditions have persisted of were renewed in the Middle Ages. Major concentrations of rock art in Europe are found in the Iberian peninsula (Spain and Portugal), southern France, the Alpine range (including France, Switzerland, Italy and Austria), in southern Italy, in the Scandinavian countries (Sweden, Norway, Denmark and Finland), and in Soviet Karelia. Only recently, consistent rock art sites have been reported from Yugoslavia, Bulgaria, Albania and Greece.

Special cases are those of Magoura cave, near Bielogradchik, Bulgaria, and of Badisco cave near Lecce, Italy, where, in the 5th and 4th millennia B.C., Neolithic and Chalcolithic sanctuary caves with numerous paintings of a cosmological and religious character have been brought to light. Such painted sanctuary caves are rather a characteristic of the Palaeolithic and are very rare in later periods. In the European Soviet Union major rock art sites have been recorded in Karelia, on the shores of Lakes Onega and Ladoga and of the White Sea, in the valley of the river Volga, as well as in Georgia, Armenia and Azerbaijan in the Caucasus. In Gobustan, near the south-western shores of the Caspian Sea, an exceptional succession of styles has been recently studied by I.M. Djalasadi, revealing an evolution ranging almost uninterruptedly from the eighth millennium B.C. to the Middle Ages. Such a sequence for Post-Palaeolithic rock art in Europe is so far equalled only by Valcamonica in Italy.

Valcamonica at the moment is the richest area of rock art in Europe both quantitatively and in time range. A series of six major styles range through a time span of some 10,000 years, covering the entire Holocene epoch. It provides a complete stylistic evolution from the earliest hunting clans that reached the Alpine area immediately after the melting of the Ice Age glaciers, till the advent of the Roman Empire and further, with secondary persistencies, till the Middle Ages.

E. Oceania

In Oceania, by far the major concentrations of rock art are found in Australia, while minor assemblages of rock art have been detected all over the Pacific and as far as the Easter Islands. In several cases this tradition appears to have reached the different islands with the earliest populations. In Australia, as mentioned already, the earliest graphic signs in Koonalda cave are over 20,000 years old. Complex figurative assemblages in Laura, Cape York peninsula, and the Panaramitee hills in the southern territories may be 14,000 years old or more. In 1982, C-14 datings were obtained from Laura, York peninsula, confirming such early chronology. Samples of C-14 from layers covering engravings have provided several dates, from ca. 13,200 B.P. to 15,450 ±1,500 B.P. In Australia, New Guinea, the Bismarck archipelago, and Timor, the tradition of producing rock art was still going on as late as the last generation, thus allowing ethnologists to take records of the contexts.

Some recording of rock art has recently taken place in various areas of the Pacific, mainly in the Hawaiian and Eastern islands, in both major islands of New Zealand and in southern New Guinea. The major concentrations so far known from the Pacific, outside Australia, are made of rock engravings in Hawaii. In New Zealand several caves, rock shelters and open air sites have preserved fine and elaborate paintings and engravings made by Maori tribes in the last few hundred years. In Easter Island, deeply engraved and relieved figures appear to belong to the same age as the monumental statues.

Recent extensive filedwork carried on in the Sydney area, in Cape York peninsula, in Arnhem Land, in the Kimberley, in the Dampier region and in the Southern Territories, has revealed the range of Australian rock art with several areas containing over 1,000,000 figures each. Recent research in Tasmania seems to indicate that the habit of making rock art was introduced there
as a consequence of migration from Australia or contact with Australians, before the rise of the sea, ca. 10,000 B.P.; till then the island may have been connected by land to the mainland. The Tasmanians are in fact "early Australians" who remained isolated from the mainland for the last 10 millennia. The so-called "pre-tingo" phase which appears to have evolved in the Australian mainland before 8,000 B.P. may have persisted much longer in Tasmania.

Throughout Australia numerous local styles have been identified, creating serious problems in tracing a general evolution of Australian rock art styles. Further, all the styles in Australian rock art may safely be attributed to hunting societies since they still made up the overwhelming majority of aboriginal groups at the time of contact.

In very broad lines, however, six major stages may be separated:

1. The Koomalda Cave marks style is known today mainly in southern Australia and in Victoria. It is made of simple parallel engraved markings some of which may have numerical value. This style, as previously mentioned, has been dated to ca. 20,000 B.P. Its duration, however cannot be established.

2. The Murray River pattern marking style is known in several sites spread over from Cape York in north Queensland to the Murray river valley in southern Australia, to Tasmania. At Laura, it has been related to archaeological layers dated by C-14 between 13,200 and 15,450 B.P. Its presence in Tasmania would also indicate a rather early date. Recurring patterns such as horseshoe-like, rectangles, circles with dots and series of parallel lines are among the most common motifs which are engraved again and again.

3. Panaramitee Symbolic-Figurative Style has been recorded mainly in southern Australia, New South Wales, Queensland and the Northern Territories. It still belongs to the pre-tingo sequence and is likely to be at least some 8,000 years old. It consists of engravings representing elements such as hand prints and foot prints, animal tracks, dots which are believed to represent eggs and are sometimes enclosed in oval lines believed to represent nests, boomerang-like patterns, schematic animal figures and human-like schematic faces.

4. Sydney Generalized Figurative Style has been recorded in New South Wales, Victoria and Queensland. In Western Australia, near Dampier, similar engravings are likely to be much later. This style is mainly concentrated in the east and is likely to have had a long duration. Specific datings are presently not available. It consists of large-sized outlined figures of both humans and animals. Humans are frequently represented in couples and animals appear also with their offsprings and with their eggs. Scenes of erotic character and images of mythological beings are frequent.

5. Laura Classic Figurative Style has been recorded in Queensland, the Northern Territories and Western Australia and appears to have a predominantly northern distribution. At Laura it has revealed a series of over twenty phases of paintings sometimes bichrome and patterned, which overlap earlier engravings of Murray river and of Panaramitee styles. In its turn it is found both in Queensland and in the Northern Territories superimposed by figures of the following Arnhem Complex figurative style. It consists of rather static but beautiful paintings representing humans, spirits, animals, hand stencils, symbols and objects with a much higher variety of subject matter than any previous styles, a new imagination and a very developed aesthetic sense. Composition seems to be considered on new and more complex parameters. This style seems to have different local patterns in Laura, Arnhem Land, Kimberley and Dampier, and has both paintings and engravings.

6. Arnhem Complex Figurative Style has a distribution similar to that of Laura Classic but is most dense in Arnhem Land and Kimberley, and only lesser concentrations are found in Queensland and Western Australia. As in the previous style, local patterns are present. It consists primarily of complex depictions of a large variety of subjects and includes scenes of mythological and magical characters. Anecdotal descriptions show a fantastic imagination and a wealth of colours and details. It is the only extensive polychrome style and is by far the most complex. It is still being executed in some areas, both on rock surfaces and as bark paintings.
This sequence of six styles, though oversimplified, may illustrate six major stages in the history of the Australians for a period of over 20,000 years. The earliest art known in this continent is from the south and also the early development appears to be in the south. In the north, the last two styles seem to represent cultural levels that have never been reached by regions in central Australia and in the south. In Australia, rock art research is developing fast, on sound ground, and is likely to bring very relevant contributions to the knowledge of cultural evolution in the region.

**F. The Americas**

As mentioned already, the earliest dated rock art sites in the Americas so far are in Brazil and Argentina and the earliest dating is provided by C-14 of a level going back 17,000 B.P. with fragments of rock showing red ochre, in the state of Piaui, Brazil. In southern Patagonia, Argentina, rock art has been found connected with archaeological levels dated 12,000 B.P. at Rio Pinturas, Chubut. North American rock art is still not sufficiently studied, but it is not unlikely that similar dates may be obtained in the West Coast states, where some of the major clusters of rock art in the American continent are concentrated.

From records available so far it seems that rock engravings are more widespread in northern America whereas rock paintings are more widespread in Latin America. California and New Mexico seem to be the transitional areas where both types are equally common, but both rock paintings and rock engravings are present from central Canada to southern Patagonia.

It seems premature at present to take a general view of the succession of style for the Americas; local successions of styles recorded in Baja California, Mexico, and in Patagonia, Argentina, may be guidelines for more diffused patterns. Both in the north and in Latin America, an early sequence of hunting and gathering rock art appears to have preceded later styles. In parts of the Americas, hunter's rock art is the only type present, while elsewhere, in British Columbia, along the US West Coast, in Mexico, Peru, Brazil and in the northern provinces of Argentina and Chile, rock art styles reflecting incipient food producing and mixed economies are also present. An early fishermen style is likely to be present in British Columbia.

Thorough stratigraphic analysis has been undertaken in Argentinian Patagonia where, at Rio Chubut, a series of four subsequent styles, all belonging to hunting-gathering cultures may cover a sequence of 12,000 years. Hand stencils and abstract marks have persisted for ages, while human and animal figures (camelides) have been added later in different and subsequent periods.

In Peru and northern Chile the rock art sequence culminates in a phase of monumental hill figures with huge images outlined by stones and boulders on hill slopes. Similar methods have been revealed by "boulder figures" in central Canada.

Northern Argentina, Chile, Peru and Bolivia have revealed a rich sequence of styles, in both engravings and paintings, which is yet to be fully analysed but is contributing already a wealth of details on the cultural evolution and the succession of life patterns in the area.

A very important sequence has been detected in Baja California, Mexico. A characteristic of this area is that several periods and a large quantity of styles are present, often in the same caves and rock shelters. An exceptionally valuable stratified series may turn out to be the key to furthering the study of the American sequence. From Baja California no dates are available so far, but the succession of styles indicates a rather long duration of rock art traditions. Both paintings and engravings are present. It starts in a fully Early Hunters' horizon and ends up after the Spanish Conquest. Four major eras are defined as Early Hunters, Late Hunters, Hunters-Fishermen, and people with Mixed Complex Economy.
Early stylistic assemblages are characterized by large-size figures of animals, hand stencils, symbols and signs. The second style has anthropomorphic beings as the main subject, with spirits and monsters revealing a very rich imaginative world. The Hunters-Fishermen style has a wealth of engravings in addition to refined paintings. Fish and sea monsters appear as the main subjects which are depicted even at sites quite distant from sea or lakes. Whales and other large marine fish are commonly represented at sites at two to three days' distance from the coast. The last style is mainly made of symbols, hand-prints and geometric patterns, repeating motifs found on pottery and objects from late pre-Colonial times. Connections with assemblages further north, from the south-western states of the USA seem to indicate that some phases reflect widespread cultural patterns.

Both in the USA and in Canada, recording of rock art started in the last century. Very large concentrations of sites are reported in all the western states, from Texas, Arizona and California to Washington. Mapping and descriptions are available, yet analytical works and chronological studies are to be developed. A sequence of styles has not yet been established and chronology is missing. From the central and eastern states only sporadic data are available, among them a relevant but as yet only partially surveyed presence of rock art in the upper Ohio valley.

In Canada, British Columbia includes by far the major concentrations and the richest assemblages, Vancouver Island being one of the major centres of rock art. Sites are also found sporadically in Alberta, Manitoba and Ontario. British Columbia may have some rather early rock engravings of a hunting-fishing human group. Later, mythological figures of monsters, sea animals, and imaginary beings may be associated with figures which persisted until recently on totem poles, decorations of houses and objects. An early stage of this stylistic horizon seems to have far-reaching parallels, mainly with the Amur-Usuri Soviet Far East.

The Americas contain a very rich variety of rock art which illustrates at least 17,000 years of intellectual adventures, human imagination and cultural records. Information is widely scattered and not yet adequately digested. The raw material existing would justify a broader and more incisive analysis than has so far been achieved.

G. Summary

The present survey is mainly compiled from reports produced by researchers around the world and by the documentation existing at the CCSP. It should by no means be considered exhaustive. Indeed, indirect reports have informed us of large and important rock art sites in such countries as China, Nepal, Vietnam, Korea, Japan, Indonesia, Cuba and Costa Rica for which insufficient documentation is available at present. However, this preliminary survey illustrates how rock art is likely to be the most widespread artistic expression of prehistoric times known in the world and indicates the role than rock art could have, both internationally and locally, for culture and for historical reconstruction.

VI. INVENTORY, PRESERVATION AND CULTURAL USES

A. Inventory and Study

One of the major problems being faced by the inventory and study of rock art is caused by the difference in information available from one area to another. In order to facilitate the compilation and dissemination of information and knowledge, we should develop and adhere to a universal method of recording, analysis and terminology. Research teams operating in different parts of the world are compiling an inventory which can potentially benefit archaeologists immensely and contribute to a new cultural approach to hu-
man early history. However, as a result of this lack of a universal system, some researchers have even failed to record accurately the location of a site; in addition there is a lack of graphic documentation such as photographs and tracings, and the already mentioned difficulties met in current communication and cooperation.

B. Preservation and Conservation

Preservation and conservation efforts are being undertaken both by governmental and by non-governmental agencies in several countries: Algeria, Argentina, Australia, Canada, Egypt, France, Italy, Lesotho, Norway, South Africa, Spain, Sweden, Tanzania and Zimbabwe. Despite the differences in environment, ecology and climate, similar causes of deterioration have been detected everywhere. Natural deterioration results from geophysical, chemical and bio-chemical causes, as well as those produced by flora and fauna. By far the major harm however is done by man. It may be involuntary, as the result of development or other re-use of the sites, or it may be the result of neglect and vandalism. The negative effects of man should and can be stopped, both by educational methods and by local and international activities aimed at preserving a common patrimony.

Preservation and conservation of documentation is no less important. Records, photographs, tracings and topographic maps made by expeditions, researchers and governmental agencies should be used for research and for culture. Copies should be obtained and made available for present study and preserved for future generations. The best way to preserve documentation is to have it published and disseminated.

The opening of rock art sites to the public has been and is being considered in many countries. Recently, parks have been created in Italy, Sweden, Algeria, Canada and the USA. They are currently being planned in Tanzania, Lesotho, South Africa, Namibia, Zimbabwe, the USSR, India and Australia. It is vital, however, that preliminary steps be taken. Study, inventory and rigorous graphic documentation, followed by conservation and preservation, must occur before the sites can be made accessible to the public. Unfortunately, this sequence of priorities is not always allowed. Parks are planned and opened to the public without the necessary preliminary studies to ensure that the rock art legacy will not be harmed by the public. In sites such as Valcamonica, in Italy, over 300,000 people visit the rock art annually, while in Tanum, Bohuslaan, Sweden and at Mount Bego in the French Maritime Alps, several tens of thousands of people visit the rocks annually. Because of this natural curiosity on the part of the public to visit the sites, proper actions for preventing damage should be taken into consideration.

Exhibitions on rock art have been planned for display in various countries. Two large exhibitions have been recently organized by the CCSP. One is on the rock art of the Negev and Sinai. Over 300,000 people came to the exhibition, which was displayed first in the National Museum of Jerusalem (Israel) for three months, and then in the National Library of Rome (Italy) for further two months. The second one, on Camunian rock art, was displayed at the Triennale in Milan and in seven months had over one million visitors. Some years ago, an exhibition of Tassili rock art (Algeria) was extremely successful in Paris (France). Other exhibitions have been organized and displayed at the Musée de l'Homme, Paris (France); in Canada at the Victoria Provincial Museum, B.C.; in Oman, at the National Museum; in Australia, Libya, Sweden and other countries rock art is occasionally displayed in archaeological exhibitions. Such displays appear to be most valuable in disseminating information, and do not create any harm to the sites. Efforts to circulate them further and to stimulate new ones should be made.
C. Cultural Promotion

Two main aspects are considered here: 1. training of specialists and 2. educational promotion both to schools and to the public at large. Doubtless it would be of little use to study rock art if research does not contribute to knowledge and becomes part of the general culture. By making the public benefit from the investigations a broader dialogue should develop between scholars and laymen. In addition to the above-mentioned parks and exhibitions, television and radio programmes have been produced, in Italy, in France and Spain, by various museums and research bodies. Monographs have been published in several countries. International organizations such as UNESCO and ICOMOS are starting to take an active part in the dissemination of this special aspect of cultural information and promotion. But still, not enough has been done so far. Special cultural programmes for schools and for the general public should be organized, particularly in those areas where rock art is present and is in danger of destruction or vandalism. Public awareness of its value would provide a feeling of identify for the local populations and would be the best tool for safeguarding the rock art sites.

For countries that lack the technical and financial means to develop parks, careful planning is necessary and international support should be favoured when requested. The results of scientific research put into the service of culture must take into account the social, psychological and spiritual needs of each particular population, and develop means by which to convey meanings and messages to the greatest number of people. One way to achieve this goal is to prepare portable displays used for travelling exhibitions, documentary films, radio and TV programmes and, of course, to produce and disseminate publications.

VII. CONCLUSION

In concluding this world report of rock art it is important that we do not lose sight of our ultimate goals. They are threefold: 1. to obtain historical information through universally accepted research methods; 2. to make accessible to the present culture the results of investigations; and 3. to preserve the rock art heritage for the study and enjoyment of future generations.

We have emphasized already the need for international cooperation in the unification of research methods. Yet this topic merits further consideration if we are to realize such a goal. First, in order to coordinate rock art studies worldwide we must establish an interdisciplinary central data bank, which would receive from and provide to researchers and research centres the needed information. This central archive would contain reports, published and unpublished studies, distribution maps of rock art on an international level, as well as graphic and photographic documentation and a standard rock art file which would provide locations and descriptions of every rock art site in the world. Such a file is currently being developed.

Second, we must establish universal standards of collecting and recording data, as well as the general criteria of analysis. By a standardized method, it will be possible to compare data and to determine which information is most relevant, and then the information would be presented in the most coherent manner possible. Jointly with UNESCO and ICOMOS, the CCSP is in the process of developing an international terminology list which will allow for a universal language of rock art terms and help to avoid confusion in definitions across languages. Accurate documentation will provide the raw material for analysis and interpretation.

Further it is essential to bear in mind that while scholars must be allowed to retain sufficient independence in conducting their research, yet the interaction of creative ideas is the primary way of stimulating the growth of knowledge. In order to understand better the initial motivation, function, and role of these primordial artistic creations we must pool our efforts by comparing and discussing, and learning from each others' ideas.
Too often scholars purportedly working toward the progress of science and culture operate in isolation, unaware of the developments in other areas of the world within their own field. Such a lack of communication can only inhibit the dissemination of knowledge and limit the progress of understanding the messages inherent in rock art study.

The second goal, to make the fruits of research accessible to the present culture, is no less important. The data, however carefully documented, will never be converted into culture if they are not shared with society, and this, after all, is one of the most important goals of research. We have already evaluated the methods whereby we can make rock art accessible to the greatest number of people, that is through publications, cultural programmes, museums, parks and travelling exhibitions. Yet in addition we must strive to allow each independent area to preserve its cultural autonomy.

Each country must have the right to safeguard and develop its own cultural heritage, while at the same time maintaining a cooperative attitude on an international level. This will require effort and good will on both international and local levels. Researchers at every level should publish their findings so that other researchers and the public at large may benefit. The publication of a World Gazetteer would make available to both scholars and laymen alike the results of research and the current state of rock art.

The third goal, to preserve the rock art heritage for future generations, is closely interrelated with the previous ones. Indeed, if we can realize the second goal and successfully cultivate cultural awareness we shall be well on the way to preservation and conservation, as local interest in rock art produces a keen desire to preserve the area, thus building a sense of local concern.

To study rock art is to investigate the early chapters in the intellectual story of our species. Rock art is found in over 100 countries throughout the world. A great many queries remain unanswered in this emerging discipline. We see from the pervasiveness of rock art around the world our common cultural origin; in order to promote the study of this heritage we must continue to stimulate and promote more international cooperation.

As we have seen, as a field of study rock art is in its infancy, even though the first descriptions reach back more than three hundred years. While rock art research is still a young science, we should take the opportunity to design a universal platform for research that can be used in this generation and that future students in rock art can build upon.

Rock art appears to have served a variety of purpose and reflects needs of social, psychological and conceptual nature. In this sense much can be said about rock art of recent tribal groups such as the San people of South Africa, the Algonkians of Canada, the Bedouins of the Near East or the Aranta of central Australia, whose direct testimony is available. By analogies, many hints are assembled for earlier groups. But the “reading” of rock art goes beyond analogies: numerous assemblages appear to represent systems near to what we would call “ideographic writing”. In some sites, like at Valcamonica in the Italian Alps, their decoding is well under way. New horizons emerge out of an old subject.

Rock art represents successive chapters in the story of our species, from the early hunters to contemporary hunting-gathering and pastoral societies. Hence a truly international approach with respect to the comprehensive study and safeguarding of outstanding treasures of rock art has become an urgent necessity. The same kinds of emotions and motivations that still today are at the base of many of our feelings and behavior are found in rock art. Its study brings back to a consious level archetypal elements that have been repressed by modern education, but that have always been hidden inside ourselves. Rock art turns out to be a tremendous means, not just for cultural, aesthetic and historical evaluation, but also for awakening an awareness of our identity and the capacity to understand the deep roots of our being.

A distinguishing dimension of rock art is that it reflects like a mirror what is inside man. It reveals intimate aspects of its makers and thus it is a unique
source of information about the emotional, ethical and conceptual components of early man’s nature. Rock art conveys messages, provides evidences of human creativity and expression, of abstract thought and imagination: and of the constant search for harmony and balance with fellow men and other animals, the environment, nature and the "supernatural". Through rock art and its composition and choice of subjects and colours, consciously or unconsciously, man has expressed his artistic sense. He has also expressed his intellectual abilities: thought processes are visible in the subject matter, figures, ideograms or psychograms depicted. They indirectly reflect man’s awareness of himself and his surroundings: the different psychological stimuli, patterns of cultural background, economic conditions and social situations are revealed by graphic or artistic expressions. With a perspective of millennia a broader understanding of human behavior unites us with our early ancestors.

Before the beginning of writing, the intellectual expressions of man, his emotional and personal way of interpreting the environment and its phenomena, of facing the challenge of contact between the inside and the outside, are contained in rock art. Writing provides historical records, in a few corners of the world, for the last five thousand years at best; previous to that we have few and indirect indications of how man behaved, what his motivations were or what his religious and conceptual life was like. When thoroughly analyzed in a broad cultural context, rock art can push back historical records to the last forty thousand years, and this in areas of the world where written history is only a few hundred years old.

Rock art becomes a tool in the hands of man: a tool for acquiring awareness of a new dimension of the past and for discovering himself and his own roots.
Introduction

The Congress on Rock Art and Museology held in Milan in connection with the exhibition on 'I camini alle radici della civiltà europea' from 29 to 31 October 1982, was organized by ICOM (International Council of Museums), ICOMOS (International Council of Monuments and Sites) and CCSP (Centro Camuno di Studi Preistorici – the Camunian Centre for Prehistoric Studies under the auspices of the city of Milan.

The purpose of the Congress was to study and make proposals on ways in which museums and exhibitions could spread knowledge of prehistoric and ethnological rock art and promote access by the public to parks and eco-museums. Public attendance at the exhibition which provided the occasion for the Congress exceeded all expectations. For five months, thousands of visitors daily gave the clearest possible proof that there is a real demand for the dissemination of knowledge and information on rock art.

Rock art is a truly universal cultural asset. It is to be found on all five continents and it bears extraordinary witness to the intellectual development of man. In view of the fact that rock art illustrates at least 35,000 years of cultural expression and constitutes a fundamental component of the heritage of mankind; taking into account the public demand for the opening of sites; and considering that present displays of rock art in museums and its dissemination through exhibitions, publication and the mass media, fall far short of the cultural importance of this art, the following recommendations were made.

Parks and sites

It is not possible to devise any worthwhile form of safeguarding, or any presentation of immovable, hence untransportable artistic cultural property, including painted rocks and caves without paying attention to the overall safeguarding of the physical and cultural environment, and generally speaking all the surrounding land. Land-use planning covers a whole set of changing systems for which a dynamic balance has to be found. An unsubstantiated initiative often gives rise to tension and conflict between the various aspects of frequently unreconcilable realities. Within overall land-use planning, archaeological parks should be designed to form part of more general plans. In the designing of parks, it should be borne in mind that:

(a) their purpose is the conservation and safeguarding of the archaeological and historical heritage, in addition to catering for the public;

(b) the establishment of parks should lead to a complete and accurate inventory of the cultural heritage which they contain;

(c) the conservation and inventorying of the heritage should promote scientific research;

(d) park management should aim at cultural dissemination, hence wherever possible, at public participation.
Thus in the establishment and management of parks the aim should be not only their administration and supervision, but also, above all, the advancement of culture and the promotion of scientific research. To this end it is recommended that wherever there are major concentrations of rock art, archaeological parks should be established with the stated objectives of preservation, conservation, inventorying, scientific research and public admittance. Tourist sightseeing should be allowed only after suitable safeguarding and conservation measures have been defined and when scientific research has made it possible to give the general public a historical and cultural view of the archaeological remains on view.

The facilities and equipment planned for parks should include laboratories for the systematic monitoring of variations in the archaeological remains and also for the systematic monitoring by means of analyses, of atmospheric and pedological pollution in parks and rock art sites.

**Documentation**

For the purposes of both scientific research and the dissemination of information, documentation will be systematically compiled, conserved and protected. In view of the instances of deterioration and actual destruction of rock art monuments, it is essential to ensure the proper preservation of all the documentation compiled, which in some cases remains the only record of the heritage itself.

(a) It is therefore desirable to develop an ongoing indexing and recording system which will help to establish a world inventory,

(b) It is recommended that pilot projects be conducted which make use of sophisticated methods and also produce graphic and photographic documentation which is systematically classified.

(c) In any event, there is a pressing need to conserve existing documentation through all currently available means. Useful for scientific research, the dissemination of information, the mounting of exhibitions and the introduction of rock art into museums, such documentation is now in many cases deteriorating; this is specially true of photographs (particularly coloured photographs), which have an extremely short life-span. Provision must be made without delay for the protection of existing documentation in danger of deterioration or even actual destruction: As it represents the scientific effort of more than one generation of researchers, and constitutes as a whole the fruit of many years of work, it should be handed down intact to future generations.

(d) Protection of all existing documentation should be a routine operation, accepted as a commitment by the governments on whose territories major rock art sites are to be found, and by the international organization whose aim is to safeguard monuments or sites, enhance museums, conserve works of art and promote culture and education. Invitations will be launched in particular to Unesco, ICOM, ICOMOS and ICCROM to take continuing and effective action to create public awareness and stimulus.

**Exhibitions and museums**

As rock art sites throughout the world are often located in outlying areas difficult of access to the public, recourse to exhibitions and the introduction of rock art into museums are considered vital for the effective dissemination of
information and culture. Whether it be permanent exhibits, special museum departments or travelling exhibitions, all can make a valid contribution to disseminating knowledge about rock art and its hidden messages. As it is impossible to move rock art, alternative methods can be used such as the display of exact reproductions, surveys, photographs and other visual or audio-visual aids.

It is recommended that exhibitions or displays in museums should also illustrate the research and study processes used to reach the conclusions drawn; such processes constitute educational instruments in the field of scientific methodology itself.

By its very nature, rock art is inseparable from the surrounding environment. Its presentation in museums and exhibitions should therefore take account of this factor, all possible display methods being used in order to reflect that environment. For exhibitions and displays to have a truly educational function, it is also recommended that special care be taken to explain their historical, ethnological and cultural content, while at the same time having due regard to aesthetic values. The exhibition currently being held in Milan is an encouraging example.

**Education, culture and the dissemination of information**

In view of the fundamental importance of rock art for an understanding of the cultural roots of mankind and for a proper historical education; also in view of the value of rock art as an educational instrument, museums are invited to fulfil the role devolving on them in this specific sector in the promotion of education, information and culture.

It is also recommended that national and international organizations concerned with culture and education should contribute to the dissemination of information and the inclusion of rock art in courses and curricula both nationally and internationally.

It is similarly recommended that encouragement be given to the establishment of fixed or travelling exhibitions which help to spread knowledge about rock art.

**Conclusion**

The participants at the International Rock Art and Museology Congress invite the organizations concerned with culture and education of countries which have major concentrations of rock art on their territory, and also the international organizations concerned to endorse these recommendations and help to disseminate and implement them.
XIth International Congress of Anthropological and Ethnological Sciences  
Pre-Congress Symposium C-100: Conservation, Recording and Interpretation of  

RECOMMENDATIONS

INTRODUCTION

The symposium on Conservation, Recording and Interpretation of rock art,  
held at Vancouver B.C., Canada, August 15-19, 1983, within the frame of the  
XIth International Congress of Anthropological and Ethnological Sciences, has  
been an opportunity for specialists of the above disciplines to meet and discuss  
urgent problems of common interest concerning rock art studies.

---Referring to and agreeing with the Recommendations issued by the  
UNESCO Consultation of rock art specialists held in 1981 at Valcamonica;

---Expressing the vote that the international organizations UNESCO, ICOMOS,  
ICOM and ICCROM will further their interest and concern for rock art conser-  
vation, recording and interpretation;

---Considering that IUAES, The International Union of Anthropological and  
Ethnological Sciences should take a direct involvement and a stimulating role  
in the promotion of research and in the dissemination of knowledge of these  
early conceptual creations of mankind;

The following recommendations are submitted to UNESCO, ICOMOS, ICOM,  
ICCROM and to the Executive Committee of IUAES:

I. INVENTORY AND DOCUMENTATION

I.1 Having considered that rock art provides a unique insight into the human  
intellectual elementary characters and qualities over at least 30,000 years  
before the invention of writing; having further evaluated that it is found  
widely disseminated all over the world, wherever Homo Sapiens Sapiens has  
arrived in all continents, it has emerged that those figures and symbols paint-  
ed and engraved on rock surfaces constitute a documentation of the utmost  
relevance for the study and comprehension of the cultural roots of mankind.  
It should be the concern of every man and woman to assure that this really  
universal patrimony is preserved, documented, studied and understood, and  
that it becomes a conscious part of our general culture.

I.2 Rock art is very vulnerable and is fast deteriorating. Inventory and  
documentation should be given high priority in all countries where it is present.  
The international organizations should act as authoritative channels in stimu-  
lating national and regional actions, as leaders in coordinating and favoring  
efforts aimed at assuring the inventory and documentation; in assuring also  
that the information is published, disseminated, made accessible to all, and  
be preserved for future generations.

I.3 The rapid decay, exfoliation, or other types of deterioration of rock art  
in many parts of the world make it imperative to rapidly progress with inten-  
sive recording, as much as possible and as reliably as possible.
National and local governments should be made aware of their responsibilities as keepers of this human heritage and of their role in making the cultural patrimony of their territories accessible to others.

I.4 World cooperation in inventory and documentation of rock art should include the issue of agreement on basic standard requirements that will assure the comparability of data and of documentation. A world survey on the state of knowledge on rock art should be made available to all nations by UNESCO and should further be updated with the constant inclusion of new discoveries and of new information.

I.5 Member states should be stimulated to cooperate and to favor urgent surveys, recording and inventory. A broad campaign should be promoted by the international organizations to explain that any delay, especially in fast-developing regions, may cause the loss of documentation forever.

I.6 Inventory and documentation is seen also as a necessary base for preservation and conservation, which, in many parts of the world, can hardly afford any further delay.

II. PRESERVATION AND CONSERVATION

II.1 Preservation and conservation of rock art is a very delicate matter which should be carried on at highly professional levels. Due to factors of environment, of human intentional or involuntary vandalism, as well as of the variety of agents causing deterioration, each case requires specific studies. In order to develop an efficient network of preservation and conservation services, national governments and international bodies should favor exchanges of experts, of information, and of services.

II.2 Rock art is usually surviving in its original context where it was created by humankind. The relationship between the rock art creation and its environment is therefore a vital aspect for its understanding. It is therefore recommended that special attention be devoted to this consideration. The relationship between rock art and its surroundings should be given special consideration in preservation and conservation projects, involving the site as a whole rather than just isolated, damaged or endangered specific figures.

II.3 The understanding of deterioration processes is vital to assure adequate preservation. In depth structural analyses on the dynamics of deterioration are strongly recommended as sound bases for any eventual action of protection or conservation.

II.4 One of the major problems of conservation which has emerged during this symposium concerns the protection and storage of documentation. Many important collections around the world are fast deteriorating as a result of use of perishable materials or of inadequate storage systems. Color photography is often altered after a few years; tracings, drawings, recordings, and whatever else has a base of paper may become altered by time and inadequate storage systems. Documentation which is now disseminated around the world in numerous
countries and in different conditions is suffering losses from deterioration every day. Two possibilities have been envisioned to ease this unfortunate condition: A. The implementation of a world data bank where copies of all documentation should be adequately inventoried and preserved; and, B. Substantial efforts be made by governments and by international organizations to assure that documentation is safely preserved, stored and accessible. International organizations are invited to assist and advise on preservation and storage of documentation with special reference to color transparencies which are known to rapidly deteriorate.

II.5 A world survey on the state of preservation of rock art should be a valuable step for evaluating a situation requiring an international effort. For such purpose, a "State of Preservation" form should be created and disseminated by the international organization, filled in and returned by experts and administrators concerned with rock art sites.

II.6 Conservators and restorators around the world should be requested to present short reports on a standardized questionnaire, on every project or action concerning preservation, conservation or restoration of rock art sites. Such reports should be collated, made available and disseminated by the international organizations.

III EDUCATION AND INFORMATION

III.1 The majority of those attending this symposium consider that education, information and professional training in rock art studies are presently inadequate. Specialized training courses, seminars and professional tutoring should be supported by national and international organizations with the purpose of raising the general degree of professionalism in rock art studies.

III.2 Congresses and symposia on rock art studies should be held regularly as a means of assuring regular contacts among specialists, exchange and updating of information, as well as an efficient means of disseminating information.

III.3 Dissemination of information should be implemented also through publications. National governments and international organizations are urged to favor the publication of reports on rock art studies and their adequate distribution.

III.4 Universities should make every effort to include rock art studies in their programs or classes.

III.5 The education of the public at large is considered no less important than the training of specialists. National and local governments should make every effort to disseminate information and stimulate the evaluation and appreciation of the rock art sites existing in their territories.

III.6 A report on all the recording techniques being currently used would be a highly valuable tool for obtaining a world view on a technical aspect which has occupied several sessions of this seminar.
IV INTERNATIONAL COOPERATION

IV.1 Having noted that in several countries the study of rock art appears to be neglected, underestimated or underfinanced, an appeal is made to these states to devote more attention to rock art studies, to stimulate further research and appreciation of rock art and to assure the basic requirements of conservation and preservation of rock art sites.

IV.2 To assure recording and documentation on rock art should be the duty of those administrations under whose jurisdiction the sites are falling. It is a moral duty of each state to assure that records and documentation of their rock art is accurate, exhaustive, and accessible to all for scientific, cultural and educational uses.

IV.3 The international organizations should provide, when requested, specialists to advise governments how to deal with the study, preservation, conservation, evaluation and public enjoyment of rock art sites.

IV.4 The international organizations and in particular UNESCO, ICOMOS, ICOM and ICCROM are urged to further and develop joint efforts and full cooperation for stimulating international action and for assuming the implementation of these recommendations.
1. The international meeting on the conservation and documentation of rock art in the Mediterranean region held in Barcelona, Saragossa, Teruel and Peníscola from 28 November to 2 December 1983 endorsed the recommendations made at earlier meetings in Tassili (1978), Valcamonica (1981), Sitges/Castellón (1982), Milan (1982) and Vancouver (1983).[1] Below are the recommendations of the meeting with regard to the documentation and conservation of the rock art heritage of the Mediterranean countries.

2. By way of preliminary it should however be emphasized that notwithstanding the paramount importance of the world’s rock art heritage, in respect of which recognized efforts have already been made, the attention given today to the protection and conservation of rock art by the authorities in charge of the protection and enhancement of the heritage as a whole is very inadequate. With regard to conservation in particular, it is satisfactory to note the growing interest shown in this field by a large number of prehistorians. The meeting however deplored the fact that the scholars who show an interest in prehistoric rock art, in various capacities, are few and far apart from each other, and not always in agreement. This wasteful use of knowledge and funds is detrimental to both the conservation and the study of rock art.

3. The international organizations involved should therefore redouble their efforts to remedy this situation as soon as possible. The vulnerability of rock art, and the magnitude of the dangers threatening it, call for a real emergency safeguard operation.

4. To this end, safeguard projects should enlist the services of prehistorians, researchers, curators and national land-use planners, all working together on an equal footing.

(1) - International Seminar on the Conservation of the Tassili Rock Paintings;
- International Seminar and Consultation of Specialists on the Study, Documentation and Conservation of Rock Art;
- Meeting of the Working Group on Rock Art of the ICOM International Committee on Conservation;
- Rock Art and Museology Congress;
- Symposium on Conservation, Recording and Interpretation of Rock Art (IUAEc).
A. Documentation

5. The meeting reiterated the need for an inventory of rock art as a prerequisite for any conservation measure.

6. The participants, after having:
   reviewed the different recording systems described by the countries represented at the meeting;
   noted the difficulty of designing a standard form on account of the specific geoclimatic and administrative features of rock landscapes on the one hand, and the diversity of purposes of the various types of inventory on the other.

7. Proposed the adoption of a common inventory base prepared from a minimum number of data categories to be included in the procedures followed in each country. The categories are as follows:

   1. Institution
   2. Inventory number
   3. Geographical and administrative location
   4. Type of supporting medium
   5. Type of art
   6. Description of supporting medium
   7. Description of art
   8. Documentation
   9. State of conservation

8. It is also necessary to prepare a glossary, in view of the need for a general reference terminology to cover all rock art works and their surroundings.

B. Conservation

9. Bearing in mind the studies carried out over the past twenty years on cave art, which have resulted in improved monitoring of the processes of destruction of subterranean rock art, it is suggested that studies be organized on similar methodological lines on the state of open-air rock art.

10. Each country is encouraged to promote such research.

11. It is also suggested that Unesco launch two national pilot projects in which foreign experts might be invited to co-operate. It is proposed that a site with engravings be chosen in the Saharan Atlas region, and a site with paintings in the east of Spain. The general characteristics of these sites are such that the method used and the findings of the studies would serve as a basis and a guide for other countries intending to take steps to protect their open-air rock art heritage. (See Annex 1 for the definition of a suggested pilot project.)

12. The participants noted with pleasure the growing interest shown by the public over the past two years in two sites which are included on the World Heritage List: the cave of Lascaux and the National Park of Tassili. They noted with concern the consequences of the influx of visitors on the conservation of these sites.

13. They therefore requested the World Heritage Committee to draw the attention of those responsible for these sites to the need to take measures to reduce
the danger of deterioration, by the establishment, in accordance with the spirit of the Convention concerning the Protection of World Cultural and Natural Heritage, of plans for the development of the National Park of Tassili; and the provision of adequate facilities on and at the foot of the Lascaux slope.

C. Specialized practical guide for the protection of rock art

14. As not enough is known about methods of documentation and conservation of rock art, it is recommended that Unesco prepare a specialized practical guide, which would include:

(i) a description of all types of rock art in the world;

(ii) the procedure (legislative or administrative) to be followed for the protection of such works;

(iii) the data to be recorded and methods to be used in carrying out surveys in the field;

(iv) the procedure for making a systematic and thorough inventory;

(v) essential conservation measures, including errors to be avoided. In this connection, certain conservation terms need to be defined (see Annex 2).
ANNEX 1

Pilot project for the study of a prehistoric rock face

Any direct or indirect intervention on a rock face should be based on a diagnosis, which should be the outcome of a study showing the relative rate of deterioration of the painting or engraving. It is therefore vital to have on record the original state of the rock face at the outset of the study. We shall define this as the 'zero state'. When the study is resumed later on it will be possible to see whether this zero state has changed, consequently whether or not action should be taken.

The zero state should be defined in relation to a number of parameters, the most important of which are as follows:

**History:** Any modifications in the cave, excavation, protection, deforestation, use by man, documentation.

**General situation:** Lay-out of the habitat
Lay-out of the shelter, orientation, cross-sections
Vegetation
Water flow

**Prehistoric environment:** Prehistoric environment (pollenology)
Engraving and painting techniques

**Rock:** Type
Sedimentology, petrography

**Soil:** Type, quality

**Survey of the rock face:** Cracks, cavities
Deposits, efflorescence
Flaking, peeling
Vandalism, graffiti
Fauna, micro-fauna
Flora, micro-flora
Record of engravings, paintings and drawings
Run-off of water
Intervention technique (grouting, varnish, repainting)

**Water:** Rainfall patterns
Amount
Circulation in the rock
Seepage, run-off
Surface humidity
Water composition - pH
Snowfall

**Atmosphere:** Insolation
Temperature
Relative humidity
Pressure
Pollution
Wind
Atmospheric dust
Air-rock interface: Water and water vapour exchanges

Flora:
- Plants
- Algae
- Bacteria

Fauna and micro-fauna:
- animals: horses, sheep, bats, birds
- insects: bees, etc.

Physical deterioration:
- Development of cracks
- Development of flaking
- Erosion due to run-off

Such a study obviously involves bringing together various specialists, who should all work together in co-operation at the same time.
Conservation terms to be defined in the glossary of the manual

Conservation
Preservation
Efflorescence
Film ('voile')
Concretion
Flake
Desquamation
Forcing up
Pustule
Varnish
Patina
Cupule
Cavity
Abrasition
Disintegration
Erosion
Spraying
Restoration
Maintenance
Intervention
Cleaning
Grouting
Degradation
Alteration
Cracking
Destruction
Gradient
Corrosion
Acts of vandalism
Graffiti
Mark of impact on surface
Scratch mark
'Cours'
Renderings
Diaclase
Joint
Morphological accident
Chip ('éclat')
Micro-flora: mildew, algae, bacteria, fungus, lichen
Micro-organisms

This list is non-exhaustive, very general and necessarily incomplete.