UNESCO International Scientific Committee for the Drafting of a General History of Africa

GENERAL HISTORY OF AFRICA · Abridged Edition

I Methodology and African Prehistory

EDITOR J.KI-ZERBO

JAMES CURREY · CALIFORNIA · UNESCO

General History of Africa · I

Methodology and African Prehistory

Abridged Edition

Unesco General History of Africa

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Methodology and African Prehistory

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JAMES CURREY · CALIFORNIA · UNESCO

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Preface

AMADOU-MAHTAR M'BOW
Former Director-General of Unesco (1974–1987)

For a long time, all kinds of myths and prejudices concealed the true history of Africa from the world at large. African societies were looked upon as societies that could have no history. In spite of important work done by such pioneers as Leo Frobenius, Maurice Delafosse and Arturo Labriola, as early as the first decades of this century, a great many non-African experts could not rid themselves of certain preconceptions and argued that the lack of written sources and documents made it impossible to engage in any scientific study of such societies.

Although the *Iliad* and *Odyssey* were rightly regarded as essential sources for the history of ancient Greece, African oral tradition, the collective memory of peoples that holds the thread of many events marking their lives, was rejected as worthless. In writing the history of a large part of Africa, the only sources used were from outside the continent, and the final product gave a picture not so much of the paths actually taken by the African peoples as of those that the authors thought they must have taken. Since the European Middle Ages were often used as a yardstick, modes of production, social relations and political institutions were visualized only by reference to the European past.

In fact, there was a refusal to see Africans as the creators of original cultures which flowered and survived over the centuries in patterns of their own making and which historians are unable to grasp unless they forgo their prejudices and rethink their approach.

Furthermore, the continent of Africa was hardly ever looked upon as a historical entity. On the contrary, emphasis was laid on everything likely to lend credence to the idea that a split had existed, from time immemorial, between a 'white Africa' and a 'black Africa', each unaware of the other's existence. The Sahara was often presented as an impenetrable space preventing any intermingling of ethnic groups and peoples or any exchange of goods, beliefs, customs and ideas between the societies that had grown up on either side of the desert. Hermetic frontiers were drawn between the civilizations of Ancient Egypt and Nubia and those of the peoples south of the Sahara.

It is true that the history of Africa north of the Sahara has been more closely linked with that of the Mediterranean basin than has the history of sub-Saharan Africa, but it is now widely recognized that the various civilizations of the African continent, for all their differing languages and cultures, represent, to a greater or lesser degree, the

historical offshoots of a set of peoples and societies united by bonds centuries old.

Another phenomenon that did great disservice to the objective study of the African past was the appearance, with the slave trade and colonization, of racial stereotypes that bred contempt and lack of understanding and became so deep-rooted that they distorted even the basic concepts of historiography. From the time when the notions of 'white' and 'black' were used as generic labels by the colonialists, who were regarded as superior, the colonized Africans had to struggle against both economic and psychological enslavement. Africans were identifiable by the colour of their skin, they had become a kind of merchandise, they were earmarked for hard labour and eventually, in the minds of those dominating them, they came to symbolize an imaginary and allegedly inferior *Negro* race. This pattern of spurious identification relegated the history of the African peoples in many minds to the rank of ethno-history, in which appreciation of the historical and cultural facts was bound to be warped.

The situation has changed significantly since the end of the Second World War and in particular since the African countries became independent and began to take an active part in the life of the international community and in the mutual exchanges that are its *raison d'être*. An increasing number of historians have endeavoured to tackle the study of Africa with a more rigorous, objective and open-minded outlook by using – with all due precautions – actual African sources. In exercising their right to take the historical initiative, Africans themselves have felt a deep-seated need to re-establish the historical authenticity of their societies on solid foundations.

In this context, the importance of the eight-volume *General History of Africa*, which Unesco is publishing, speaks for itself.

The experts from many countries working on this project began by laying down the theoretical and methodological basis for the *History*. They have been at pains to call in question the over-simplifications arising from a linear and restrictive conception of world history and to re-establish the true facts wherever necessary and possible. They have endeavoured to highlight the historical data that give a clearer picture of the evolution of the different peoples of Africa in their specific socio-cultural setting.

To tackle this huge task, made all the more complex and difficult by the vast range of sources and the fact that documents were widely scattered, Unesco has had to proceed by stages. The first stage, from 1965 to 1969, was devoted to gathering documentation and planning the work. Operational assignments were conducted in the field and included campaigns to collect oral traditions, the creation of regional documentation centres for oral traditions, the collection of unpublished manuscripts in Arabic and Ajami (African languages written in Arabic script), the compilation of archival inventories and the preparation of a *Guide to the Sources of the History of Africa*, culled from the archives and libraries of the countries of Europe and later published in eleven volumes. In addition, meetings were organized to enable experts from Africa and other continents to discuss questions of methodology and lay down the broad lines for the project after careful examination of the available sources.

The second stage, which lasted from 1969 to 1971, was devoted to shaping the *History* and linking its different parts. The purpose of the international meetings of experts held in Paris in 1969 and Addis Ababa in 1970 was to study and define the problems involved in drafting and publishing the *History*; presentation in eight volumes,

the principal edition in English, French and Arabic, translation into African languages such as Kiswahili, Hausa, Fulani, Yoruba or Lingala, prospective versions in German, Russian, Portuguese, Spanish and Chinese, as well as abridged editions designed for a wide African and international public.[1]

The third stage has involved actual drafting and publication. This began with the appointment of the 39-member International Scientific Committee, two-thirds African and one-third non-African, which assumes intellectual responsibility for the *History*.

The method used is interdisciplinary and is based on a multi-faceted approach and a wide variety of sources. The first among these is archaeology, which holds many of the keys to the history of African cultures and civilizations. Thanks to archaeology, it is now acknowledged that Africa was very probably the cradle of mankind and the scene – in the neolithic period – of one of the first technological revolutions in history. Archaeology has also shown that Egypt was the setting for one of the most brilliant ancient civilizations of the world. But another very important source is oral tradition, which, after being long despised, has now emerged as an invaluable instrument for discovering the history of Africa, making it possible to follow the movements of its different peoples in both space and time, to understand the African vision of the world from the inside and to grasp the original features of the values on which the cultures and institutions of the continent are based.

We are indebted to the International Scientific Committee in charge of this *General History of Africa*, and to its Rapporteur and the editors and authors of the various volumes and chapters, for having shed a new light on the African past in its authentic and all-encompassing form and for having avoided any dogmatism in the study of essential issues. Among these issues we might cite: the slave trade, that 'endlessly bleeding wound', which was responsible for one of the cruellest mass deportations in the history of mankind, which sapped the African continent of its life-blood while contributing significantly to the economic and commercial expansion of Europe; colonization, with all the effects it had on population, economics, psychology and culture; relations between Africa south of the Sahara and the Arab world; and, finally, the process of decolonization and nation-building which mobilized the intelligence and passion of people still alive and sometimes still active today. All these issues have been broached with a concern for honesty and rigour which is not the least of the *History*'s merits. By taking stock of our knowledge of Africa, putting forward a variety of view-points on African cultures and offering a new reading of history, the *History* has the signal advantage of showing up the light and shade and of openly portraying the differences of opinion that may exist between scholars.

By demonstrating the inadequacy of the methodological approaches which have long been used in research on Africa, this *History* calls for a new and careful study of the twofold problem areas of historiography and cultural identity, which are united by links of reciprocity. Like any historical work of value, the *History* paves the way for a great deal of further research on a variety of topics.

It is for this reason that the International Scientific Committee, in close collaboration

1. At the time of going to press Volumes I and II have been published in Arabic, Chinese, Italian, Korean, Portuguese and Spanish; Volume IV in Arabic, Spanish and Portuguese, and Volume VII in Spanish.

with Unesco, decided to embark on additional studies in an attempt to go deeper into a number of issues that will permit a clearer understanding of certain aspects of the African past. The findings being published in the series 'Unesco Studies and Documents – General History of Africa'[2] will prove a useful supplement to the *History*, as will the works planned on aspects of national or subregional history.

The *General History* sheds light both on the historical unity of Africa and also its relations with the other continents, particularly the Americas and the Caribbean. For a long time, the creative manifestations of the descendants of Africans in the Americas were lumped together by some historians as a heterogeneous collection of *Africanisms*. Needless to say, this is not the attitude of the authors of the *History*, in which the resistance of the slaves shipped to America, the constant and massive participation of the descendants of Africans in the struggles for the initial independence of America and in national liberation movements, are rightly perceived for what they were: vigorous assertions of identity, which helped forge the universal concept of mankind. Although the phenomenon may vary in different places, it is now quite clear that ways of feeling, thinking, dreaming and acting in certain nations of the western hemisphere have been marked by their African heritage. The cultural inheritance of Africa is visible everywhere, from the southern United States to northern Brazil, across the Caribbean and on the Pacific seaboard. In certain places it even underpins the cultural identity of some of the most important elements of the population.

The *History* also clearly brings out Africa's relations with southern Asia across the Indian Ocean and the African contributions to other civilizations through mutual exchanges.

I am convinced that the efforts of the peoples of Africa to conquer or strengthen their independence, secure their development and assert their cultural characteristics must be rooted in historical awareness renewed, keenly felt and taken up by each succeeding generation.

My own background, the experience I gained as a teacher and as chairman, from the early days of independence, of the first commission set up to reform history and geography curricula in some of the countries of West and Central Africa, taught me how necessary it was for the education of young people and for the information of the public at large to have a history book produced by scholars with inside knowledge of the problems and hopes of Africa and with the ability to apprehend the continent in its entirety.

For all these reasons, Unesco's goal will be to ensure that this *General History of Africa* is widely disseminated in a large number of languages and is used as a basis for producing children's books, school textbooks and radio and television programmes. Young people, whether schoolchildren or students, and adults in Africa and elsewhere will thus be able to form a truer picture of the African continent's past and the factors

2. The following eleven volumes have already been published in this series: *The peopling of ancient Egypt and the deciphering of Meroitic script; The African slave trade from the fifteenth to the nineteenth century; Historical relations across the Indian Ocean; The historiography of Southern Africa: The decolonization of Africa: Southern Africa and the Horn of Africa; African ethnonyms and toponyms; Historical and socio-cultural relations between black Africa and the Arab world from 1935 to the present; The methodology of contemporary African history; Africa and the Second World War; The educational process and historiography in Africa; Libya Antiqua.*

that explain it, as well as a fairer understanding of its cultural heritage and its contribution to the general progress of mankind. The *History* should thus contribute to improved international co-operation and stronger solidarity among peoples in their aspirations to justice, progress and peace. This is, at least, my most cherished hope.

It remains for me to express my deep gratitude to the members of the International Scientific Committee, the Rapporteur, the different volume editors, the authors and all those who have collaborated in this tremendous undertaking. The work they have accomplished and the contribution they have made plainly go to show how people from different backgrounds, but all imbued with the same spirit of goodwill and enthusiasm in the service of universal truth can, within the international framework provided by Unesco, bring to fruition a project of considerable scientific and cultural import. My thanks also go to the organizations and governments whose generosity has made it possible for Unesco to publish this *History* in different languages and thus ensure that it will have the worldwide impact it deserves and thereby serve the international community as a whole.

Description of the Project

B. A. OGOT[1]
President, International Scientific Committee for the Drafting of a General History of Africa

The General Conference of Unesco at its 16th Session instructed the Director-General to undertake the drafting of a *General History of Africa*. The enormous task of implementing the project was entrusted to an International Scientific Committee which was established by the Executive Board in 1970. This Committee, under the Statutes adopted by the Executive Board of Unesco in 1971, is composed of thirty-nine members (two-thirds of whom are African and one-third non-African) serving in their personal capacity and appointed by the Director-General of Unesco for the duration of the Committee's mandate.

The first task of the Committee was to define the principal characteristics of the work. These were defined at the first session of the Committee as follows:

(a) Although aiming at the highest possible scientific level, the history does not seek to be exhaustive and is a work of synthesis avoiding dogmatism. In many respects, it is a statement of problems showing the present state of knowledge and the main trends in research, and it does not hesitate to show divergencies of views where these exist. In this way, it prepares the ground for future work.

(b) Africa is considered in this work as a totality. The aim is to show the historical relationships between the various parts of the continent, too frequently subdivided in works published to date. Africa's historical connections with the other continents receive due attention, these connections being analysed in terms of mutual exchanges and multilateral influences, bringing out, in its appropriate light, Africa's contribution to the history of mankind.

(c) *The General History of Africa* is, in particular, a history of ideas and civilizations, societies and institutions. It is based on a wide variety of sources, including oral tradition and art forms.

(d) The *History* is viewed essentially from the inside. Although a scholarly work, it is also, in large measure, a faithful reflection of the way in which African authors view their own civilization. While prepared in an international framework and drawing to the full on the present stock of scientific knowledge, it should also be a

1. During the Sixth Plenary Session of the International Scientific Committee for the Drafting of a General History of Africa (Brazzaville, August 1983), an election of the new Bureau was held and Professor Ogot was replaced by Professor Albert Adu Boahen.

vitally important element in the recognition of the African heritage and should bring out the factors making for unity in the continent. This effort to view things from within is the novel feature of the project and should, in addition to its scientific quality, give it great topical significance. By showing the true face of Africa, the *History* could, in an era absorbed in economic and technical struggles, offer a particular conception of human values.

The Committee has decided to present the work covering over three million years of African history in eight volumes, each containing about eight hundred pages of text with illustrations, photographs, maps and line drawings.

A chief editor, assisted if necessary by one or two co-editors, is responsible for the preparation of each volume. The editors are elected by the Committee either from among its members or from outside by a two-thirds majority. They are responsible for preparing the volumes in accordance with the decisions and plans adopted by the Committee. On scientific matters, they are accountable to the Committee or, between two sessions of the Committee, to its Bureau for the contents of the volumes, the final version of the texts, the illustrations and, in general, for all scientific and technical aspects of the *History*. The Bureau ultimately approves the final manuscript. When it considers the manuscript ready for publication, it transmits it to the Director-General of Unesco. Thus the Committee, or the Bureau between committee sessions, remains fully in charge of the project.

Each volume consists of some thirty chapters. Each chapter is the work of a principal author assisted, if necessary, by one or two collaborators. The authors are selected by the Committee on the basis of their *curricula vitae*. Preference is given to African authors, provided they have requisite qualifications. Special effort is also made to ensure, as far as possible, that all regions of the continent, as well as other regions having historical or cultural ties with Africa, are equitably represented among the authors.

When the editor of a volume has approved texts of chapters, they are then sent to all members of the Committee for criticism. In addition, the text of the volume editor is submitted for examination to a Reading Committee, set up within the International Scientific Committee on the basis of the members' fields of competence. The Reading Committee analyses the chapters from the standpoint of both substance and form. The Bureau then gives final approval to the manuscripts.

Such a seemingly long and involved procedure has proved necessary, since it provides the best possible guarantee of the scientific objectivity of the *General History of Africa*. There have, in fact, been instances when the Bureau has rejected manuscripts or insisted on major revisions or even reassigned the drafting of a chapter to another author. Occasionally, specialists in a particular period of history or in a particular question are consulted to put the finishing touches to a volume.

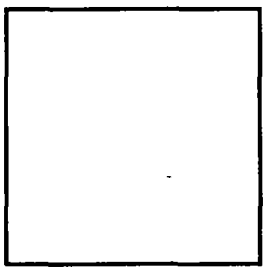
The work will be published first in a hard-cover edition in English, French and Arabic, and later in paperback editions in the same languages. An abridged version in English and French will serve as a basis for translation into African languages. The Committee has chosen Kiswahili and Hausa as the first African languages into which the work will be translated.

Also, every effort will be made to ensure publication of the *General History of Africa*

in other languages of wide international currency such as Chinese, Portuguese, Russian, German, Italian, Spanish, Japanese, etc.

It is thus evident that this is a gigantic task which constitutes an immense challenge to African historians and to the scholarly community at large, as well as to Unesco under whose auspices the work is being done. For the writing of a continental history of Africa, covering the last three million years, using the highest canons of scholarship and involving, as it must do, scholars drawn from diverse countries, cultures, ideologies and historical traditions, is surely a complex undertaking. It constitutes a continental, international and interdisciplinary project of great proportions.

In conclusion, I would like to underline the significance of this work for Africa and for the world. At a time when the peoples of Africa are striving towards unity and greater co-operation in shaping their individual destinies, a proper understanding of Africa's past, with an awareness of common ties among Africans and between Africa and other continents, should not only be a major contribution towards mutual understanding among the people of the earth, but also a source of knowledge of a cultural heritage that belongs to all mankind.



Note on chronology

It has been agreed to adopt the following method for writing dates. With regard to prehistory, dates may be written in two different ways.

One way is by reference to the present era, that is, dates BP (before present), the reference year being + 1950; all dates are negative in relation to + 1950.

The other way is by reference to the beginning of the Christian era. Dates are represented in relation to the Christian era by a simple + or − sign before the date. When referring to centuries, the terms BC and AD are replaced by 'before the Christian era' and 'of the Christian era'.

Some examples are as follows:

(i) 2300 BP = − 350

(ii) 2900 BC = − 2900
AD 1800 = + 1800

(iii) 5th century BC = 5th century before the Christian era
3rd century AD = 3rd century of the Christian era.

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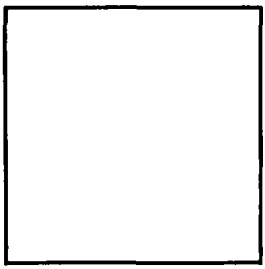


General introduction

Africa has a history. Unfortunately, for far too long, little was known about it and the little that was known was misunderstood. After the comings and goings of a host of travellers, slave traders, merchants, soldiers, administrators and scholars of all kinds over thousands of years, the image of Africa in many people's minds has become tainted by misconceptions about its poverty, barbarism, irresponsibility and chaos.

Yet the history of Africa, like the history of mankind as a whole, is really the story of an awakening. That story needs rewriting, for it has been considerably distorted by ignorance or self-interest.

Why?

Our purpose here is not to write a history designed to settle old scores, but rather to embark on a scientific undertaking, in a bid to shed light on the darkness in which the past of the African continent – with its incomplete genealogies, its unclear structures, its missing or unreliable dates – is still shrouded. In their ignorance of African history, people foolishly leap to the conclusion that there is no such thing. Yet every year, a stream of books and papers on Africa and a variety of archaeological and documentary discoveries, some of them quite spectacular, call into question the meaning of certain stages in the history of mankind as a whole.

It was important, therefore, for a survey of unimpeachable quality to be carried out, under the auspices of Unesco, by teams composed of both African and non-African scholars, guided by an International Scientific Committee and with African editors. This is a remarkable experiment in international co-operation which is making it possible to restore to the peoples of Africa their own past, not merely for pleasure or amusement, but in order to enable them to understand the present and rid themselves of their complexes, so that they can move forward and build the future.

How?

Every possible precaution has to be taken to ensure that the historical truth is re-established. The well-tested methodology adopted for that purpose need not differ fundamentally from that used anywhere else. The same rules are applied the world over

to enable researchers to reach conclusive findings. But, in so far as the realities differ, the steps the mind takes to grasp them will likewise differ. A decision taken by the Emperor Napoleon[1] or an order issued by Churchill[2] cannot be interpreted in the same way as the epic song praising Sundiata.

Indeed, the difficulties specific to the history of Africa become apparent when the physical geography of the continent is considered. As the new Peters map projection shows,[3] Africa is not isolated in the space of our planet, but appears to be withdrawn into itself. Although it is attached to the Middle East by the narrow isthmus of Suez, it is hemmed in by coastal ranges through which the rivers force their way over rapids that can only be negotiated with difficulty. The only sizeable passage between the Sahara and the Abyssinian mountains is blocked by the vast swamps of the Baḥr al-Ghazāl.

A third of the continent's surface is covered by two deserts: the Sahara, the desert to end all deserts, and the Kalahari. If we include the 'green desert' of the equatorial forest cutting an impenetrable swathe in the middle of the continent, we have accounted for half the total land area. Under these circumstances, we can more readily understand the importance of the natural gaps that form corridors running from north to south like the great trough of the Rift Valley, or from east to west like the valley of the River Niger. We likewise understand why the first kingdoms of black Africa grew up at the confines of areas that were in themselves almost hermetic, and especially in regions where there is no impediment to movement, like the Sahel.

Moreover, the fact that Africa was underpopulated is one of the keys to its historical difficulties for, as F. Braudel has said, 'Civilization is the daughter of number'. Wars and endemic or epidemic diseases are not so much to blame, for the other continents have likewise suffered on those counts; however, the severe demographic drain of the slave trade and colonization certainly prevented the continent from attaining the particular threshold of concentration at which the critical economic and socio-political mutations take place. The harsh and monotonous climate also had its part to play. All these are objective factors that have nothing to do with the sordid myths of racial inferiority, outmoded tribalism and the congenital passivity of the Africans.

The problem of sources

Three main sources are available for the historical investigation of Africa: written documents, archaeology and oral tradition. These are backed up by linguistics and anthropology. None of these sources, however, is automatically or everlastingly predominant.

Written sources

Although some written sources do exist, they are unevenly distributed in time and space. The centuries on which least light has been shed by written documents are, with the exception of North Africa, those preceding and following the birth of Chirst.

1. Napoleon: a French emperor at the beginning of the nineteenth century.
2. Churchill: a British statesman who played a decisive role during the Second World War.
3. Arno Peters: a contemporary German historian who perfected a cartographical projection in conformity with the real land area.

Unesco has established the Ahmed Baba Centre at Timbuktu in an endeavour to collect all the relevant documents, a great number of which may still be found in the libraries of North Africa, Europe, the Middle East and Armenia, and even in the homes of leading African citizens and scholars in the Sahel. The recent discovery of manuscripts in Morocco and in Istanbul, in Turkey, bear out this thesis, as do the documents brought to light in West Africa by universities or centres for African studies. The new guides to written sources, such as those published by the International Council on Archives, will prove very useful to researchers, who also need scholarly re-editions and translations of important works to which access is at present difficult. Finally, manuscripts in sub-Saharan scripts, such as Vai, Bamum and Ajami, should not be neglected.[4]

Archaeology

Archaeology might be said to furnish documents that cannot speak for themselves. Yet there is something utterly objective and absolute about the language of finds dug up from the earth. Everything depends on the interpretation of the information provided by these silent witnesses and clues to civilization, whether they be foodstuffs, tools or artefacts, or objects made of iron, glass or pottery. Comparison of just such objects established the ancient link between the prehistoric peoples of the Chad Basin – the Sao – and the societies of the Nile valley and Libyan desert. In view of the high cost of archaeological investigations, inter-African programmes should be set up to single out and classify the most important sites, before plans are made to exploit them.

Oral tradition

Oral tradition is a living museum of the whole stock of socio-cultural output stored up by peoples who were purported to have no written records. The old men who are its custodians have become the last vestiges of an ancient landscape which historians are seeking to restore. As the African proverb goes: 'The mouth of an old man smells bad, but good and salutary things come out of it'. Oral tradition provides clothing and colour, it puts flesh on the bones of the past. Naturally every precaution has to be taken to ensure that the materials contained in the tradition are carefully sorted and sifted.

It has been claimed that oral tradition is suspect because it is functional – in other words, it fulfils a social role – as though any human message was not functional by definition, including archives which sometimes conceal a good many falsehoods beneath their objective appearance. It is true that the epic tradition in particular is an almost mythical resurrection of the past, aimed at restoring a people's historical roots through the magic of the narrative. Written records, however, sometimes perform the same function.

It should be added, of course, that a common failing of the epic is the weaknesses of the chronological references. For instance, the use of the average length of reigns or generations for measuring distances back into the past by extrapolation from the present day has been vigorously disputed, since demographic and other changes may have taken place. In some cases too, an exceptional monarch may be credited with all the exploits of his line, as in the case of Da Monzon, King of Segou in the early nineteenth century, to whom the griots, or bards, attribute all that kingdom's major conquests.

4. Vai is the language of Liberia; Bamum, the language of Cameroon; and Ajami is an African language written in Arabic script.

Moreover, an oral account loses its significance if it is confined in the straitjacket of a written document and is severed from the environment of the audiences that gave it life. On the other hand, if it is left to develop freely in the community from which it draws its nourishment, it grows like living speech, adapts itself to new audiences and assimilates fresh contributions. Nowadays, whole chunks of written texts which certain 'mercenaries' of oral tradition learn by heart are reinjected into age-old narratives.

Even the content of the message is often obscure. For Africans, speech is a weighty matter. The more eminent the person speaking, the more important the message and the more enveloped it is in proverbs, parables and allusions. This apparent obscurity makes it even more difficult to transfer the content of an African oral tradition to the language of an industrialized country. Tradition does not stand up well to translation and some of the errors ascribed to tradition are the work of translators.

However, the mode of discourse of oral tradition, whether in epic form or in prose, whether didactic or ethical, may be of historical value from three standpoints. First, it reflects the customs and standards current in a society. When Da Monzon is addressed as 'master of waters and master of men', this signifies that he had absolute power. When the song in honour of Sundiata says 'Saya Kausa malo yé' – 'Death is preferable to dishonour' – we can appreciate that a sense of honour was one of the values of Malinke society in the thirteenth century. When Silamaka says 'Luckily for you, I am not allowed to kill messengers', we are witnessing the workings of one of the rules of international law in pre-colonial Africa.

Second, oral tradition offers us incidental descriptions of facts and objects, which conjure up the social and physical setting in which life went on. For instance, in the epic of Da Monzon, of the Bambara kingdom of Segou, we are given descriptions of leather sandals, of canoes each capable of taking up to sixty people, and of the technique for laying siege to towns, whereby flaming arrows are launched to set off fires and water is added to the gunpowder used by the enemy warriors. Hence the number of different versions of an oral tradition, far from being a drawback, is an advantage for anyone who is familiar with the literary form being used, with its codes and stereotypes and the set phrases used to pad it out, and also familiar with the societies involved, with their different social strata and the opposing clans that have produced the different versions. When accounts agree, as in the case of the Bambara and Fulbe griots, who belonged to opposite camps, the authenticity of the evidence is borne out.

Third, in some instances, there is a formal and institutional tradition to which structure has been imparted in actual training schools, such as those at Keyla, Kita and Niani, in Mali. This court tradition is backed by music played on instruments that are specific to the region, such as the *balla* or xylophone in Mali, the *bendre* drum of the Mossi in Upper Volta, or the *mvet* harp of the Fang. Owing to the existence of tonal languages, these instruments can take the place of court officials or poets, who can make them talk without having to utter a word themselves. The same could be said of the plastic arts, which are the direct expression of real people or of events or social patterns, as in the case of the bas-reliefs of Abomey and Benin and of Kuba sculpture.

Hence oral tradition is a distinct source in itself, which lends the history of the continent a marked originality.

Linguistics

Linguistics is a discipline that has attained a degree of accuracy sufficient for it to be used for diagnosing the past. However, before languages come to be compared for presentation in typological and genetic terms, whereby a particular language can be said to have been spoken earlier than another and hence the people speaking it must have preceded other groups, they first have to be identified and described scientifically. This is an area where there are sometimes conflicts between specialists. For instance, some people argue that Bantu came into being in the Zaire Basin, which was where it developed, while others maintain that its origins have to be traced back to the Sudanic languages. However, when a linguist demonstrates that the words denoting sheep are very similar both to the north of the equatorial forest and within that forest, the deduction we can make is that sheep were presumably introduced in an area running parallel to the edge of the forest until there was a break in the forest. This is, in fact, borne out by the East African pattern, where the group of related words denoting sheep runs in a north–south direction, at right angles to the direction in the centre of the continent.

Greenberg has pointed to Kanuri's contribution to Hausa in respect of terms relating to culture, technology and political titles. The systematic study of place-names (toponyms) and people's names (anthroponyms) from an African standpoint can furnish fresh historical data.

Research on Swahili vocabulary, which is full of terms of Arabic origin, for instance, or on the languages of the peoples living along the east coast of Madagascar, who were also influenced by the Arabs, could provide historians with a mine of information. But linguistics must first rid itself of racist theories like those of A. W. Schlegel, which situate the languages of the blacks at 'the very bottom of the ladder'.

Anthropology and ethnology

For a long time, these two disciplines were enlisted in the service of colonization and domination: by presenting African and other societies as primitive and backward, and by taking apart the mechanisms holding them together they made it easier to administer them as dependants or, in other words, contributed to the 'development of underdevelopment'.

Darwinian evolutionism, diffusionism, with its theory that all the fine and beautiful things in Africa came from other parts of the world, and functionalism, with its claim that the structures of the African world followed a static pattern from which the historical process was absent, were theories that – consciously or unconsciously – fed on the colonial balance of power and strengthened its hold. As subjects for research, anthropologists chose the simplest peoples, who were regarded as being the prototypes of the African world.

In the end, however, colonization succeeded in arousing the indigenous peoples who, with their accession to independence, became fully-fledged citizens. As such, they are now determined to find out about their societies themselves and to stop being objects of curiosity for Westerners hankering after the exotic.

Fortunately, researchers like Barth, Frobenius, Delafosse and Evans-Pritchard had already paved the way for an adaptation of the human sciences to the African situation, based on the assumption that Africans are like other people, but have been shaped in and by a different context. The Marxist method, so long as it is not dogmatic, and

structuralism can both provide useful, if contrasting, ways of approaching reality. Marxism, for which history is the collective consciousness in action, lays emphasis on productive forces and production relations. It is an essentially historical method, whereas structuralism considers that the key to understanding lies in the structures which, consciously or otherwise, are the logical mechanisms triggering off the action of human groups.

For anthropology to serve a useful purpose, it must take into equal account both practices and theoretical norms, discarding all the prejudices that cloak the scientific mode of discourse. It is only then that meaningful correlations will emerge and illuminate the past. For example, the trade routes on which certain commodities were a royal monopoly coincided with centralized political hegemonies in ancient Ghana and Mali, and those of the Asante empire, the Lunda kingdom, and so on. The same was true of the Ngonde and Zulu, whereas related peoples like the Nyakyusa and Xhosa, who were fairly distant from such routes, did not establish monarchical structures. It might be feasible to take that factor as a basis for evolving a sort of law of historical development in Africa.

Moreover, it has been noted that the form of conjugal union between human groups usually determines which of the groups' languages will predominate, since the maternal language prevails only if women are taken as wives, not as slaves or concubines. This has been borne out by observations among the Nguni in Southern Africa and the Fulbe of the Ouassoulou.

In conclusion, therefore, we can say that it is impossible to classify the main sources of African history, as outlined above, in an 'order of merit'. Depending on the circumstances, each one can play a decisive role, and they are often only conclusive when they are combined or contrasted. Oral tradition, for instance, may even correct written sources: the great Ibn Khaldūn wrote of Sundiata in his *History of the Berbers*: 'He was succeeded by his son Mansa Uli. *Mansa* in their tongue signifies sultan and *Uli* is the equivalent of Ali.' But oral tradition re-establishes the truth by pointing to the fact that, in the Mande language, the word *ule* means red. Hence Mansa Ule or Uli means 'the fair-complexioned king'.

Principles of research

Four main principles have been laid down with a view to ensuring that historical research on Africa will be of a high standard.

Interdisciplinarity

The interdisciplinary approach enhances each of the individual sources by combining it with the others. For example, a clearer understanding of the Bambara kingdom of Segou can be obtained through political sociology, which has detected in it traces of the earlier imperial system of Mali. Similarly, the oral traditions relating to the countries of the Niger delta show that the history of that region does not stem solely from the influence of the slave and palm-oil trades; prior endogenous factors overlooked by the Portuguese author Pacheco Pereira, but equally responsible for the region's rapid

development, can be identified.

A study of the cultural anthropology of the present-day Fulani has enabled A. Hampâté Bâ and Germaine Dieterlen to shed light on some of the enigmatic drawings of the Tassili frescos.

The expansion of the Bantu has been traced back through the concordant sources of linguistics, oral tradition, anthropology and written accounts in Arabic, Portuguese, English and Afrikaans and, more recently, through archaeology. Linguistic arguments likewise concur with those of technology in suggesting how royal gongs and ceremonial twin bells spread from West Africa to Lower Zaire, Shaba and Zambia.

Such a combination of sources becomes all the more imperative when problems of chronology have to be solved. Unfortunately, carbon-14 datings are not always available, nor do we always have, as in the north of Chad, vast quantities of pottery fragments which can be used to build up a pattern of classification based on successive models (diachronic typology). In a few cases, maps of the eclipses that are known to have been visible in specific areas at specific times enable correlations to be made with the reigns of paticular kings, since it is somewhat hazardous to make chronological inferences from the average length of reigns or generations, if only because there are such marked variations over the course of time.

There is no reason to make a cult of chronology, however great its importance as the backbone of history, and whatever efforts we make to base it on solid foundations. Dates are a means rather than an end in themselves. If we do not know the exact year in which Kumbi Ṣaleḥ was defeated, there is nothing to prevent us from saying 'the end of the eleventh century'. What is more, the entire process restored by history must, as far as possible, be reintegrated into the context of African time. There can be no denying that African time is based on the principle of antecedence and succession impelled by the force of causality, but it is tempered by the intrusion of myth.

The level of development used to be such that numerical and abstract calendars were not necessary. References to time were therefore cosmic and natural and were bound up with such phenomena as the sun, the seasons, and movements of men and beasts, or else they involved exceptional occurrences, especially natural disasters that left a lasting mark on people's minds. This conception of time was nevertheless historical, since African societies are often gerontocratic and anteriority is particularly significant as the sole basis for the exercise of social rights. Moreover, with the constant enhancement of the forces of the individual and the group being the whole basis for the African philosophy of life, it was impossible for the conception of time to be entirely static.

In many instances too, the approach to chronology became more precise and scientific. Quite apart from the astonishing skills displayed in Pharaonic Egypt and the Muslim kingdoms, there were the notches carved in special pieces of wood among the Dogon or the gold nuggets deposited every year in a receptacle in the stool-house of the kings of Bono Mansu. Sometimes a date recorded by a foreign eye-witness provides a reference pointer that sheds invaluable light on the reign of some prominent figure.

Traditional conceptions of time came to be recast only with the introduction of writing, the spread of religions linked more closely to calendar-style history, and Africa's entry into the world of profit generated by a more efficient use of time.

The second imperative requirement is that African history should at last be seen *from within* instead of being interpreted through references to other societies, ready-made ideas and prejudices. This does not imply any desire for revenge or self-glorification, but will involve a flexing of the collective memory. Other people's attitudes often prompt us to have doubts or indeed to be disparaging about ourselves. It is time for us to take an inside look at our identity and our growing awareness.

In a continent like Africa, where names are of such importance that those of respected figures are not even uttered, it is particularly significant to find our history being explained by a whole series of words and concepts that have come from Europe or other continents and that translate – and quite often betray – realities and structures created in another linguistic and social context. I. A. Akinjogbin has demonstrated this in connection with the *ebi* or extended family system in the kingdom of Oyo. This is why African terms for African structures must, as far as possible, be kept as they are, whenever there are no precise equivalents in other languages.

Of course there is no question of denying foreign influences, especially in cases where they have triggered off qualitative changes that accelerated the pace of African history. For example, the introduction of firearms into the central Sudan in the sixteenth century placed the feudal horsemen at a disadvantage against the armed infantry formed of serfs and commoners. As a result, the entire power structure in the central Sudan was to change, and the *kacella* or *kaigamma*, originally recruited from slaves, supplanted the noble minister Ciroma in his relations with the king. However, it is essential to investigate the internal patterns first before searching for external influences.

The third principle for the new history of Africa is that it must be the *history of the peoples of the African continent as a whole*, and that continent includes both islands such as Madagascar and the North African region, with which the lands to the south of the Sahara have had close and often beneficial relations for so long. It must be a history of peoples for, in spite of the monarchies and chiefdoms, the distances involved and the frequent lack of wheeled vehicles and of scribes may well have tempered the impact of despotism on remote villages. Moreover, even the most absolute kings and chiefs were bound by custom, and hence by a form of law laid down by established authorities such as councils, priests, seers, and so on. Again, it must be a history of peoples for, in spite of the history of colonialism and the frontiers it bequeathed to the countries forming the Organization of African Unity, the people of Africa are not hemmed in by those frontiers. Two examples, among many others, are the Senufo, who are to be found in Mali, Upper Volta and Ivory Coast, and the Hausa, who live in both Niger and Nigeria.

Thus, from prehistoric times, there have been not only wars, but also social cross-currents, cultural and religious borrowings, and countless permutations that are reflected in the intricacies of the map of Africa. The scattering of the Luo between the Nile valley and East Africa, the expansion of the Bantu between the Sudan and Central and Southern Africa, the transcontinental trade between the Atlantic seaboard and the east coast, are merely the 'high spots' of an intermingling process that has been going on for many thousands of years. Nor have migrations or permanent invasions always taken the form of irresistible historical waves, as in the case of Chaka. For instance, the settlement of the Mossi in their present heartland in Upper Volta occurred gradually, as

bands of horsemen took wives among the groups they encountered, but left to the local chiefs responsibility for such matters as land worship and rights of settlement. This was how the great Mossi conqueror, Ubri, came to be of mixed blood. This process of gradual fusion was by far the most common, and the image of the advancing tide of invasions that we are given, as in the literature recounting the eruption of the Beni Hilal into North Africa, for example, is not consistent with the historical facts.

Physical anthropology was long used to divide peoples, to the detriment of the blacks, who were branded as savages 'civilized' by repeated waves of 'superior races', such as the so-called Hamites. Scholars like J. Hiernaux have demonstrated the futility of most of these hazardous constructs based on 'race'. The Fulani, for example, are a cultural, not a biological group. The resemblance between the Moors and the Warsingili of Somalia derives no more from heredity than from the dry and barren steppe environment which has conditioned both groups and accounts for their higher stature, wider pelvis, and narrower and more elongated skull. Thus, apart from some areas of North Africa where the term *ḳabila* is current, the word 'tribe' will be banished from this history, on account of its pejorative connotations.

The fourth guiding principle is that the history should not be narrative, focusing on the battles and exploits of outstanding figures, but should deal with the fundamentals of *civilizations, institutions, structures, techniques, and social, political, cultural and religious practices.*

In conclusion, it might well be asked why so great an effort should be made to reconstitute the history of our continent. The answer, in the first place, is that without a history of Africa, the history of the world as a whole would remain obscure in many respects. Furthermore, the methodology used for this history will make an invaluable scientific contribution to historiography in general, especially as far as the inter-disciplinary approach is concerned. What is more, living without a history is like being a piece of flotsam or like a tree that has been felled and seeks to form a link with alien roots.

Primarily, however, rewriting this history is a duty, because for the African peoples themselves it is a right. It is they who forged their history and who are continuing to build on it. Teams must therefore be mobilized to save as many vestiges of the past as possible, and museums must be opened to preserve those vestiges. Legislation must be passed to defend them, scholarships granted for training specialists, syllabuses and degree courses recast in an African perspective. History must serve not only as a mirror in which we recognize our own reflection, but as a driving force that will propel us on the road to progress.

1 *The development of African historiography*

The first documents on the African past go back to the very origins of writing. As an integral part of both the ancient Mediterranean world and of Islamic civilization, North Africa has always contributed to the history of Africa, including that of the regions south of the Sahara. However, from the end of the eighteenth century to 1930 or thereabouts, the historiography of North Africa was dominated by the European colonialist viewpoint until, from the latter date onwards, the nationalist revival in the region incorporated historical studies into its scheme of things.

This chapter therefore mainly concerns itself with the historiography of Africa south of the Sahara, the ancient 'Ethiopia' of the Bilād al-Sūdān, with which contacts were so limited that few historical accounts were produced. Apart from documents in hieroglyphics, the first available sources are very superficial and refer to Africa south of the Sahara through legends or accounts that are sometimes indirect and occasionally obscure. Herodotus, the Elder Pliny and Strabo, for example, tell tales of travels or raids across the Sahara or along the coasts.[1] The trading circuits of Alexandrian merchants in the Red Sea and as far as the Indian Ocean provided a sounder basis for the works dealing with that region, such as the *Periplus of the Erythraean Sea* (*c.*100 of the Christian era) and the writings of Claudius Ptolemy (*c.*150 of the Christian era).

Closer to the present, regular trans-Saharan trade by camelback and sorties in the western Indian Ocean made it possible for Arab geographers and writers living between the ninth and fifteenth centuries of the Christian era, such as al-Bakrī, al-Idrīsī, Yāḳūt, al-ʿUmarī, Ibn Baṭṭūṭa and Leo Africanus (Hassan ibn Muḥammad al-Wuzzaʾn), to shed light on the Sahelian regions of the Sudan and the East African coast. The problem posed by these priceless works is that of ascertaining the authority of their sources, which differ very widely in quality: sometimes they consist of first-hand information – what we would now call eyewitness reports – but in other instances they are compilations and in yet others a mixture of the two, as in the case of Leo Africanus.

Among these writers, however, there is one genius who stands out above all the

1. Herodotus was a Greek historian and geographer, who lived in the fifth century before the Christian era. The Elder Pliny was a Roman scholar, who lived in the first century of the Christian era; he completed a collective work of 37 volumes on the natural sciences. Strabo was a Greek geographer from Asia Minor, who lived in the first century before the Christian era.

others: Ibn Khaldūn (1332–1406), the 'father of modern history', who was born in Tunis. His philosophy of history sees the whole process as a sort of cyclical spiral in which nomads, driven on by the energy they draw from the solidarity forged in the desert, regularly seize arable lands and urban settlements, but eventually go into decline as a result of assuming a sedentary life-style, and are deprived of the leadership by other nomads. This model, which was taken up by Marc Bloch in connection with early medieval Europe, illustrates the visionary powers of Ibn Khaldūn who, in fact, was to advance some of the tenets of historical materialism well before Karl Marx. One of the chapters of his most important work is devoted to the Empire of Mali, which was then at its peak.

Subsequently, the hegemonies of the Sahel and the Sudan were to have their own scribes, whose works included the celebrated *Ta'rīkh al-Sūdān* and *Ta'rīkh al-Fattāsh*, both of which were composed in Timbuktu in the seventeenth century of the Christian era. On the other hand, the *Kilwa Chronicle*, possibly dating from the fifteenth century, and the *Kano Chronicle*, which appears to have been written in the early nineteenth century, are more in the nature of compilations of oral traditions. More recently, in the present century, a large number of manuscripts have been discovered, showing that Arabic-speaking Africans were concerned about setting down accounts of all the countries in which they lived or through which they passed, as in the case of the *Gonja Chronicle* (*Kitāb al-Ghunja*), which deals with a small kingdom situated in the northern part of present-day central Ghana.

Mention should also be made of works written in Arabic characters, but in African languages, such as Hausa, Kiswahili and Fulfulde, which abounded at the same period. Nor must it be forgotten that, for two thousand years or more, Ethiopia has had an unbroken literary tradition, first in Ge'ez and later in Amharic, which produced such celebrated works as the chronicles of the '*Wars of Amda Sion*'.

From the fifteenth century onwards, the regions of Africa most frequented by Europeans – such as the Guinea coastlands, the region of the Lower Zaire and Angola, the lands crossed by the Zambezi and Ethiopia – were the subject of a variety of studies and accounts that are of particular interest to historians. Starting with Cadamosto in 1460, right up to Barbot and Bosman in the eighteenth century, not forgetting Dapper and his great compilation (1688), a number of writers left works on the Guinea coastlands that are invaluable pointers to the development of this part of West Africa.

Curiosity about Africans was generally rather superficial among traders, but was much more systematic among missionaries, who sought to learn more about the societies they were aspiring to change. In Ethiopia, where the written data that already existed made their task easier, the seventeenth-century missionaries Pedro Paez and Manoel de Almeida, followed by the orientalist Job Ludolf, produced the first historical works. In the Congo, Angola and the Zambezi valley, African resistance to the grasping tactics of traders gave rise to dramatic developments which are echoed in the works of writers like Pigafetta and Lopez in the sixteenth century and Cavazzi in the seventeenth, when Cadornega also produced his *History of the Angolan Wars*.

By the eighteenth century, there was a significant increase in the number of more ambitious works, such as universal histories and geographies. In fact, earlier accounts were available as sources, and there was already growing controversy about the slave

trade. Dating from this period are works such as the *Universal History*, the *History of Angola* by Silva Correia, Benezet's *Some Historical Account of Guinea*, the *Memoirs of the Reign of Bossa Ahadee* by Norris and the *History of Dahomey* by Dalzel.

This period also saw the emergence of the superiority complex, which the Europeans started to display towards the continents that they had exploited for several centuries. Their attitude was engendered by the upheavals which, since the Renaissance, the Enlightenment and the scientific and industrial revolution, had bestowed overwhelming material power on Europe. But the Europeans overlooked the fact that their power was partly derived from the slave trade, which in itself had undermined societies in Africa.

Hegel (1770–1831) had no hesitation in stating in his *Philosophy of History* that Africa 'is not a historical continent; it shows neither change nor development' and that the black peoples were 'capable of neither development nor education. As we see them today, so have they always been.' This preposterous view of Africans persisted into the twentieth century, when an Oxford professor could be heard to say: 'Perhaps in the future, there will be some African history to teach. But at present there is none: there is only the history of the Europeans in Africa. The rest is darkness . . . and darkness is not a subject of history . . . We cannot therefore afford to amuse ourselves with the unrewarding gyrations of barbarous tribes in picturesque but irrelevant corners of the globe.'

And yet, as a result of the nineteenth-century explorations and the rush to conquer Africa, large numbers of books on the continent came to be written, including such titles as James Bruce's *Travels to Discover the Source of the Nile*; Bowdich's *Mission from Cape Coast Castle to Ashantee*; the works of the great explorer Heinrich Barth; the *Documents sur l'histoire, la géographie et le commerce de l'Afrique orientale* by M. Guillain; and Gustav Nachtigal's *Sahara und Sudan*. One of the greatest travellers of the period was Richard Burton, who was an outstanding orientalist with a keen, enquiring mind. In his *Mission to Glele, King of Dahomey* (1864), he writes: 'the pure Negro ranks in the human family below the two great Arab and Aryan races . . . The Negro, in mass, will not improve beyond a certain point, and that not respectable; he mentally remains a child'.

Certain African intellectuals, such as James Africanus Horton, engaged in heated debate on this subject with the London Anthropological Society, but to no avail. Matters were made worse when the German school of historians claimed that only written sources could provide a proper basis for history. In London, Professor A. P. Newton echoed this theory when he claimed that Africa has 'no history before the coming of the Europeans. History only begins when men take to writing'; 'primitive custom' . . . was the concern of 'archaeologists, linguists and anthropologists'. The outcome of this attitude was that the *Cambridge Modern History*, which was published in the early years of the twentieth century, totally ignored Africa, and the history of the continent was left to men like Sir Charles Lucas and Gabriel Hanotaux. Colonial and imperial history accordingly took the place of the history of Africa. Even so, of the eight volumes of the *Cambridge History of the British Empire*, only one was devoted to Africa and that to South Africa, in other words, to the history of the settlers in that region. Only the intorductory chapter, written by an anthropologist, makes any reference to the African peoples. Elsewhere, the history of Africa made a timid appearance in more

recent publications, such as the *Peuples et Civilisation* or *Histoire Générale* by Glotz, published in Paris; the *Historia Mundi*, which appeared in Berne; the *Vsemirnaja Istorija*, published in Moscow; and the *Storia d'Etiopia* edited by C. Conti Rossini. Even archaeologists took little interest in Africa since, at that time, they too were fascinated by written sources and by the discovery of ancient inscriptions. Only monumental African ruins like those of Axum or Zimbabwe found favour in the eyes of scholars, while the excavations conducted in the search for the origins of man seemed more geological than historical, so vast was the time-gap separating these embryos of mankind from populations with an actual history.

It is true that in the twentieth century anthropologists and linguists were attracted by the enormous variety of physical types, societies and languages of the continent and embarked with enthusiasm on pioneering fieldwork. In some cases, they attempted to reconstruct the history, which they thought could explain the contemporary picture. The results were sometimes catastrophic. This is particularly true of the work entitled *Races of Africa*, by the anthropologist C. G. Seligman, which was published in 1930 and in which he wrote: 'The civilizations of Africa are the civilizations of the Hamites'. He concluded that all the advances made by the other groups – the Negro and the Bushman – were due to the influence of the superior Hamitic 'race'. These gratuitous and pedantic assertions were refuted by a number of authors, among them J. H. Greenberg, who demonstrated that the term Hamite was meaningless other than as a linguistic classification, which did not imply any ranking order among so-called races. By way of example, he cited 'the Hamitic-speaking agricultural Hausa . . . under the rule of the pastoral Fulani who speak . . . a Niger–Congo (i.e. Negro) language'. Nevertheless, in his day, Seligman was regarded as a master in his field, and his work as a classic. In fact, his attitude was only a reflection of the prejudice common in the environment in which he lived, whereby the whites who had conquered and dominated Africa in the nineteenth century were only continuing the civilizing process which light or brown-skinned peoples, generally labelled Hamites, had begun before them. This racist approach can be seen in other serious works by a number of subsequent authors, such as Sir Harry Johnston in his major conspectus, *A History of the Colonization of Africa by Alien Races*, and Maurice Delafosse, in his magisterial survey *Haut Sénégal-Niger*. In the latter's view, for instance, the empire of Ghana had been founded by Judaeo-Syrian migrants. Similarly, Flora Shaw, in her *A Tropical Dependency* (1906), was obsessed by the Muslim Arab influence south of the Sahara, while Yves Urvoy, in his major works *Histoire des populations du Soudan central* (1936) and *Histoire du Bornou* (1949), only saw the one-way influence of the Saharan nomads on the sedentary Negro peoples. The archaeologist Sir Richard Palmer (*Sudanese Memoirs*, 1928 and *The Bornu Sahara and Sudan*, 1936) even ranged as far as Tripoli and the Yemen in search of the driving force behind the history of the peoples of Nigeria.

The Hamitic myth was abandoned little by little, but even so a balanced approach was still not forthcoming. Between 1930 and 1950, in fact, functional anthropologists like A. R. Radcliffe-Brown and B. Malinowski wielded an overwhelming influence. They gave prominence to very thorough, but purely descriptive analyses, without going into the historical facts of the situation. Representative of this outlook were Tor Irstam's *The King of Ganda* (1944), Lars Sundstrom's *The Trade of Guinea* (1965),

Hermann Baumann's *Völkerkunde Afrikas* (1940) and Dietrich Westermann's *Geschichte Afrikas* (1952). The last-mentioned author was an outstanding linguist who did pioneering work in collaborating in the compilation of Baumann's monumental encyclopaedia, although he too did not escape the Hamitic prejudice. G. P. Murdock's ambitious work, *Africa: Its Peoples and their Culture History* (1959), suffers from the fact that its author never set foot in Africa.

Mention can also be made of *The Zimbabwe-Monomotapa Culture* (1948) by H. A. Wieschoff, who was a disciple of Leo Frobenius, a cultural anthropologist, archaeologist and historian all in one. Frobenius was a prolific author who steadily reported on the enormous amount of fieldwork he conducted in many regions all over the continent. He also came up with several original theories, some of which were brilliant, although others – such as those on Atlantis and on the Etruscan influence on African culture – were rather fanciful. Whatever we may think of Frobenius' grandiose intentions, spurred on by his unflagging enthusiasm and his deep sense of identification with Africa, he managed to collect a mass of information, which it would be worth re-evaluating and which no doubt accounts for the renewed interest currently displayed in his work.

However, it has to be acknowledged that the interest of professional historians in Africa was at its nadir at the end of the nineteenth century. Fortunately, as in the case of the *Ta'rīkh* in the sixteenth century, the Africans themselves came to the rescue. Having now acquired a command of European languages, they were to make use of them to piece together the evidence about the past of their peoples. Among the titles that come to mind are *A History of the Gold Coast and Asante* (1895) by Carl Christian Reindorff and Samuel Johnson's *History of the Yorubas*, both of which are still today reliable and essential sources for the history of their peoples.

There was also the prolific output of the first proto-nationalists, who often drew on history to defend their case and shatter the myth of black cultural inferiority. Writers in this category included J. A. B. Horton, E.W. Blyden, J. M. Sarbah, J. E. Casely-Hayford and J. B. Danquah and, even more notably, J. O. Lucas, with *Religion of the Yoruba*, J. W. de Graft Johnson, with *African Glory*, and Eva L. R. Meyerowitz, with *The Sacred States of the Akan; the Akan Traditions of Origin* (1952). Some of the last-mentioned authors attempted to trace back the history of the black peoples to remote ancestors in the Nile valley.

In some instances, at the instigation of missionaries, works of a historical character were written in African languages, as in Uganda and Yorubaland. One such example is the remarkable work *A Short History of Benin* by J. U. Egharevba (1934).

Moreover, the coming of colonization brought new practical demands with it. In order to become better administrators, it was useful for the Europeans to know something of the African past, the relations different peoples maintained with one another, and their ancient institutions. In addition, rudiments of local history were taught in the schools set up to train the future auxiliaries of the colonial administration, if only to whet their appetites for what was considered much more important – a knowledge of the history of their colonizers. Yet the works of some of these writers were conspicuous for the loftiness of tone and objectivity of the views they expressed, or at least for the accuracy of the material they collected. Examples include C. H. Stigand's

The Land of Zinj (1913), E. W. Bovill's *Caravans of the Old Sahara* (1933), Charles Monteil's *Les Empires du Mali* (1929), the works of Georges Hardy and Henri Labouret, and the imposing *Tableau géographique de l'Ouest Africain au Moyen Age* (1961) by Raymond Mauny.

Formal structures were gradually established, especially in the French colonies, with the setting-up of the *Comité d'études historiques et scientifiques de l'Afrique Occidentale Française*, which was forerunner of the *Institut français de l'Afrique Noire* (IFAN), created in Dakar in 1938, whose *Bulletin* and *Mémoires* were to mark the course of research. From 1947 onwards, the Société Africaine de Culture and its journal *Présence Africaine* made an outstanding contribution, while African intellectuals, trained in the techniques of historical method, applied those techniques to their continent, restoring objectivity and adding to the methodology, especially by wider and more intensive use of such sources as oral tradition, linguistics, and so on. In this context, we might mention the symposium on the problem of the peopling of Ancient Egypt, organized in Cairo by Unesco.

Last, but by no means least, universities, the privileged seats of research, were gradually established. In this regard, a clear lead was taken by the colonies of Great Britain, which had already created the remarkable School of African and Oriental Studies. Liberia College in Monrovia and Fourah Bay College in Sierra Leone had both existed from the nineteenth century, but, from 1948 onwards, a whole set of university institutions came into being in the Gold Coast and Nigeria, in Khartoum and Kampala (Makerere College), in Dakar (1950) and Leopoldville (Lovanium in 1954). The professional historians from those universities or from the industrialized countries made it possible for Africans to take over, although not without some prompting. In 1956, at Ibadan University Professor K. O. Dike became the first African director of a history department.

Since the end of the Second World War, the historiography of Africa has become increasingly similar to that of any other part of the world, although, while abiding by the general principles of historical criticism, it has naturally had to adopt various specific technical approaches in order to deal with certain problems. It should, however, be stressed that this progress would have been impossible without the process by which Africa threw off the colonial yoke: the armed revolt of Madagascar in 1947, the independence of Morocco in 1955, the heroic war of the Algerian people and the struggle for freedom in all the African colonies enabled Africa to think for itself about its own past.

2 *The place of history in African society*

Man is a historical animal. He visualizes his history as being a design in the making and, after it has come to pass, he sees it as a memory pregnant with meaning, as a 'model'. Consciousness of the past is accordingly marked by the very nature of that past and by the character of each of the stages through which it passes. A people that has long been victorious does not have the same consciousness of its past as one that has long been subjugated. Geographical conditions also affect the quality of a people's view of things. In certain respects, therefore, time as visualized by the Africans is both mythical and social. Even so, it will be seen that Africans feel that they are the active agents of their own history, and African time will be found to be authentically historical.

Mythical time and social time

Myth, or in other words, the non-rational representation of the past, used to occupy an important place in the African approach to society. Customs were often imposed on those who had roles to play in society: all of them, from the ruler downwards, had to model their slightest acts and gestures on those of an exemplary prototype whose origins were shrouded in the mists of time. Myth governed history and was at the same time responsible for justifying it.

Two characteristics emerge from this type of historical thinking: its timelessness and its essentially social dimension. When time is not reckoned strictly, it appears to include and embrace eternity both back into the past and forward into the future. It is not like a river with a clearly identified source and current, but more like a boundless ocean. Hence action can start anywhere and make its effects felt anywhere. When Mansa Musa, the Emperor of Mali (1312–32), asked the King of Yatenga to become a convert to Islam, the latter answered that he would first have to consult his ancestors by offering up sacrifices. This example shows how the past can have a direct bearing on the present. The dreams of kings, as interpreted by ministers specially appointed for the purpose, triggered off tangible future actions that were not motivated by any actual contemporaneous events. In this kind of suspended time, the present may even act on what is regarded as the past, but in fact remains contemporary. The blood of sacrifices offered up today can help the ancestors of yesteryear.

In a more fundamental way still, some accounts attribute to a mythical past advances

that were made in historical time; as the latter is not perceived as such by each individual, it is taken over by the non-historical group memory. An example of this is the Kikuyu legend accounting for the discovery of the technique for working iron. Ngai (God) had divided up the animals between the men and the women, but the women were so cruel that their animals ran away and became wild. The men interceded with Ngai on behalf of their wives, saying 'We wish to sacrifice a lamb in thy honour, but we do not want to do it with a wooden knife lest we run the same risk as our wives'. Ngai congratulated them on their wisdom and, so that they could have more efficient weapons, told them how to smelt iron.

This mythical and collective conception made time an attribute of sovereignty. In Sudan, the Shilluk king is the mortal repository of immortal power, for he combines in his own person both mythical time (he is the incarnation of the founding hero) and social time, regarded as the source of the group's vitality. The same thing occurs among the Bafulero of eastern Zaire, the Banyoro of Uganda, and the Mossi of Upper Volta, for all of whom the chief is the mainstay of collective time: 'The Mwami is present: the people live. The Mwami is absent: the people die.' Indeed, the death of the king is a break in time which halts activity and social order and all expression of life, from laughter to agriculture and sexual union between either people or animals. The interregnum is a parenthesis in time, when everything that was forbidden becomes permissible.

Everything can accordingly be seen to communicate in such animist thought, where the part represents and may even signify the whole, and hair and nail parings must not fall into the hands of an enemy lest they give him power over their owner.

Indeed, one has to consider the Africans' whole conception of the world in order to understand their view of time and its real meaning for them. In mythical thinking, the passage of time in the ordinary sense is only one aspect of another time experienced by other dimensions of the individual. When a man lies down at night on his mat or his bed to sleep, that is the moment his double chooses to set out and retrace the path the man himself followed during the day, to visit the places he frequented, and to repeat the work and actions he performed consciously during his daily life. It is in the course of these peregrinations that the double encounters the forces of good and evil, and it is then that the double must be strong. When the Songhay say of someone that his *bya* (double) is heavy or light, they mean that his personality is strong or weak. The ideal is to succeed in merging into one's double and becoming one with it, as did *Si*, the legendary ancestor of the Songhay dynasty: 'Terrible is the father of the *Si*, the father of thunderbolts. When he has toothache, he crunches gravel. When his eyes are sore, he bursts forth in flame. He strides over the earth. He is everywhere and nowhere.'

Social time, history experienced by the group, amasses power, and that power is symbolized and given concrete form by some object which is transmitted by the patriarch, the head of the clan, or the king, to his successor. It may be a golden ball kept in a *tobal* or war-drum, together with parts of the remains of a wild animal. Or it may be kept in an earthenware pot, like the regalia (*tibo*) of the Mossi king. Among the Songhay and Zarma, the object is a sort of iron rod. Among the Sorko in the old empire of Gao, it was an idol in the shape of a large fish with a ring in its mouth. The Soninke, the descendants of Sunni 'Alī, have chains of gold, silver or copper, with each link

representing an ancestor and the whole chain representing the dynastic line back to Sunni the Great. In the course of magical ceremonies, the chains are produced before the public from the mouths of the celebrants and when a Soninke patriarch dies, he disgorges the chain for the last time and has his chosen successor swallow it from the other end. He dies as soon as he has passed on the chain to the person who is to continue the line. The acting-out of this last will and testament is an eloquent illustration of the strength of the African conception of mythical and social time.

It might be argued that this view of the historical process is static, repetitive and sterile, and that myth is the motive force behind a history that is merely marking time. But, as we shall see, African historical thought cannot be confined to that one dimension.

The mythical approach, in fact, is common to all peoples. Every history starts off as religious history, but sometimes the mythical current overwhelms a nation's attitudes, opinions or ideology. Under the Nazi regime, for instance, the myth of race, substantiated in rituals that went back into the remote past, led mankind into one of the most terrible periods in all its history.

Are Africans aware of being agents of their own history?

It is true that, for some centuries, Africans have been deprived of the conscious power of initiative as a result of the alienating disorders inflicted by the slave trade and colonization. There are also grounds for believing that the people who lived in many self-contained micro-societies during the pre-colonial period were subjected to the oppressive weight of authority exercised by their elders or through the patriarchal or marriage systems, and in no way felt that they were in control of their collective destiny. Yet it was primarily at that level that the feeling of being directly involved in decision-making and of being a free agent was most strong. Since power was the attribute most widely shared in such societies, it was there that the colonial conquest encountered the fiercest resistance.

In societies that were more highly and, above all, more broadly structured, it comes as no surprise to find, for example, the entire history of the rise of the Empire of Mali being encapsulated in the *Praise to Sundiata* (*Sundiata Fasa*). The recent history of pre- and post-colonial Africa, from Osei Tutu and Anokye of the Asante to Shaka or Samory, and right through to some of the present-day heads of state, does not detract from this mental picture of the 'meaning of history' that Africans have. We should hasten to add, however, that their idea of a leader who is the driving force behind history is almost never reduced to the caricature-like image of only one man as the prime mover in the whole of human progress. There is nearly always a dynamic group, which is famous as such, as in *Sundiata Fasa*. Nor are the chiefs' companions forgotten, even when they are of inferior status, such as griots, spokesmen and servants. They too go down in history as heroes.

The same thing is true of women who, contrary to certain persistent misconceptions, probably feature in African history to a greater extent than in any other. In matrilinear societies, where the line of succession passes from the maternal uncle to the nephew, there is nothing surprising about this. Among the Soninke, for example, power is

2.1 *Bronze statue representing the dynastic power of the Songhay of Dargol (A. Salifou)*

handed down 'through the mother's milk'. Elsewhere, too, the people see women as having played a role of the utmost importance in the historical evolution of nations. As daughters, sisters, wives and mothers of kings, they were well placed to influence events. Lueji, in turn daughter, sister, wife and mother of a king, is an astonishing example who well deserves her title of *Swana Mulunda* or Mother of the Lunda people. Among thousands of other names, we can mention those of Yennenga, the mother and heroine of the Mossi nation, and the famous Amina of Zaria who, in the fifteenth century, conquered many Hausa cities which still bear her name. Action by women and consideration for them have continued right down to the present day because of their activities in political parties and national liberation movements. True, like women everywhere, they have also striven to please and be decorative, and to use their wiles and powers of seduction, as in the case of Sundiata's sister. In the famous nineteenth-century engraving, the King of Dahomey can be seen presiding at a feast, surrounded by women decked out like dolls in all their finery. But he was also attended by the Amazons, who were the spearhead of the royal army against Oyo and against the colonial invaders at the Battle of Cana in 1892. Despite their self-effacement in public, where they appear to be the victims of segregation, African women, through the active role they play in the production of material goods and cultural artefacts, bear living witness to the well-known African proverb: 'Women can make or mar anything'.

On the whole, the fact that human groups were limited in size for very long periods in Africa meant that power and history were everybody's business and it is this that accounts for the popular and 'democratic' inspiration that so frequently informs the African conception of history. Everybody felt that he had at least the power to flee autocratic rule and take refuge in the 'wide open spaces'. Shaka himself went through the same process towards the end of his career.

This feeling of taking part in the making of history in the village setting and the sensation of being borne along like a fine particle in the closely-knit network of a large chiefdom are very important factors for the historian, for they are in themselves the stuff of history and contribute in their turn to its making.

African time is a historical time

Some people, both before Hegel and since, have claimed that all Africans have done is to go on repeating the past, without ever innovating or developing. They are said to have an incorrigible yearning for the past, justifying their actions by saying 'That was how our ancestors did it'. If that were really true, instead of finding the Empire of Mali, Ibn Baṭṭūṭa would have found only prehistoric caves or shelters inhabited by men dressed in animal skins. The actual social nature of the African conception of history confers on it an undeniably historical dimension, for history is the evolving life of the group. Whether in traditional ideology or in the Islamic view of things, which had so far-reaching an influence on vast areas of Africa, there is no question of history being indifferent.

In the all-embracing thinking of Africans, time is the arena where man can always carry on the struggle against the drain on his being, his health and his strength, as represented by family, fields, villages and so on. In African 'animism', time is an enclosed space, a market-place where the forces that stalk the earth are pitted against

each other and negotiate a truce. Forces have to be constantly stemmed, collected, channelled, harnessed and mobilized by a sort of mental engineering working for the individual or the group. This attitude is a dynamic one. For instance, the Cerko and Soninke clans of the Songhay in Niger are antagonists. The former, who represent the past and try to reign over the night, attack society. The latter, the masters of the day, represent the present and defend society. In fact, power in black Africa is often expressed by a word that means force or strength (*fanga*, *panga* and *pan*, in Bambara, Moré and Samo respectively). These synonyms show what importance Africans attach to force, if not violence, in the unfolding of history. But force is not thought of as only being material. Speech is energy. This is why, at the end of a religious invocation, the Songhay celebrant first cites by name the lineage of those who handed down the sacred words to him, before concluding by saying: 'May mine be better in my mouth than in the mouth of the ancestors'.

Another aspect of force is its ethical content, without which no power would be capable of doing good. Popular wisdom bears witness to this idea in many tales which depict despotic chiefs who are finally punished, thus drawing the moral of history. The *Ta'rīkh al-Sūdān* and the *Ta'rīkh al-fattāsh* are lavish in their praise for the virtues of al-Ḥadjdj Askiya Muḥammad. It is true that their authors had a vested interest in doing this, but they systematically point to the connection between the ruler's virtues and his 'good fortune', his lucky fate. The same idea is to be found in Muḥammad Bello, who urges Yacuba Bauchi to mediate on the history of the Songhay empire, and especially on that of the Askiya Muḥammad, by saying: 'Many peoples acquired great powers, but these crumbled because they disregarded the foundations of justice . . . If we are to endure, our force must be the force of truth and of Islam . . . The generations that come after us . . . will judge us by the truth and justice we have been able to impose in the state.'

This lofty view of the role of ethics in history is also found in 'traditional religion' belief, which regards sin as being anything that disrupts the equilibrium of forces and is liable to harm the community. This may seem a mythical view of things, but it exerted an objective influence on real-life history. In certain black African systems, for example, moral authority capable of sanctioning the conduct of public affairs or of chastising those who conducted them was vested in special, sometimes secret societies, such as the *lo* of the Senufo or the *poro* of Upper Guinea. They were parallel powers that could be appealed to, but they could also take the place of official authority, and people finally came to look upon them as occult and indeed terrorizing centres of decision-making.

In the same type of society, the organization into age-sets makes it possible to go back in time into the chronological record of the life of a people. This structure was also capable, whenever the need arose, of taking conflicts between generations in its stride by articulating relations between them in such a way that they did not degenerate into violent confrontation. The senior generation sent one of its members as a delegate to the younger generation immediately following it. The role of that spokesman was not to supervise and impose sanctions, but to advise and proffer guidance so as to ensure that the reckless energy of the young was not prejudicial to the community as a whole. The Alladians of Moussou, near Abidjan, still practise this kind of organization for present-day community activities.

Awareness of time past, which is so vivid among Africans that it may seem to stifle the present, while leaving its more dynamic features untouched, is not symptomatic of some essentially African 'nature'. It is rather the mark of a stage in social evolution. Proof of this can be seen in the difference between the 'time is money' attitude of many African town-dwellers and that of social time among their relatives in the village.

Legend and myth already represent an effort to rationalize social development, but efforts were also made to start calculating historical time by linking it with cosmic or social phenomena, especially when these are recurrent, instead of with individuals. Even more sophisticated systems of computation were attempted. For instance, according to Ivor Wilks, the Akan had a complex calendar system with a seven-day week, a six-week month and a nine-month year 'regularly realigned on the sun by methods that are not yet fully understood'. The Akan calendar could thus be used to refer, say, to the eighteenth day of the fourth month of the third year of the reign of the Asantehene Osei Bonsu. This system of dating was still in use in European countries in the eighteenth and even the nineteenth centuries.

Three factors, however, had an impact on the quality of the Africans' conception of history. The first of these was the spread of writing, which helped in quantifying and measuring, and hence organizing the passage of time. The second was the introduction of the major religions of Islam and Christianity, with their roots in a given historical tradition. By a sort of contagion, African converts managed to incorporate their own local history into the overall picture of the history of their religion. Lastly, the Africans' entry into the world of profit and the amassing of money weaned them from their own conceptions and subjected them to those of the economically powerful nations, which set their pace and their rules. The wristwatch worn by African workers or businessmen is the symbol of that new demand made on them.

3 *Recent trends in African historiography and their contribution to history in general*

These thick volumes are being published in a bid to reconstitute the African past, because that past is part and parcel of identity and hence a significant factor in development. Africans must accordingly surmount the obstacles that colonial history erected between their past and themselves and that have prevented them from keeping their appointment with history.

Everybody is aware of the fact that, in the nineteenth and early twentieth centuries, Europe held sway over all the other continents. Its dominant role influenced its view of world history which, from that time onwards, was ordained by and in terms of Western Europe from the triumphant position it occupied at the head of the advancing column of mankind. This Eurocentric view was projected onto all the other continents through the educational systems the Europeans created in the colonial world.

Nowadays, this way of looking at world history is no longer the official one, but it has left marks and scars that are still visible. The schoolchildren of the first decade of this century, in whom those ideas were instilled, only reached retirement age in the 1960s. Once they had left school, where textbooks were ten to twenty years behind the times, it was virtually impossible to alter the prejudiced attitudes they had acquired, especially in view of the glosses produced by the mass media, which have lagged even further behind general historical works.

However, the very slow process of changing attitudes has to be viewed in the light of the *dual revolution* that has affected historical studies since the end of the Second World War, and that has involved, first, *the transformation of history from chronicle into a social science* and, secondly, the *replacement of history with a national bias by history based on a world perspective*. This pattern of change has been given added impetus by the work produced by historians in all the regions of the world, and especially by African historians.

From the nineteenth century onwards, history was seen not as a science, but as a part of the national heritage, which had to be given a fresh lease of life in order to bolster patriotic sentiment, in short, to act as a 'vehicle of ethical and political instruction'. It was possible, for example, to gain the highest academic awards in the universities of France and Great Britain without having any special knowledge of the history of the rest of Europe, still less of the world as a whole. The North American approach was likewise focused on the history of the civilization which, starting from the time of the Greeks,

had eventually given rise to the civilization of the United States. The continents that are poor today were implicitly regarded as having no past worth mentioning. This is why the work of all historians who rejected the Eurocentric approach and studied each people's history for its own sake was so revolutionary. African historians have played an outstanding role in this regard, if only because Africa was the continent most subject to disparagement in racist theories. Racism is a scourge that is capable of taking on a multiplicity of forms, from the most discreetly concealed to the most bloodthirsty, as in the case of the slave trade and the Second World War. Like a living fossil, it bides its time, buried in the subconscious of hundreds of millions of people, until it re-awakens in the shape of pseudo-scientific doctrines and claims; for example, that everything remarkable about Africa must be of foreign origin, because Africans themselves have never invented anything. This attitude was carried to such lengths that the main issue raised in connection with the masterpieces of Ife sculpture was that of finding out what foreign peoples had managed to travel as far as that region in order to produce such works of art.

The mere fact of being non-literate debarred a people from taking part in the march of progress, and it was on that count that the history of black Africa was artificially separated from that of North Africa. It was forgotten that Africa had been literate since the early Middle Ages, inasmuch as it had a class of scribes and clerks like Europe, since the marabouts and traders had brought Arabic script with them to the heart of the tropical forest. Mass literacy in Europe, as elsewhere, dates from after the Industrial Revolution.

The *second impediment* to the making of authentic history was that the masses, even in Europe, were excluded from the mainstream. History was a matter for the *ruling classes* and their exploits alone were singled out by historians as worth being recorded for posterity. Life in seventeenth-century France was reduced to the daily comings and goings of Louis XIV and the battles he fought.

Economic history was not concerned with what people produced and what their needs were or with the ways in which they were commandeered into the service of the privileged classes. Instead it dealt with the technical discoveries made by scientists and the decrees promulgated by ministers to develop national growth policies.

Monopolized as it was by Europe and by Western elites, history deprived the greater part of the world of its past. Those historians who set out to broaden the scope of history in horizontal terms so that it embraced the other continents, and others who extended it vertically so as to take in other social categories were therefore waging the same battle, but it was only much later that they came to join forces.

Using every argument that they could turn to good account in their campaign *to decolonize African history*, African specialists found themselves in an ambiguous position. When, for example, they claimed that Africa had highly centralized empires and kingdoms similar to those of Europe, they tended to overlook the fact that those structures had been built up at a very heavy cost in human life, whereas African village democracies, founded on maximum individual autonomy, probably represented more worthwhile achievements. On the other hand, African historians were closer to the target when they reversed 'colonial history's' presentation of the European conquerors as heroes of civilization.

In the work of the historians of decolonization, the picture was completely changed and aligned more closely on the facts: the heroes were the African resistance fighters, whereas the conquerors were the leaders of expeditionary columns and colonial governors, who equated right with might, a policy always applied with brutality and sometimes with bloody consequences. A second step forward was taken when the spotlight was focused on the protest and resistance campaigns which, at the height of the colonial period, were to pave the way for the national liberation movements.

Slowly but surely, this re-emergence of an authentically Afrocentric history was to join forces with the movement for *an all-embracing social history*, in the first place through an interdisciplinary approach combining the histories of agriculture, urbanization, and social and economic relations, and subsequently as a result of the advances made in history based on field surveys. The latter approach freed researchers from the constraining influence of archives in which the documents were often unreliable and were basically flawed because of the prejudices of the people who compiled them from the time of the slave trade to the end of the colonial period. The first-hand verbal accounts of contemporary African victims of colonization have proved an effective counterweight to the testimony of official papers. Moreover, as a result of the methodology evolved for making use of oral tradition, historians of Africa have become pioneers in that field and have made a remarkable contribution to its development.

Between 1890 and 1914, a number of far-sighted scholar–administrators in the colonial services had already begun to collect accounts of African traditions. Yet, as late as 1959, G. P. Murdock, following in the footsteps of the British functionalists, bluntly asserted that 'indigenous oral traditions are completely undependable'. A few years later came the publication of Jan Vansina's book, *Oral Tradition: A Study in Historical Methodology* (1961), in which the author, together with a number of African and non-African historians, demonstrated the validity of oral tradition as a historical source, provided that it was subjected to the necessary critical controls. The seminars of historians held in Dakar in 1961 and in Dar es Salaam in 1965 emphasized the same view, as well as the roles of linguistics and archaeology.

All this work was to open up new paths and *render outstanding service to the other social sciences*. Primarily, however, it showed that 'traditional' Africa had never been static and changeless. Indeed, economists, political scientists and sociologists all had a tendency to split the African past into a 'before' and 'after', as it were: 'before' being traditional Africa and 'after' all that had come into being since the fateful era of modernization, which was said to have jolted into action a world that had lain sleeping until then.

It was the English-speaking anthropologists who were most put out by the revelation that dynamic internal forces had been at work in traditional African society. As functionalists, they had taken the structures of that society and had set about isolating the different agents or groups that had played a specific role in the original balanced state of things; their method entailed analysing the real and observable present and sifting out everything that might have been added since the arrival of the Europeans, so as to end up with an indigenous 'model' in the pristine state, in a sort of timeless 'anthropological present'. It is true that this approach, which was dominated by the work of Bronislaw Malinowski, helped give an insight into the workings of societies. But this partiality for

an Africa that was as 'primitive' as possible and, what is more, was immobilized in the museum of the ethnological present, tended to strip the peoples of Africa of one of their most important dimensions: their historical development. Consequently, historical studies had a positive impact on functionalism by recalling that the present is by definition transient.

Their effects on the *study of religions* were also beneficial. At the outset, the prime concern in this field was with the religions that European influence was tending to supplant. This long-standing attitude can be traced back to the time of the Crusades. What chiefly interested students of Islam was not its internal developments, but rather the secret of its dynamism and the attitude of its chiefs and sects to the colonial power.

By contrast, in recent decades, more penetrating studies have been devoted to African syncretic and messianic religions that are to some extent offshoots of Christianity, and to their impact on anti-colonial rebellion and protest movements. More interest has also been taken in the internal reform of Islam and in 'animist' religion, the thinking behind which has been so neglected, although the secret societies associated with it played a leading role in the development of certain peoples.

In economic history, what is most striking about the studies carried out is the obstinacy their authors display in visualizing African economic spaces as being compartmentalized and static, with the only influences stemming from the 'modern' impact. Underlying most of these studies are the theories of economic growth and 'take-off' propounded by W. W. Rostow, whereby underemployed resources and factors of production have to be liberated, failing which only closed subsistence societies can exist. This concept runs completely contrary to the observed historical facts. From time immemorial, the African peoples have been linked together by complex complementary production and export patterns involving such commodities as salt, cattle, smoked fish, kola nuts, minerals and metals, which were instrumental in maintaining considerable trade flows between the different ecological and economic spaces. The historical dimension of economics will add significantly to this discipline's ability to grasp the realities of the African situation: for example, the stress laid by historians on the importance of trade in pre-colonial Africa has contributed to the theories of sociologists and economists.

One reason why African history has lagged behind in the West, compared with the history of the other continents, was the lack of professional historians who could have influenced their university colleagues. Historical works were produced by colonial administrators, missionaries and certain African religious figures or authors like Shaykh Musa Kamara of Senegal, and some research was carried out in institutes in Scandinavia and central and eastern Europe, but these proved insufficient to enhance the status of Africa's history. Until 1950 no university offered a concerted programme of specialization at postgraduate level and no university teacher anywhere was concerned exclusively with African history. Twenty years later, however, there were some 500 historians with doctorates in the speciality. This development was due to the favourable political and intellectual climate of the time.

In Africa, the emancipation movement that got under way in the 1940s gave an overwhelming boost to these studies, especially after the foundation of new universities from 1950 onwards. The French-speaking countries, which were for a long time tied to

the French system, tended to fall behind somewhat, but the lost ground was rapidly recovered, partly as a result of the contribution made by the two major Congresses of Black Writers and Artists held in Paris and Rome in 1956 and 1959.

The rapid strides made in Africa itself were matched by the developments in historical research conducted – in some cases over a long period – in a number of centres in other continents, such as the School of Oriental and African Studies of the University of London and the Ethnographic Institute in Leningrad, which undertook the publication of all known documentation for sub-Saharan Africa from the eleventh century onwards. At the Sorbonne in Paris, the first chairs of African history were created, in addition to which mention should be made of the work done by the École Pratique des Hautes Études. In Brazil and the Caribbean, however, it was only later that interest came to be taken in this field, in spite of the work of Price-Mars in Haiti and Nicolas Guillen in Cuba.

Interest was even slighter in the United States before the 1960s, and what interest existed was concentrated on North Africa, especially in the classical and colonial periods. Among Afro-Americans the group centred on W. E. B. Dubois had debated the theme of the rehabilitation of the continent. Earlier still, Carter G. Woodson had founded the *Journal of Negro History* in 1916 and W. L. Hansbury of Howard University had waged a passionate crusade to have African history included in the teaching programme of American universities.

The achievement of independence by some of the countries of North Africa and by Ghana before 1960 did not bring about any immediate change in this field. The situation in Southern Africa was even worse, since, in South Africa, history still meant the history of Europe and of the European minority in Africa. In Zimbabwe, in the early 1960s, there was a brief attempt to include reference to African history in historical studies, but the white minority's unilateral declaration of independence was suddenly to reverse that pattern.

In tropical Africa, the English-speaking countries were the first to attempt to strike a new balance between African and world history, by merging British history with European history and by becoming more responsive to the Islamic, Latin American and Asian worlds, thereby demonstrating that the return to the African fold was not synonymous with withdrawal.

In the French-speaking countries, history staffs came to be largely African only from 1970 onwards. As early as 1963, however, reformed history curricula were introduced in secondary schools, and this was immediately followed by the recasting of university history courses within the framework of the programme of the CAMES (Conseil Africain et Malgache pour l'Enseignement Supérieur).

Furthermore, *from about 1955*, two factors contributed to the promotion of African historical studies *in France and Great Britain*. These were the repatriation of colonial administrators, some of whom had engaged in at times very arduous fieldwork, and the Africanization of teaching staffs, which liberated a large number of European researchers, who returned to Europe, many to teaching posts or even chairs in universities. African history was thus given a special position in the universities of Bordeaux, Aix, Lyon and especially Paris, with its Centre d'Études Africaines, and likewise at the School of Oriental and African Studies in London and the universities of Birmingham, Sussex and Edinburgh.

In Eastern Europe, the teaching of African history has made significant progress. In particular, archaeologists from Czechoslovakia and Poland have worked in Guinea, and in the USSR African history is taught systematically at the Patrice Lumumba University.

In the United States, African history took a quantum leap forward between 1960 and 1970. In 1960, shortly after its foundation, the African Studies Association had among its members only twenty-one historians resident in the United States and Canada. In 1962, at the First International Congress of Africanists held in Accra, President Kwame Nkrumah spoke to some 800 participants in an opening address in which he outlined the responsibilities of historical studies for the new Africa. By 1970, the number of North American specialists in African history or archaeology had risen to about 350. Two contrary tendencies were instrumental in fostering this development. The first of these was the Afro-American community's firm belief that the history of Africa was the common heritage of all the African peoples and their descendants, wherever they might be. The second was the desire to integrate the long-unrecognized African component into the history of the world as a whole. Africa thus became another major culture area like south Asia or east Asia, and many history departments added a Third World history section to their existing American and European sections.

Nowadays, the history of the world is no longer synonymous with the history of Western civilization. In the longer run, the success of these developments will depend on the quality of the work done by African historians and other historians of Africa, and on the broadening of the other social sciences to the point where they take due account of the findings of African research before hazarding any generalization about human society.

4

Sources and specific techniques used in African history: a general outline

The historical cast of mind peculiar to man, regardless of his origins, works through historical criticism, which is essentially a technique for processing documents. Even so, sources first have to be established. As far as Africa is concerned, the existence of any such sources was long disputed. Nowadays, however, they are to be found in profusion in every field, whether it be geology, palaeontology, palaeobotany, the use of radio-activity to yield absolute chronological data, physical geography, sociological analysis, oral tradition, comparative linguistics, written documents, economics, population studies, and so on. The list is growing all the time, but the new qualitative factor is the combined use now being made of these mutually corroborative sources. This represents more than a mere technical contribution to the methodology of history in general. It is in the nature of a new theory of historical science, which requires historians to have a wide-ranging interdisciplinary background and to work in constant partnership with scholars in other fields.

First among these scholars are the *physicists*, on account of the use made of radioactive isotopes for taking measurements. This technique tends to cut short controversy over the age of the human remains identified by archaeology and palaeontology.[1]

Researchers in the earth sciences are also making a noteworthy contribution quite independent of all written documents. Physical geography, for instance, provides information on the patterns of human development. This is the case in Chad, where the relief features are briefly as follows: at the base, there is a central plain formed of the accumulated deposition of sediments and, at the top, plateaux of medium elevation. Between the two are slopes that have been scoured by erosion. Yet those slopes are more densely populated than the flood-threatened plains, and the plains in turn support a larger population than the denuded plateaux. Latitude also has its part to play, since population densities decline the further north one travels towards the desert. Farmers, fishermen and herders are packed into the southern area, where lake and river waters irrigate the soil. Thus human activity is ordered by the demands of the physical environment and history has also been shaped to conform to this pre-set scheme of things. Furthermore, the low- or medium-lying land has often been appropriated by invaders, who drove its autochthonous peoples into the barren highlands. The Fulbe,

1. On this subject, see Chapter 9, below.

for instance, pushed back the Bumi into the uninviting regions of the Adamawa and confined the Kiroi of northern Cameroon to the granite scree of the Madara massif. Yet these displaced peoples eventually adapted to the unrewarding soils to which they were relegated, whereas the conquerors had to contend with swarms of mosquitoes and with the havoc wrought by malaria and sleeping sickness in the humid areas that they took over. This example goes to show that the bare facts of geography can by no means account for everything. All the earth and life sciences have to be mobilized, if the true pattern is to be explained.

In the case of the remotest periods, where there can be no question of documentary sources and for which no oral traditions or anthropological data are available, archaeology and palaeobotanical methods come into their own. The pollen grains in a particular soil can be isolated by dissolving the soil sample in acid, which removes the silica and limestone and the organic humus, but leaves the pollens intact. These are then stained and mounted in gelatine, and counted to determine their density in the soil. It is possible to deduce from the density and nature of the pollens what type of vegetation covered the region and, by a study of the ground strata, to reconstitute the development of plant life or agricultural production through the agency of man or the climate. Diagnoses such as these have made it possible to trace back the history of the domestication of plants in Africa and their introduction or adoption.[2]

Remains of dogs, pigs, sheep and goats also offer a pointer to the beginnings of domestication. The use of the horse, which can be regarded as being one of the 'driving forces' of history, is recorded in Egypt at the time of the Hyksos invasion (1600 before the Christian era). Horses were used in Libya and Nubia in the early years of the first millennium before the Christian era, but only penetrated south of the Sahara in the 'Middle Ages', and at first only at the royal courts, as witnessed by Ibn Baṭṭūṭa's description of the court of the Emperor of Mali.

The dromedary, which can be recognized in a rock painting in the Chadian Sahara dating from as early as the third century before the Christian era, was first introduced into Egypt, where it was used for communication with the Red Sea. Roman troops probably took it to the Maghrib, where it was used by the Berbers, who migrated southwards to escape the clutches of the Roman administration. As a result, the substantial black populations of the Saharan oases were reduced to slavery or were driven even further south.

For the historian, therefore, any testimony, regardless of the science from which it is obtained, can become invaluable raw material; there is no distinction between prime sciences and auxiliary sciences. However, in spite of history's debt to the earth and life sciences, still more important contributions have been made by *the human and social sciences*, such as Egyptology, linguistics, oral tradition, economics and political science.

Egyptology is a source that has hitherto not been sufficiently tapped. This discipline involves both historical archaeology and the deciphering of texts through a command of the Egyptian language, which has come down to us in three different forms. The first of these is hieroglyphic writing, consisting of signs that fall into two main categories: word-signs or ideograms (the representation of a basket to denote the word 'basket', in

2. On this subject, see Chapter 27 below.

which the main phonetic components are *nb*) and sound-signs or phonograms (the representation of a basket only retains the phonetic value *nb* and serves to convey other words with the same phonetic value, such as the homonyms *nb* 'lord' and *nb* 'all'). The second form is hieratic writing, a cursive form of hieroglyphics, which appeared in about the third dynasty (2278–2423 before the Christian era). It always runs from right to left and was written with a calamus or reed-pen on sheets of papyrus or on pottery. Demotic writing, a simplification of hieratic, made its appearance at the time of the twenty-fifth dynasty (751–656 before the Christian era) and disappeared from use in the third century before the Christian era. It is related to the as yet undeciphered Meroitic script.

Reading a script is like embarking on a journey into the mental and emotional universe of a people. On that journey, African historians and linguists can take their bearings from examples closer to the present day, for Egyptian writing spread far into black Africa. The pictograms of the *Gicandi* graphic system used by the Kikuyu in Kenya bear a striking resemblance to Egyptian pictograms. The same is true of the Nsibidi pictograms of the Efik in southern Nigeria, and of the signs used in the Mende and Loma scripts of southern Sierra Leone and northern Liberia respectively. Although they are admittedly rather more remote, analogies can be detected between Egyptian forms and Dogon, Bambara and Bozo hieroglyphs and the writing of the Bamum of Cameroon.

What is more important still is the idea of the power exercised by writing over the lives of peoples and other beings that is found both in Egypt and further south in Africa. There is accordingly a time-span stretching from the Pharaohs, during which certain patterns of civilization were propagated without there ever having been a complete break.

Knowledge of Egyptian writing gives access to a rich literature that is highly interesting even for present-day Africans, with its funerary stelae, inscriptions on monuments, administrative documents, hymns, philosophical works, medical and mathematical treatises, and literary works (novels and tales). One example is the letter which the Pharaoh Nefer-Ka-Rê (Pepi II) wrote in about 2370 before the Christian era to Herkhuf, the leader of a trading expedition to the 'Land on the Edge of the World', which was probably the area of the African lakes. The fourth expedition in the series brought back a Pygmy for the Pharaoh. Another Egyptian text, *The Tale of the Castaway*, dating from the twentieth century before the Christian era, gives precise information about the life of sailors and economic relations between the Nile valley and the Red Sea. Queen Hatshepsut (1504–1483 before the Christian era) organized expeditions to the land of Punt, present-day Somalia, as recorded in the splendid bas-reliefs at Deir al-Bahri in Upper Egypt.

The introduction of ancient Egyptian as a subject in African universities would enable contact to be re-established with one of the most outstanding chapters of the African heritage. In fact the final report of the international symposium on 'The Peopling of Ancient Egypt and the Deciphering of the Meroitic Script', held in Cairo in 1974, is very explicit about this, when it states that: 'The Egyptian language could not be isolated from its African context and its origin could not be fully explained in terms of Semitic: it was thus quite normal to expect to find related languages in Africa.'

Ancient Egyptian should therefore no longer be classified among the 'Hamito-Semitic' or 'Afro-Asiatic' languages, as some authors have done. The aim of genetic

analysis should be to produce a scientific definition of a linguistic kinship which, at the present time, is perforce sensed only intuitively. This would eventually make it possible to identify the structural element common to the cultures of Pharaonic Egypt and the rest of Africa. This is the task awaiting historians and linguists.

Linguistics, especially if the comparative approach is used, is of considerable assistance to history, since it provides the justification for going beyond existing languages to describe a 'common dialectal language' which, although perhaps not a genuine ancestor, makes it possible to visualize the overall linguistic space common to several languages that are now apparently unrelated. This work has been performed for Indo-European languages and also for 'proto-Bantu' or 'Common Bantu'. One important underlying problem is obviously that of migrations. The problem is not concerned with tracing the movements of racial groups, for language is a cultural phenomenon rather than a racial one, but with detecting exchanges reflected and measured by linguistic transfers. It can be readily concluded from the Niger–Congo language family, for instance, that there were very ancient socio-cultural links between all the peoples situated between the Atlantic in the west and the Indian Ocean in the east, and as far south as the tip of South Africa.

Oral tradition, too, renders signal service to history, especially when it is the only source immediately available, as in the case of the Mbochi of the Congo and their chiefdoms. We learn from European chroniclers that the kings of Loango, in Angola, were buried in two separate cemeteries, one at Lubu and the other at Lwandjili, but they do not tell us why. However, the oral tradition of the Vili recounts that the transfer from one site to the other took place following a violent conflict between the royal court and the inhabitants of Lwandjili, and that this was responsible for the move to Lubu. In this case oral tradition provides the key to the explanation that was missing in the written sources. Similarly, the excavations carried out at Tegdaoust by J. Devisse and D. and S. Robert made use of medieval Arab chronicles, but also of the general oral tradition pertaining to the site.

African griots, of course, generally do not use a linear sequence based on a chronological scale, but proceed by building up separate 'tableaux' in which the different moments or epochs are presented in a disconnected manner, as if they were timeless scenarios, the essential factor being the significance of the roles acted out at any given time by the different protagonists against the background of a clearly defined system of values. This absolute history, as it were, can be said to be quite simply structural history.

The contribution made by *sociology and political science* should not be neglected. For instance, we may ask whether the notions of kingdom, nation, state, empire, democracy, political party, and so on, can be applied indiscriminately to Africa. The answer is that they certainly cannot. For example, let us consider what exactly is meant by the 'Kingdom' of Kongo. The people themselves use the expression *nsi a Kongo*, which means 'the country of the Kongo'. Frontiers are fluid and change with the pace of clan movements. Within that space, however, ethnic homogeneity (in other words, the same linguistic and cultural patterns) is essential. The king is the *mfumu* (the elder or the maternal uncle) of every family (*nzo*) and every matrilineal clan (*makanda*) recognizing common founder-ancestors (*bankulu mpangu*). Hence the king is the

supreme chief (*ntinu*) over a network of clans. His kingdom does not denote a state ruled by a king in the Western sense, which is in any case only one particular example of a transition to the nation-state (monarchy).

The Kingdom of Danxome in present-day Benin, on the other hand, can be compared more closely with the Western model. As Maurice Glélé has shown, in this case there was a permanent heartland with a central power structure consisting of the king, his ministers and the ministers' delegates. The king was the absolute sovereign with the power of life and death over his subjects (the *anato*, the men of the people), from among whom he recruited his *glesi* (farmers) for his lands, since the king was supreme owner of all property (*dokunno*). This power was exercised through subordinate territorial chiefdoms. Little by little, the Fon, Mahi, Alada, Savi, Juda, and so on were brought under the same administrative, military and economic rule through a process of political and cultural assimilation based on conquest. But even in so strictly controlled and dynamic an economy, the population still had its part to play through village palavers and chiefdoms.

There was a difference of structure, therefore, between the nineteenth-century nation-state of Danxome and the Kingdom of Kongo. In the former, the chiefdom was only an organ of decentralization and, as such, was a subsystem, whereas the Kongo chiefdom was the system itself.

If we take the term 'feudalism', it will be found that there is still some ambiguity. For medievalists with a legalistic bent, the feudal system is organized around the *fief*, owned by the lord, and around the relationships of loyalty, homage and dues linking the vassal to his lord. On the other hand, Marxists regard feudalism as being a mode of production midway between slavery and capitalism. Hence, feudalism, by their definition, is a particular type of production relation by which the feudal class dominates the serf class, which is tied to the land.

The question is, however, whether either of these concepts can be applied to pre-colonial African societies. The answer can only be given by conducting comparative social studies. The 'feudal' nature of the organization of the Bariba (Republic of Benin) has been highlighted primarily as a working hypothesis. The concept of granting a *fief* does not seem to exist in Africa, as it did in Europe. Only a political structure resting on specific socio-economic relationships can suggest a feudal-type organization.

In short, the utilization of combined sources makes it possible to unearth a new way of writing history from the subsoil of general methodology. This approach made it possible to show that the mound at Mdaga, in Chad, had been occupied almost without interruption for more than two thousand years, from the fifth century before the Christian era to the mid-nineteenth century, and thus brought the hitherto legendary Sao people into the limelight of authenticated history.

5 *Written sources before the fifteenth century*

If we rule out everything that is carved on stone or engraved on metal, we can confine the notion of written sources to what is drawn or printed in conventional signs on any kind of support, whether it be papyrus, parchment or paper. Examining such sources over so long a period and on so large a continent, where they find expression in such a variety of cultures and languages is a vast and complex undertaking. Some discussion of the general problems raised would probably be helpful before any attempt is made to draw up an inventory.

General problems

The field covered by this survey is both wide-ranging and compartmentalized, sometimes into specialized scientific domains, inasmuch as Egyptologists deal with the Pharaonic period, classicists with Ptolemaic Egypt and Roman North Africa, and Islamic scholars with Muslim North Africa. In black Africa, on the other hand, these different types of written source overlap, although a whole section of the continent was unfamiliar with written documents virtually until the sixteenth century of the Christian era. For some regions, the few written sources that do exist take on a much greater significance than they would in the Maghrib, for instance. This compartmentalization and its resulting distortions show that the sources are a reflection of the objective history of Africa which, in certain respects, is so varied and marked by contrasts. But the many intertwining factors suggest a comprehensive picture that we must try to piece together again to form a single unit.

The problem of analysis by periods

The first and most striking factor is that the nature of the written documents on the history of Africa tends to change from the fifteenth century of the Christian era onwards. Until that time, the sources consist of literary works from antiquity and subsequently the Middle Ages, in other words, conscious accounts written by people who were intent on handing down something of what they knew in the form of annals, chronicles, accounts of travels, and so on. Then, starting with the fifteenth century, the prime sources are archival documents, which were not originally produced to impart

information, but to ensure that a particular organizational system functioned effectively.

Moreover, whereas classical and Arabic documents predominate in the earlier period, from the fifteenth century of the Christian era onwards the sheer mass of European documents (Portuguese, Italian, Dutch, etc.) increasingly takes over and, as far as black Africa is concerned, there is likewise a significant increase in the number of autochthonous documents. Here again, the gradual shift in the nature and origin of the sources is a reflection of actual historical developments, since Mediterranean Africa of the fourteenth century and black Africa of the fifteenth were to witness the European annexation of the outer fringes of the continent. The Portuguese appeared off the coasts of black Africa in 1434. Hence the choice of the fifteenth century as the cut-off point can be justified, provided that it is not applied too rigidly.

In addition, from the standpoint of written documentation, this first period can be subdivided chronologically as follows:

1. from the Ancient Egyptian empire to the emergence of Islam in 622 of the Christian era;
2. the first Islamic age, from 622 to the mid-eleventh century;
3. the second Islamic age: from the eleventh to the fifteenth century.

In this instance, the choice of the eleventh century of the Christian era as a turning-point calls for some explanation. In fact, up to that date, Africa north of the Sahara was being organized on the Islamic model and was being integrated into the multi-continental empire of the 'Umayyad, Abbasid and Fatimid caliphates. The second phase, by contrast, saw the growth of centrifugual tendencies leading to an attitude of withdrawal. In the Maghrib, this was the time of the Almoravid Empire and the reconquest of autonomy by the Zirids, with its corollary, the Hilālī invasion. Egypt gradually moved away from trading with the Persian Gulf and turned towards the Red Sea, while south of the Sahara permanent relations were established with Islam and the political hegemonies of the Sahel came into being. Documents on Africa also became much more plentiful in the course of the eleventh century.

Ethno-cultural areas and types of sources

As far as written sources are concerned, it is easy to yield to the temptation of making a cursory division of the continent into the two areas north and south of the Sahara. However, a more searching examination reveals a less clear-cut distinction: from the standpoint of sources, the western and central Sudan lived to some extent in symbiosis with the Maghrib, drawn closer to the latter through its Islamic and historical literature than to the Bantu world. The question, then, is whether the Africa of the Mediterranean, the Sahara and the Sahel, encompassing Ethiopia, the Horn of Africa and the east coast down as far as Zanzibar, should be contrasted with another Africa – 'animistic', tropical, equatorial and southward-striking. It is true that this distinction is based on the criterion of exposure to Islamic influences, and the danger of such a summary division would be to overlook the fact that a large part of the north-eastern half of the

continent was only very sporadically penetrated by Arabic education, whether in terms of the area covered or the social categories involved. Moreover, this way of presenting things could lead to the somewhat hasty conclusion that the other part of Africa, which does not have written sources, cannot reconstruct its history or – worse still – did not experience any real historical movement.

Ethno-cultural areas

With due allowance for all these observations, it is possible to suggest the following breakdown from the standpoint of sources:

(a) Egypt and Nilotic Sudan;
(b) the Maghrib, including the northern fringe of the Sahara, such as Fezzān;
(c) the western and central Sudan, from the Atlantic to Lake Chad;
(d) Ethiopia, Eritrea, the Horn and the east coast;
(e) the rest of the continent, that is, from the Gulf of Guinea through the equatorial and central regions down as far as South Africa.

This structural pattern has the advantage of not being based exclusively on external criteria, although it does take them into account. However, it should not make us disregard the fact that the sources are confined to a few languages only, of certain limited types, that they do not always originate in the area with which they deal, and that they are often not contemporary with what they describe.

Typology of written sources

The *African languages* conveying the greatest mass of information are Ancient Egyptian, Berber, the Ethiopian languages, Coptic, Kiswahili, Hausa and Fulfulde. The most prolific, however, were the languages of non-African origin, such as Greek, Latin and Arabic, even if the last-mentioned has since become the national language of a number of African countries. Naturally, there are also Persian, Chinese and other languages. Chronologically, the first written sources are hieratic Egyptian papyri dating from the New Kingdom and perhaps as far back as the Pharaonic Middle Kingdom at the beginning of the second millennium before the Christian era, such as the papyrus known as *Instructions for King Merikere*. Then we have New Kingdom papyri and ostraca,[1] followed by sources in Greek and in Hebrew (the Bible); demotic Egyptian texts dating from the Ptolemaic period; Latin literature; Coptic texts in the Egyptian language, but with the Greek alphabet; and documents in Arabic, Chinese, Persian, Italian and Ethiopic, in which the oldest written account is from the thirteenth century of the Christian era.

Generically, the material can be divided into narrative sources, which originally predominated, and archival sources, which made their appearance in the Maghrib from the twelfth century of the Christian era onwards in the form of Almohad items, for instance. These sources became more plentiful in Egypt, under the Mamluks, for example, from the twelfth to the fifteenth century, and in Ethiopia, where they are

1. The papyrus is a plant which provided the first medium for writing; the ostracon (plural ostraca) is a limestone fragment.

conserved in monastery manuscript collections. Elsewhere, archives had not yet come into being, although *mahrams*, or letters patent[2] issued by the kings in eleventh-century Bornu, still exist.

The sources fall into two categories: narrative sources, such as chronicles, annals, accounts of travels, legal and religious works and literary works in the strict sense; and archival sources comprising (a) private documents, such as letters and business correspondence; (b) official documents, consisting of administrative correspondence and legislative and fiscal texts; and (c) legal and religious documents.

The narrative sources, beginning with Homer in the eighth century before the Christian era, include some of the master works of the human intellect in which facts about Africa are built into theories of universal import, as in the writings of Herodotus, Polybius, Ptolemy, St Augustine, Mas'ūdī and Ibn Khaldūn. The archival documentation for Africa, which was originally confined to Egypt, is the oldest in the world: the first papyri of the Nile valley predate by some twenty centuries their counterparts in Europe (the Ravenna papyri). From the fourteenth century onwards, there was a considerable increase in the number of archival items, which were initially included in encyclopaedic compilations before regular repositories of archives were created.

Inventory by periods

Pre-Islamic antiquity (from the origins to + 622)

The main sources for this period are archaeological, but the first written documents were already starting to appear in Egypt, Nubia and East Africa.

Egypt, Nubia, East Africa

The writing on papyri or ostraca is either in hieroglyphs (which are more in the nature of carvings) or in hieratic signs forming a cursive script more suited to drawing on a surface. These papyri and ostraca deal with both governmental matters and private life, and include administrative and legal reports, accountancy records, private letters, and stories and novels.

The first millennium before the Christian era is particularly important. For instance, the *Book of Kings* in the Old Testament of the Bible provides valuable information on the twenty-second Pharaonic dynasty (950 before the Christian era) and on the subsequent period up to the Persian domination (525 before the Christian era). From the first Saite dynasty in Egypt (800 before the Christian era), Greek texts start to enlighten us about Africa through authors like Menander and Herodotus. By that time, papyri were written in Greek or demotic Egyptian, which was an even more cursive script than the hieratic.

Between the establishment of the Ptolemies in Egypt at the end of the fourth century before the Christian era and the Arab Conquest in 639 of the Christian era, there elapsed a period of one thousand years. This period was primarily dominated by Greek sources, with authors like Polybius, Strabo and Diodorus Siculus, and the Roman Pliny the

2. Letters by which privileges are assigned to a person or a group.

Elder, whose *Natural History* is of uneven quality, but teems with interesting facts which, among other things, give us our first glimpse of the Ethiopian world.

The first hundred years following the emergence of Christianity are rich in documentary sources. Egypt became one of the leading centres of Hellenistic culture and produced historians, geographers, philosophers and Fathers of the Church. Its integration into the Roman Empire, and subsequently into that of Byzantium, made it the subject of a number of archival texts (such as the Theodosian Code or Justinian's *Novellae*) or narrative accounts, such as Ptolemy's Geography (*c.*140 of the Christian era), *The Periplus of the Erythraean Sea*, an anonymous work composed in about 230, and the *Topographica Christiana* of Cosmas Indicopleustes (*c.*535). All these works are fundamental for the information they provide about Ethiopia, the Horn and the east coast of Africa.

Ancient Maghrib

The written history of the ancient Maghrib is bound up with the conflict between Carthage and Rome. Punic history before Hannibal is dependent on archaeology and epigraphy. The *Periplus of Hanno*, which speaks of the north-western coasts of Africa, is a forgery. Due consideration has to be given, however, to the notices of Juba II, which Pliny the Elder included in his *Natural History*. The bulk of the information available on the Maghrib in the Carthaginian, Roman, Vandal and Byzantine phases is to be found in the works of historians or geographers writing in Greek or Latin. Initially, these writers were foreigners, but they were gradually superseded by autochthonous authors.

From − 200 to + 100, we find such distinguished eye-witnesses as Polybius, Strabo, Diodorus Siculus, Sallust, Livy, Tacitus, Plutarch and Ptolemy. Some of these authors were more concerned with producing compilations of previous data, but others provide original and indeed unique pieces of information. Polybius was an intimate of the Scipios and is said to have been present at the siege of Carthage in 146 before the Christian era. In his *Bellum Jugurthinum*, Sallust gives us a remarkable description of the Berber kingdoms, while Caesar, in his *Bellum Civile*, is both a protagonist and a writer of history. Polybius, who was born in about − 200, is the outstanding figure of the period. After his departure from Hellenistic Egypt, his sixteen years of exile in Rome, where his forced residence was made somewhat easier by the friendship of the Scipios, enabled him to gain an all-embracing view of the Mediterranean world. This was given an added dimension by his insatiable curiosity and exceptional insight. Unfortunately, out of the forty books forming the *Pragmateia*, only six have come down to us. Had that not been the case, we might have learnt more about the fleet of ships which Scipio Aemilianus is said to have offered Polybius so that he could explore the Atlantic coast of Africa.

After the first century of the Christian era, which was the period corresponding to the zenith and subsequent decline of the Roman Empire, literary sources became less frequent and are virtually confined to Christian writings, although these include such outstanding figures as St Cyprian and St Augustine (+ 354–430). However, the religious commitment of these Fathers of the Church should prompt us to treat with caution instances where they engage in controversy over contemporaneous historical events, as when St Augustine formally attacks the Donatist movement. The writings of

the leading Fathers of the Church have been brought together in such monumental collections as the Berlin and Vienna Corpuses and the compilations of Migne.

The Vandal period in North Africa, followed by the Byzantine reconquest and occupation, has come down to us through the outstanding works of a most discerning author, Procopius, whose *De Bello Vandalico* is the fundamental source on that troubled period.

Saharan and Western Africa

With the navigational techniques of the time, the furthest the ancients were able to go beyond the southernmost part of Morocco was to Cape Juby and the latitude of the Canary Islands. The *Periplus of Hanno* is therefore largely a spurious concoction. On the other hand, snippets of information on black Africa filter through the writings of a number of authors. Herodotus speaks of the silent trade that the Carthaginians carried on in southern Morocco, where they exchanged the craft products of the Maghrib for gold dust: they merely laid out their wares, sized them up and bartered them, without so much as a word being spoken. The Continuer of the Pseudo-Scylax provides information on the relations between the Carthaginians and the Libyan Berbers. Even so, it is once again in Polybius that we find the essential facts, such as the very first written place names for black Africa. However, since he stops at Cape Juby, his information has to be supplemented by the notices of Juba II collected by Pliny, Strabo and Diodorus Siculus.

Finally, in the second century of the Christian era, the Alexandrian geographer Ptolemy, in his fundamental synoptic *Geography*, records the most thoroughgoing knowledge antiquity possessed of the contours of Africa. His map of 'Inner Libya', for which he was able to draw on the information obtained by the Roman army in its punitive expeditions beyond the frontiers (*limes*) of the empire, contains some names that have survived to the present day, such as Mauretania, Libya, Garamantes, Numidians, Niger, and so on. It is true that some of the errors on this map, especially regarding black Africa, which remains a peripheral feature, persisted until the nineteenth century of the Christian era, as in the case of the supposed course of the Niger. All in all, however, it made a decisive contribution to African historical knowledge.

The first Islamic age (*c.* + 650–1050)

The Arab Conquest and the establishment of the Caliphate unified the previously separate politico-cultural domains of the Persian and Byzantine Empires. An empire stretching from the Atlantic seaboard to the far reaches of Asia was accordingly created, with the intermingling of peoples that had until then been unaware of each other's existence. This accounts for the existence of fresh sources of information, especially on black Africa, although it was still on the fringes in relation to the hub of the empire. It also explains the imprecise, disjointed and at times legend-like nature of the information. One conspicuous feature is that, apart from the sources that continue to be confined to Egypt, such as papyri, archival documents and Fatimid items, almost all the information from that time onwards is common to the whole of Africa. It can accordingly be classified by types rather than by regions.

Chronicles

We have very few chronicles before the ninth century of the Christian era, although there is one exception that was virtually unknown until quite recently. This is the *Ta'rīkh* of Khalīfa b. Khayyāt, one of the oldest Arabic annals, which contains essential information on the conquest of the Maghrib. It is also important to note that al-Tabarī reproduces in his *Ta'rīkh* one of the oldest Arabic accounts of the black world, in the shape of the testimony of the historiographer 'Umar b. Shabba; this relates to the revolt of the '*Sudan*' at Medina in 145 AH/ + 762, and bears witness to the considerable presence of Africans at the height of the period. Mention may also be made of a collection of legal traditions compiled by Ibn 'Abd al-Ḥakam, as these also contain historical information.

After a century of silence, there appeared, in the mid-tenth century, the *Kitāb Wulāt Misr wa Qudhatuha* of Kindī, which can be likened to a chronicle and is of the utmost significance for knowledge of Egypt and the Maghrib. Likewise of the tenth century is the Ḳāḍī Nu'man's *Iftitah al-Da'wa*, a work fundamental for learning about the beginnings of the Fatimid movement.

However, all these chronicles touching on black Africa have to be handled with considerable caution and critical scrutiny, and need to be compared with the Islamic writings of the Middle and Near East.

Geographical sources

These sources are numerous and important from the ninth century of the Christian era onwards and appear in the form of map collections, like the *Ṣūrat al-Ardh*, with illustrations by Khwarīzmī, administrative geographies, 'itineraries-and-countries' (Masalik), or accounts of travels that are annotated to varying degrees. They are a reflection of the clear determination to encompass the whole of the known Islamic world, and that is why they represent first-class sources on black Africa during this period.

The exhaustive list compiled by Kubbel and Matveiev bears witness to their value. But, here again, a strictly critical approach has to be taken in determining how much is compilation and how much is fiction. Moreover, it is important to view them in the context of the methodology and idiosyncracies of the Arab writers of the period and, above all, within the context of African history as recovered from other sources, so as not to end up with a piecemeal and prejudiced picture based on Arabic and foreign chronicles alone.

Among this mass of documents, mention can be made of the *Ta'rīkh* and *Buldān* of al-Biruni Ya'ḳūbī, which tell of Ethiopia, Nubia, the Sudan, the Beja, Zandj and the Zaghawa of Kanem. Even more detailed are the *Masalik* of Ibn Hawḳal, who visited Nubia and the western Sudan and gives a description of trans-Saharan trade. Lastly, Mas'ūdī's *Fields of Gold* (+ 965) teems with facts about the east coast of the continent.

Legal and religious sources

The legal treatises and hagiographical works of *Tabaqāt* are a mine of information on the Maghrib. The *Chronicle on the imams of Tahert* by Ibn al-Ṣaghīr, dating from the early tenth century of the Christian era, sheds light on the trade links between this Ibadite

community and Gao and, generally speaking, on all the commerce across the Sahara, provided the allusions these works contain are identified and treated with caution.

The second Islamic age (+ 1050–1450)

The most notable feature of this period is the variety and quality of the information it provides. This emanates from archival sources, which, although still less numerous than literary works, are none the less important. The chroniclers produce works of the highest order, both for their observation of contemporary events and for the reproduction of ancient sources that have now been lost. As a result of the external sources available and of the appearance of Ethiopian manuscripts and new African documents, knowledge of black Africa reaches its peak.

Archival sources

These sources are to be found only in Egypt and the Maghrib. Most of the documents in the Cairo Geniza belong to the Fatimid era, but a small number relate to the Mamluk period. They consist of a mixture of family papers and business correspondence, reflecting the preoccupations of the Egyptian Jewish community. These documents are undated and historians have to handle them with care, but they are nevertheless very interesting on account of the considerable amount of information they contain. Mention should also be made of the private archives and Waqf records preserved in the Cairo Registry.

European documents – mostly treaties and business letters, which shed light on the economic and social sector – have also been preserved in a number of cities in Italy and Spain.

Strictly speaking, there are no state archives for this period, but a number of official Almoravid and Almohad documents give a picture of the prevailing ideology in the two empires and, in A. Laroui's opinion (1970), provide an outsider's view of religious and political developments. At a later period in Egypt, we come across historical and legal encyclopaedias composed of a large number of official documents relating to the country's fiscal and institutional structures. Among documents of the same type, mention should be made of al-Maḳrīzī's works, especially the priceless *Ḳitāb* of the fifteenth century, which deals not only with Islamic Egypt, but also with Nubia, the Sudan and Ethiopia.

Narrative sources

Chronicles

After the twelfth century of the Christian era, during which we find virtually nothing, the thirteenth and fourteenth centuries offer us a whole cohort of talented writers who not only bear witness to the events of their own time, but endeavour to synthesize the events of past centuries. Nuwayrī, for example, deals in his writings with the Mamluks as well as with the conquest of the Maghrib; Ibn al-ʿIdhārī, who is as important for the whole Ifrīḳiya past as for the Almohads; and Ibn Ḵhaldūn, the supreme genius, produced the all-embracing survey contained in the *Ḳitāb al-ʿIbar*.

Geography

The quality of the works tends to vary. In his *Book of Roger* (+ 1154) al-Idrīsī gives us a jumbled mixture of facts about Ethiopia and West Africa. The *Geography* of Ibn Saʿīd al-Gharnātī relies on al-Idrīsī as his source, but provides some additional facts on the Sudan. There are also a number of minor, but useful authors, such as al-Zuhrī (twelfth century of the Christian era), Yāḳūt (fourteenth century), al-Baghdadī and al-Himyarī. Three names stand out above the crowd, however: these are al-Bakrī (eleventh century), al-ʿUmarī (fourteenth century) and Ibn Baṭṭūṭa. Al-Bakrī's *Masālik wa' l Mamālik* represents the high point of our knowledge of the geography of the Maghrib and the Sudan, even though the author himself never crossed the Sahara.

Al-ʿUmarī's *Masālik al-ʿAbṣār* is the testimony of an observer of the highest calibre as regards the internal organization of the Empire of Mali and its relations with Egypt and Islam. This work sheds light on the transition to state-like structures in the Sudan and on the process of Islamization. Whereas, three centuries earlier, al-Bakrī highlighted the gold trade and links with the Maghrib, al-ʿUmarī shows us the shift towards links with Egypt.

Finally, Ibn Baṭṭūṭa, an inveterate traveller through the continent, offers the priceless advantage of having witnessed at first hand life as it really was in the Sudan and the Maghrib. Every observation he made at the court of Mali, for example, and throughout his wanderings in the Sahel is worth its weight in gold. His chapter on 'what is good and bad about the black peoples' is a doubly valuable historical document, in that it enables us to gauge the reactions of an inhabitant of the Maghrib to the black world of the time.

Sources of religious and literary inspiration

The most noteworthy sources of this type are the works of *Tabaḳāt* and of Sunnite, Khāridjite, Maraboutic and even Coptic Christian hagiographers, as well as manuscripts of Ethiopian churches. They enable us to catch a glimpse of how both religious sensibility and social patterns were developing, as in Māliki's *Riyadh*, for example. Khāridjite sources are very important for the whole Saharan contact zone between the Maghrib and the Sudan. The literary sources are plentiful, but almost exclusively concerned with the Maghrib and Egypt. One of the key works is Safadi's dictionary *al-Wafibi-l-Wafayat*.

Conclusion

The period up to the threshold of the fifteenth century of the Christian era is not as poor in written sources as might be thought. It is true that Egypt, and subsequently the Maghrib, are at a distinct advantage. Yet even for the other regions, the documentation increases in volume and improves in quality as we move on from Herodotus to Ibn Khaldūn and Ibn Baṭṭūṭa, since it graduates from mere notes on place-names to basic structural history. Arabic sources in particular, although of external origin, transcend the undeniable social and cultural differences and mark the beginnings of a new and fuller trans-Saharan solidarity harking back to that of Neolithic times.

6 *Written sources from the fifteenth century onwards*

The far-reaching changes that took place in the world, and especially in Africa, from the fifteenth century of the Christian era onwards, were responsible for a significant shift in the character, provenance and volume of written source materials. The new trends emerging can be summarized as follows.

First, in addition to the growing number of narrative sources in the form of chronicles, descriptive accounts, and so on, we find a marked increase in primary source material emanating from private and official archives. This expanding mass of documentation is a boon to the historian, but also a problem, since it cannot readily be marshalled to produce a comprehensive view of things.

Moreover, we find a sharp decrease in the volume of Arabic narrative sources for Africa south of the Sahara. What is most striking here is the fact that autochthonous authors started to write about their own history in Arabic, notably in the Sudan and on the east coast. These same Africans then went on to write in their own languages, mainly using first the Arabic script and later the Latin alphabet, but sometimes using writing developed by Africans themselves. Eventually, they wrote works in European languages, and there was a considerable increase in the number of documents of this type in the course of the nineteenth century.

There was continuity, too, in some regions, such as Egypt, the Maghrib and Ethiopia, where the age-old traditions of producing written documents were kept alive and even resuscitated in the case of the Maghrib.

This proliferation of written works made it possible to discover increasingly large areas of the continent as the process developed inland from the coast, slowly at first and then more rapidly, especially from the eighteenth century onwards. This is particularly true of the regions of Senegambia, the Niger delta and Benin, and the Kingdom of Kongo and Angola, but it also applies to the areas on either side of the Zambezi as far up as the Mwene Mutapa Empire, and to the south-west coast and Madagascar. On the whole, though, the Atlantic coast is better provided with written documents than the eastern seaboard.

If we also bear in mind the influence of the Sudanese historiographical school, which spread southwards, at least as far as the forest, we see that vast areas of the continent were covered by written sources and only very few regions remained untouched by this movement until the late nineteenth century. For this reason it is preferable to discuss the

question region by region, having regard to the uneven distribution of the source material in time and in terms of its origin, nature and language.

North Africa and Ethiopia

North Africa

The chronicler tradition lived on in this region, but did not produce any outstandingly talented figures comparable to those of past centuries. In particular, there were no noteworthy disciples of Ibn Khaldūn to carry on his thinking.

The changes during the period with which we are dealing primarily concern archival documents and European accounts. The Ottoman archives, dating back to the beginning of the sixteenth century of the Christian era, are in no way inferior to the richest archives in Europe. They cover countries like Egypt, Tripolitania, Tunisia and Algeria, which had been incorporated into the Ottoman Empire. Morocco never lost its independence and has a remarkably full collection of historical materials of its own, most of which deal with government and administration; prior to the nineteenth century, there is little material on economic and socio-cultural activities, probably because private archives are virtually non-existent.

The striking fact about Arabic narrative sources is their decline in both quantity and quality, except in the case of Morocco, where the two Sherifian dynasties are the subject of detailed histories. These include, for example, the twenty-volume *Ma'sul* by Mokhtar Sussi and the work of one of the greatest Moroccan historians, al-Zayyani (who died in + 1833), as well as that of al-Nasiri al-Slawi (who died in + 1897), whose general history of the country uses an ingenious combination of traditional and modern methods. We are also indebted to him for a geographical work providing a wealth of information on social and economic life.

In Algeria, there are anonymous Arabic and Turkish histories of Aruj and Khayruddin Barbarossa, and a military history by Muḥammad al-Tilimsani. Tunisian history is largely dependent on a series of annals, ranging from those written by al-Zarkashi in the sixteenth century to the nineteenth-century work of Maqdish al-Safaqusi. A history of Tripoli was written by Muḥammad Ghalbun in the eighteenth century, while Ibadite chronicles and biographies, like that of al-Shammakhi in the sixteenth century, contain valuable information about the Sahara and the Sudan.

For the history of Ottoman Egypt, two great names stand out: Ibn Iyas, in the sixteenth century, whose work is extraordinarily rich in detail; and al-Jabarti, in the nineteenth century, who chronicles the crucial period of the last days of Ottoman domination, the Napoleonic occupation and the rise of Muḥammad 'Alī.

During this period, there was a substantial increase in the number of accounts by European travellers and contemporary witnesses. Although these accounts are biased on account of the anti-Islamic attitude of their authors, they contain a wealth of observations and unprecedented insights. Such travellers included merchants and even captives, as in the case of Miguel Cervantes. The monumental 24-volume *Description de l'Egypte* compiled by the scientists on Napoleon's expedition is an inexhaustible mine of information about Egypt as they found it on the threshold of a new epoch. In short, by the

nineteenth century, the sources for the history of North Africa were as abundant as those for any European country.

Mauritania and the eastern Sudan should also be included in this geographical area. In the case of Mauritania, the material available includes biographies, genealogies, local chronicles in manuscript form and European accounts of the coastal and river regions from the seventeenth century onwards. Hitherto unknown documents have also been retrieved through the researches of Mukhtar wuld Hamidun. Mention must likewise be made of the early twentieth-century encyclopaedia of Moorish history and culture, the *Al-Wasit*, by Aḥmad al-Shinqiti. Many of these sources, and especially the chronicles of Nema and Walata, throw valuable light on the adjoining western Sudan.

In the eastern Sudan, historiography seems to have started with the *Funj Chronicle*, a transcription of the oral tradition relating to the Funj Sultanate in the nineteenth century. Another noteworthy source consists of the genealogies of various Arab groups and the great biographical dictionary of Sudanese scholars, the *Tabaqat*, by Wad Dayfallah, which is packed with information about social, cultural and religious life in the Funj kingdom.

The earliest known visitor to the region was David Reubeni in the sixteenth century. He was subsequently followed by other acute observers of the Sudanese scene, such as James Bruce in the eighteenth century and al-Tunisi in the nineteenth century, who pressed on as far as Dārfūr. Eventually, in the first half of the nineteenth century, Sudan was visited by particularly large numbers of foreign travellers. In addition, indirect sources of information on the region are to be found in the Cairo archives and, as far as the last twenty years of the nineteenth century are concerned, in the outstanding records of the Mahdiyya in Khartoum.

Ethiopia

The main feature of the situation in Ethiopia is the continuity of external and domestic sources alike; indeed, for certain crucial periods, opposing written sources are available. For example, the Muslim invasion of Aḥmed Gran in the first half of the sixteenth century is covered from the Ethiopian standpoint by the *Royal Chronicle* (in Ge'ez) of the Emperor Lebna Dengel, and from the Muslim side by the chronicle written by Gran's scribe, Arab-Faqih, to say nothing of the various first-hand accounts left by the Portuguese.

From the thirteenth century onwards, the Ethiopian royal chronicles provide a record of the imperial reigns, continuing into the twentieth century with the Amharic chronicle of the Emperor Menelik II. In addition to these major historiographical works, many other materials exist, including histories of monasteries, lives of saints, religious disputations, poetry and legends. The *History of the Galla*, written in the sixteenth century by the monk Bahrey, who was an eye-witness of the Galla invasion of Ethiopia, is a unique document, and we owe one of the first general histories of Ethiopia to Hiob Ludolf, the founder of Ethiopian studies in Europe. Indeed, Ethiopia – Prester John's Christian kingdom – aroused keen interest among Europeans from the time of the Crusades, and this accounts for the exceptional number of foreign visitors, missionaries, diplomats, soldiers, merchants and adventurers among whom were to be found Russians, Czechs, Swedes and Armenians, as well as nationals of the leading European powers.

From the second half of the nineteenth century onwards, the most important historical

material is furnished by documents in the archives of those European powers, as well as in those of Addis Ababa and even Khartoum.

South Africa

Here again, but for quite different reasons, written source materials are abundant. A distinction can be made between two main periods. Before the nineteenth century, sources are almost exclusively of foreign origin, are fewer in number and deal chiefly with areas along the seaboard. From the nineteenth century onwards, however, sources become more plentiful and more autochthonous in character. The earliest sources date back to the sixteenth and seventeenth centuries and consist of accounts by Dutch sailors and settlers in the Cape region. Then, from the second half of the eighteenth century onwards, people started penetrating into the interior and this gave rise to works like that of Peter Kolb on the Cape Khoi. A large number of reports have been collected, as in the compilations of l'Honoré Naber. Missionary archives, on the other hand, give a more intimate view of African societies. The work of John Philip, who devoted his life to defending African rights, is particularly noteworthy in that respect.

In the nineteenth century, the source materials become increasingly specific as commercial and missionary activities continued to expand. The San, Nama and Herero of Namibia, for example, are depicted as if they were objects of curiosity. North of the Orange river, missionaries and explorers, who had learnt African languages, were responsible for producing better documented works such as those by Robert Moffat and David Livingstone, while G. M. Theal published a collection of material on Lesotho. At the same time, the Africans themselves started to express their views directly, as in the case of the letters written by King Moshesh. Although the quality varies, there are a large number of foreign accounts of the interior areas of Natal and Zululand, including such works as A. T. Bryant's collection of Zulu oral traditions.

However, the main feature during this period is the direct involvement, on a growing scale, of the Africans themselves as active proponents and witnesses of their own history. African views can be seen voiced in correspondence, newspapers, formal complaints and legal documents, and in the first attempts by Africans to write historical narratives. Prime examples of this trend are the voluminous correspondence exchanged with the colonial authorities by African chiefs such as Dingaan, Cetshwayo, Mzilikazi, Lobengula, and others, and such items as the Ancestral Laws of the Rehoboth Community and the *Diary* of Hendrik Witbooi, both of which were written in Afrikaans.

From the end of the nineteenth century onwards came the publication of the first African-language newspapers, in which criticism was deliberately levelled at the dominant system. For example, the weekly *Isidigimi* (1870–80) was the mouthpiece for the first proto-nationalists like Tiyo Soga and *Imbo Zabantsundu* (The Voice of Black People) started publication in 1884. Mgnoki, an African resistance fighter in the Zulu war of 1879, who died in 1924, published his memoirs in the United States. However, it was not until the twentieth century that the first histories written by Africans themselves appeared. Virtually all the histories prior to that time were monologues delivered by the white community, in which a mere few pages of ethnography were devoted to the black

peoples by way of introduction to what was regarded as being the true history of South Africa! Full use must therefore be made of the very few African testimonies that exist, if the authentic history of the region is to be written.

External narrative sources

Here the major factor is the spectacular decline in Arabic sources as compared with those from other origins.

In Arabic and other Oriental languages

Leo Africanus wrote in Italian, but it was as an Arab and Muslim that he undertook his journeys in the western and central Sudan at the beginning of the sixteenth century of the Christian era. Although his description of Africa is not free from mistakes, for three centuries it was the only reference Europe had for the interior of the continent.

The nautical works of Aḥmad Ibn Madjid, the pilot who guided Vasco da Gama from Malindi to India, are also an important early sixteenth-century source. In addition to plotting the coastal topography and charting sea routes, he voiced very strong views about the activities of the Portuguese in the Indian Ocean. Two key works on East Africa are the *Chronicle of the Fortress of Aden* by Abu Makhrama (sixteenth century) and the *History of the Imams and Sayyids of Oman* by Salil ibn Raziq (nineteenth century). South of the Sahara, it was not until the nineteenth century that an Arabic volume of some value appeared under the title of *Report on the Sudan*, by al-Tunisi, who visited Wadai.

Several Moroccan historians recorded observations on the Songhay Empire and the countries bordering the middle reaches of the Niger. A large number of previously unknown documents have been discovered in Moroccan libraries, and it is likely that other documents of the same type exist in Persian, in Turkish or in Indian languages.

In the nineteenth century, an Azerbaijani scholar described his journey through the Horn of Africa and the Maghrib in a book entitled *The Garden of Travels*. Much earlier, however, Armenians had taken an interest in exploring the continent, and at the end of the seventeenth century two Armenian priests embarked on a journey that was to take them from Ethiopia to Morocco, through Nubia, the Lake Chad region and the western Sudan. One of them, Avatik Bagdasarian, left an account of their travels. We are also indebted to another Armenian, Warga, for an interesting account of a journey he undertook in 1821: starting out from North Africa, he crossed the Sahara and emerged on the coast of present-day Ghana. Other documents in Armenian and Georgian exist in the libraries and archives of those Soviet republics.

In European languages

It is impossible to enumerate, even in summary form, the enormous volume of European works on Africa that appeared during this period; it seems preferable, therefore, to attempt a general evaluation of the scope and value of the literature.

From the standpoint of geographical coverage, at the end of the sixteenth century European knowledge did not really extend beyond the African seaboard, the kingdoms of the ancient Kongo and Angola, and the countries along the Zambezi. In the

following two centuries, attention was primarily devoted to studying the coastal peoples more closely at the time of the slave trade and with that purpose in mind. Then, at the end of the eighteenth century, there started the advancing movement that was to culminate in the 'scramble for Africa'.

In terms of national representation, the sixteenth century can be said to have been predominantly Portuguese; the seventeenth Dutch, French and British; the eighteenth primarily British and French; and the nineteenth British, French and German. However, all the other countries that are now industrialized were also engaged in trade and indulged their curiosity about Africa, especially the Italians and Danes, as well as nationals from countries like the United States and Brazil. In evaluating the literature all these people produced, it is important to take account of their nationalities and the changing attitudes of Europeans towards Africans.

Although it is a gross over-simplification, the Portuguese writers can be said to have been more motivated by Christian prejudices than the British, and the Dutch were generally regarded as being more objective. But European thought itself had plainly evolved to a significant degree between the sixteenth century, when the Portuguese chroniclers were writing, and the eighteenth century, when the Dutch scholars were at work. This does not necessarily mean that the picture formed of black societies became any more objective with the passage of time. In many respects, the converse was true. In the nineteenth century, for example, at the time of Burton and Stanley, the pseudo-scientific notion of the superiority of the white race was widespread and European attitudes were likewise heavily distorted during the slave trade, but the demands of that trade itself were such that close attention had to be paid to the economic activities of Africans and to their habits and systems of government, and this is why such sources are particularly valuable.

Moreover, due allowance had to be made for the differing interests of the people involved in the take-over of Africa. As a rule, traveller's tales were written by pioneers or adventurers who did not wish to disappoint their readers' thirst for the exotic and who accordingly tended to overstress the more unusual aspects and the dangers they had succeeded in overcoming through their own heroism, using racy language to describe 'barbarous' customs.

The first missionaries, on the other hand, took a close interest in African religions, all the better to destroy and supersede them. Even so, the fact that they needed to have a command of African languages placed them in a better position to understand the social framework, whose development they sometimes illustrated by compiling collections of oral traditions. Explorers tended to be specialists in the natural sciences and interested mainly in solving the great geographical enigmas still outstanding at the time. Hence, apart from the famous exceptions like Heinrich Barth and Mungo Park, they were not particularly interested in the social life of the peoples they met on their travels. Even so, histories of African peoples or states were written by Europeans from the eighteenth century onwards.

Some of the more positive aspects of these European narrative sources are worth stressing. In the first place, they make a considerable contribution to the chronological framework, which is the weak point of oral tradition. An explorer's precise dating of a meeting with a monarch may make it possible to reconstitute the chronological pattern

underlying the history of one or more peoples, although, in some instances, Europeans have been instrumental in perpetuating unfortunate errors as a result of their interpretation of certain traditions that were noted down in too great a hurry.

The narrative literature is also of fundamental importance for economic history. The Europeans needed objective reports on trade routes, markets, commodities and prices, natural resources, craft production, and so on. In this regard, Binger's reports are a model of their kind. However, there are certainly some instances where hazardous extrapolations are made, possibly to enhance the importance of a particular journey.

The Europeans were particularly well placed to describe so-called 'manners and customs' such as ritual practices, production techniques, war strategies and tactics, and so on, although they often looked at things superficially, from the outside. It was only with time that they came to realize the existence of the complicated pattern of relationships and mutual obligations in the internal structure and dynamics of African society.

Internal narrative sources

The outstanding feature during this period was the appearance of works written by Africans from south of the Sahara, first in Arabic and subsequently in European languages. This historiographical tradition seems to have arisen simultaneously, on the southern edges of the Sahara, in the Sahel and on the Indian Ocean seaboard.

The first of the three famous Sudanese chronicles is the *Ta'rīkh al-fattāsh*, the work of three generations of the Kati family from Jenne, which covers the history of the Songhay and adjoining nations up to the Moroccan invasion in + 1591. The more extensive and detailed *Ta'rīkh al-Sūdān* was written by the Timbuktu historian, al-Sa'dī and covers the same period, continuing up to + 1655. Both works are by accomplished scholars with a wide cultural background and a profound knowledge of contemporary events. The most significant consideration, however, is that they represent an authentic insider's view of things, even if that view is clearly affected by Islam.

We have a very detailed anonymous eighteenth-century history of the Moroccan pashas of Timbuktu (+ 1591–1751), while an earlier important source is the biographical dictionary of the learned men of the western Sudan compiled by the famous scholar Aḥmad Bābā, who lived in Timbuktu and died in + 1627. The *Ta'rīkh Say*, by Ibn Adwar, the date of which is not certain, appears to be a transcription of an oral tradition.

Between the Sahel and the tropical forest, scholars produced an increasing number of works devoted to local chronicles, clan genealogies, biographies and religious issues. One remarkable example is the *Kitāb al-Ghunja*, which traces back the development of the Gonja kingdom. Most of these works are in Arabic, although a significant number were written in Ajami (that is, in African languages such as Hausa and Dyula, but in Arabic script). A similar situation existed in the Fulfulde-speaking regions, especially the Futa Toro and Futa Jallon. A large number of chronicles in Fulfulde have been brought to the Gilbert Vieillard collection at the IFAN in Dakar or in the chronicles of the Senegalese Futa by Sire-'Abbās Sow, an eighteenth-century author.

In northern Nigeria, mention must be made of the fascinating study written by the Imām Ibn Furṭūwa at the end of the sixteenth century, on the reign and wars of Idrīs

Alaoma, the Mai of Bornu. The *mahram*, which were deeds of privilege granted by the rulers to families of religious notables, are exceptional testimonies to economic and social conditions. Other minor chronicles or genealogies are also available, especially from the literary renaissance in the nineteenth century, when African languages such as Hausa, Fulfulde, Kanuri, Mandara and Kotoko were widely used. A number of these works are by the leaders of the Fulani *djihād*, the political and religious movement initiated by ʿUthmān dan Fodio.

The chronicles of the Hausa cities of Kano, Katsina and Abuja, among others, date from the end of the nineteenth century, but make use of earlier data. There is also a rhymed chronicle in Fulfulde describing the life of the great Tukuloor reformer al-Ḥadjdj ʿUmar Tall, who is himself the author of the *Rimah Hizb al-Rahim*, (Spears of the Party of God the Merciful), which is full of allusions to the way of life in the western Sudan.

More or less the same picture can be seen on the East African coast. The *Kilwa Chronicle* dates from the sixteenth century, whereas the others are of more recent date. Nevertheless, even these are of interest because they represent compilations of facts dating back to the period before the arrival of the Portuguese. Since + 1965, more than 30 000 pages of Kiswahili or Arabic manuscripts have come to light. Even poetic works can prove illuminating, as in the case of the Kiswahili poem *al-Inkishafi*, which describes the rise and decline of Pate.

African writings in European languages started to appear from the eighteenth century onwards. Fante writers from the coastal region of present-day Ghana, such as Jacobus Capitein and A. William Amo, paved the way for the major works written by liberated slaves like Ignatius Sancho, Ottobah Cugoano and Olaudah Equiano (or Gustavus Vasa), who were advocates of the abolition of the slave trade, but also provided valuable material on the lives of black peoples in both Africa and Europe. The diary of Antera Duke, a Calabar trader, abounds in details culled from everyday life in one of the main slave ports of the time.

For Madagascar, we should mention the diary in Arabic script (*sura-be*) kept by King Radama I (+ 1810–28) and the mid-nineteenth-century writings in Roman characters of two Merina aristocrats, Raombana and Rahaniraka, who give an insider's picture of day-to-day life in the kingdom.

Throughout the nineteenth century, a very large number of works were written by Africans or Afro-Americans, in which descriptions of African life are combined with polemics of a general nature. Among these writers were Samuel Crowther, a Yoruba, Thomas B. Freeman, of mixed origin, and Benjamin Anderson, a Liberian. In a class by themselves are Edward W. Blyden and James Africanus Horton, the pioneering leaders of the movement to arouse African consciousness.

Finally, we come to the first generation of historians proper. One of the earliest of these was the Abbé Boilat, a mulatto from St Louis, Senegal, whose *Esquisses Sénégalaises* contains a good deal of ethnographic material. He was followed by C. S. Reindorf, a Gâ, with his *History of the Gold Coast and Asante*, and Samuel Johnson, who wrote a *History of the Yorubas*.

Although these African works display a certain degree of bias when they discuss counter-racist, political or religious issues, they are nevertheless of overwhelming

importance, for they represent the hidden face of the moon or the submerged mass of the iceberg, so to speak, the other facet of history overshadowed by the countless disquisitions produced by strangers to the continent.

Archival sources, private papers, confidential reports and other records

Unlike narrative sources, which have a clearly defined purpose, this objective form of testimony consists of fairly impartial and uncontroversial documents forming a record of social or economic relations built upon the basis of correspondence, minutes of transactions, statistics, treaties and agreements, ships' logs, and so on. Although it is sometimes difficult to draw the dividing line between the two types of source, the long-held view that private archives were virtually non-existent in Africa has been proved wrong. Recent research has discovered and identified a mass of materials of this type, but a good deal more is probably waiting to be unearthed in the archives of Africa, Europe and Asia.

Let us first take a look at the documents written in Arabic. Prior to the nineteenth century, these were fairly rare, although we have letters written by the Ottoman Sultan to the Mai Idris of Bornu (in + 1578), which have been discovered in Turkish archives, and correspondence from the Sultan of Morocco to the Askiya of Songhay and the Kanta of Kebbi. Arabic had become the diplomatic language not only in Islamized courts of the Sudan, but even among the dynasties of the Asante empire, who used Muslim scribes to conduct their correspondence with the chiefs to the north and with the Europeans on the coast. This Arabic chancery also kept the records of administrative and judicial decisions, accounts, and so on. An example from the Indian Ocean seaboard is the treaty concluded in + 1776 between the French slave trader Morice and the Sultan of Kilwa.

The nineteenth century saw an enormous increase in the volume of correspondence in Arabic throughout the continent, with the emergence of states like the Sultanate of Sokoto, the state of Liptako, the empires and kingdoms of al-Ḥadjdj ʿUmar, Aḥmadu Seku, Lat Dior, Mahmadu Lamine, Samori, Rabih and others. In fact, the colonial administrations conducted their correspondence with these states in Arabic. Letters exchanged between the Ottoman Pasha of Tripoli and the Bornu shaykhs, between the Sultan of Darfūr and Egypt, and between Timbuktu and Morocco still exist. Similar archives of letters exist in Zanzibar, although on a more modest scale.

Texts written in the Vai script come into the same category. This form of writing was invented in about + 1833 by Momolu Duwela Bukele and it spread very quickly among the Vai people so that by the close of the century nearly all of them knew the script and used it currently for private and official correspondence, for keeping accounts and for writing down customary laws, proverbs and stories. Neighbouring peoples such as the Mende, Toma, Gueze and Bassa adapted the Vai script to their own languages and used it for similar purposes.

At the beginning of the twentieth century, Sultan Njoya of Bamum, in Cameroon, invented a script which he reformed four times. Unlike the Vai script, however, it was not popularized, but was used only by a restricted group of courtiers. Even so, Njoya wrote a large volume on the history and customs of his people in this script. Mention

should also be made of the texts in Nsibidi, from south-eastern Nigeria, which consisted of inscriptions in sanctuaries and special forms of language used among members of certain secret societies.

Material in European languages dates from the sixteenth century to the present day. It is written in a dozen languages, is enormously abundant, and is scattered all over the world in a hundred different places, including archives, libraries and private collections. This state of affairs makes it rather difficult to use, especially in cases where there are no guides or catalogues. It was for this reason that the International Council of Archives, under the auspices of Unesco, undertook to prepare a series of guides to the sources of the history of Africa, in order to promote access to the whole body of existing sources by drawing attention to periods other than that of colonization. The series consists of twelve volumes covering source materials on Africa south of the Sahara in the countries of Western Europe and in the United States. As Joseph Ki-Zerbo has so aptly put it in his Introduction to the series, 'in the battle for the rediscovery of the African past, the *Guide to the Sources of the History of Africa* forms a new strategic and tactical weapon'. Among other noteworthy ventures of the same type are the five guides to the history of West Africa covering the archives of Portugal, Italy, Belgium, the Netherlands, France and the United Kingdom.

Even more ambitious and advantageous are editions of archival documents *in extenso*. In addition to the work of Paiva Manso in the nineteenth century, there are, for example, major collections of missionary documents, chiefly from Portuguese archives, compiled by A. da Silva Rego and by A. Brasio. A monumental collection compiled through the combined efforts of Portugal and Zimbabwe (formerly Rhodesia) covers Portuguese documents on south-eastern Africa, complete with an English translation. There are also other special collections, such as the *British Parliamentary Papers*, the work of J. Cuvelier and L. Jadin on the Vatican documents relating to ancient Kongo, and surveys of British policy in West Africa and Italian policy in the Horn of Africa.

All the independent African nations have public archives covering the colonial period and these are currently being classified and described. The publication of a series of guides to all the public and private archives in Africa is an urgent requirement. There are plainly gaps in these African archives, since they have only recently been classified and many items have been lost, but they have the immense advantage of primarily containing documents relating to the African situation rather than only to colonial policy. Moreover, they contain materials connected with the pre-colonial period, as well as a greater number of documents originating from Africans themselves. Hence, they are absolutely necessary for establishing a new and balanced view of the African past.

In conclusion, we should mention other types of material, starting with cartographic documents. Beautifully decorated and coloured maps dating from the sixteenth century are scattered in a large number of libraries and archives in Europe. They are an irreplaceable source for following up the development of place-names, since they bear the names of localities that have now disappeared or only feature in oral tradition. For instance, certain eastern Bantu peoples have traditions according to which they originated from an area known as Shungwaya. Although this name has now disappeared, it is found on certain old maps. Maps such as these also furnish information on the distribution of ethnic groups, frontiers between states, names of rivers and mountains,

and other topographic features, all of which have historical implications.

Proof of this is established by the major work of Yūsuf Kamal, *Monumenta Cartographica Africae et Aegypti*, which also contains narrative commentaries, but comes to a halt at the beginning of the sixteenth century. This is why Joseph Ki-Zerbo is right to have urged that a collection of all the old maps of Africa be published in an atlas, complete with commentaries.

Linguistic data – another category of source material – are often found in written sources, either indirectly or else systematically, such as in the form of lists of words from African languages. Glossaries of this type are found from as early as the fifteenth century until the nineteenth century. The most notable publication in this field is Koelle's great collection of the vocabularies of about 160 languages.

Documents dealing with the Kikongo language were published from the sixteenth century onwards. Such works clearly have a historical dimension, since, quite apart from representing exercises in glotto-chronology, they make it possible to study social and cultural nomenclature diachronically.

In short, contrary to the widely held misconception, the written sources of African history are extremely abundant, although they have never been exhaustively surveyed. Systematic research must be undertaken at the earliest opportunity to remove the remaining areas of obscurity.

7 *Oral tradition and its methodology*

Oral Civilization

The African civilizations of the Sahara and the regions to the south were essentially civilizations of the spoken word. It would be absurd, however, to regard oral civilizations as somehow being defective simply because writing did not exist, rather after the manner of the Chinese saying that claimed 'the palest ink is to be preferred to the strongest word'.

In civilizations that did not know writing, speech, as the vector of messages essential to the life of the group, took on a special significance that was lost to societies endowed with a written language. In such oral civilizations, speaking or naming was tantamount to acting, taking possession or creating. Hence, a fundamental text in oral tradition cannot be interpreted like a written text, since it has been more actively involved in the making of history. If it is to be interpreted properly, it must, as the Zairean scholar Fu Kiau has said, be lived again as it was by those people who first uttered it. This view is shared by such leading traditionalists as Amadou Hampâté Bâ and Boubou Hama.

The nature of oral tradition

Oral tradition may be defined as being a testimony transmitted verbally from one generation to another. Its special features are the fact that it is verbal and the manner in which it is transmitted. It is thus certainly more fragile than written records, which are embodied in objects, such as manuscripts, for instance. It should be added, however, that there may be several written versions of a single event and, conversely, there are stereotyped and fixed versions of oral traditions.

Oral traditions may originally be based either on an eye-witness account, or on an unsubstantiated rumour of purely personal inspiration, or else on an interpretation of other oral texts to produce an entirely new tradition. However, only traditions based from the outset on an eye-witness account are really valid. The historians of Islam evolved this type of critical technique in examining the *hadiths* or sayings of the Prophet collected by his disciples. The validity of a *hadith* depends on the chain of intermediaries (*isnad*) between the scholar who set it down in writing and one of the Prophet's

companions. The normal standards of historical criticism were applied to each link in the chain: could the witness have known the tradition? Was it in his interest to distort it? Could he have transmitted it and, if so, when, how and where?

Hence, the essential requirements for an oral tradition are that it should be verbal and that it should be handed down. Its purpose is irrelevant. Some oral materials, like archival records, were never designed for a contemporary or future public. They are all the more precious for being an unconscious testimony to the ideas, values, structures, behaviour and world-view of a particular society at a particular moment in time.

Tradition as a literary work

The first consideration is the form in which the message is couched, since the rules governing form have an influence on content and hence on the value of the tradition. Depending on whether the content is fixed or free and on whether the form is regulated or free, there are four basic *genres* of varying reliability.

1. In instances where both content and form are fixed, we have stereotyped texts that are learnt by heart and are transmitted in their entirety.
2. In instances where the content is fixed, but the form is free, the texts are such that the meaning cannot be changed, but the formulation can be arranged, provided it abides by the core of the story or the key words, as in proverbs, prayers or genealogies of successive rulers. Both in this case, and even more so in the previous one, the actual words that can be traced back to the original model can be subjected to historical interpretation just as if they had occurred in a written document.
3. In instances where the content of the text itself is free, but the form is dictated by rhymes, lines or verses, there are a large number of variants, but it is still possible to reconstitute the skeleton or fundamental core of the text.
4. On the other hand, when both content and form are free, there are countless instances of re-arrangements, differing versions, recasting, developments and alterations. Even in cases such as these, however, the freedom of the artist or traditionalist may be inhibited by social pressures, which require some measure of fidelity to a model. The most fanciful versions, at least, can therefore be eliminated by careful criticism based on a thorough grounding in the literary rules governing the presentation of the text, which will make it possible to detect anomalies and penetrate the meaning. Particularly important in this regard are the key words that relate to structural patterns and have to be deciphered in the light of the context.

There are sometimes also standard episodes that are encountered in the same type of narrative all over Africa. For example, the traditions of the Luba in Zaire, the Fulani and Mossi in Upper Volta, and the Hausa in Nigeria all recount the episode of a chief ridding himself of his rival by inviting him to sit on a mat over a pit containing sharp pointed stakes. This does not imply that such narratives should be automatically rejected: regardless of the stratagem or the scenario, the essential fact to be retained is that of a rival being eliminated.

Literary criticism will take account of the aesthetic constraints imposed on the

author. If the author gives prominence to these constraints at the expense of accuracy of reproduction, there will be significant changes in the way in which the narrative is built up, thereby reflecting public taste and the author's talent. In a set of variants, the correct variant will be recognized from the fact that it does not comply with the artistic model in fashion, just as a variant that contradicts the social function of a tradition is more likely to be true than the others.

The social framework of tradition

Everything vital to the proper workings of a society is transmitted by means of written documents in societies with writing and by means of tradition in oral societies. Far from being merely entertainment or folklore, tradition is vested with the essential mission of social reproduction.

In this connection, it is tempting to draw a distinction between the traditions of societies based on states and those of 'stateless' societies, but any attempt at this type of classification is liable to break down very quickly. Within a purportedly homogeneous category there may be vast differences, to take only the case of the so-called 'age-set' societies of the Maasai (Kenya–Tanzania), Embu (Kenya) and Oromo (Kenya–Ethiopia) as examples. The Gouro of Ivory Coast have a lineage tradition and yet they also have a historical tradition handed down by a secret society. Similarly, the Tonga of Zambia have a descent narrative, but they also have a tradition of ritual centres controlled by rain-makers. Hence, purely theoretical classifications are to be mistrusted.

Traditions have a host of social functions and these affect their content. Official traditions include genealogies, king-lists and accounts of the origins of dynasties and privileges of chiefdoms, but they also comprise land-right charters and legal customs concerning water, animals, trees, foreigners, and so on. Private traditions relating to restricted groups such as families, followers of a cult, craftsmen's guilds, etc., are often less well preserved, but are more likely to be true to fact and can be used to cross-check the reliability of official traditions.

If due allowance is made for the constraints of both literary form and function, it is possible to draw up a catalogue of the different types of oral testimony and of the distortions to which each category has probably been subject: for instance, by taking the brief answers given to such questions as 'How did we start growing maize?', 'Where did this dancer's mask come from?' and so on.

However, the probability of distortion does not necessarily mean that distortion actually took place. The value of a tradition cannot be dismissed without proof that distortion occurred or that the probability of its having occurred is very great. It is not sufficient to claim, as Goody and Watt have done, that an oral society automatically erases from its collective memory everything that is liable to be prejudicial to it. There are traditions, for example, which admit to defeats or to migrations into a region where there were already autochthonous peoples or, in other instances, testimonies describing a geographical setting that bears no relation to the present-day situation. What is more, the tendency to eliminate anything that runs counter to the views and interests of a community, or rather of a dominant class, is not peculiar to oral societies. Indeed, it is a

world-wide phenomenon. Hence it is naive to claim, as the above-mentioned authors have done, that the knowledge-content of the brain of every adult in an oral society is approximately the same. This is a gratuitous affirmation which disregards the fact that in almost every society there are people specializing in crafts, politics, the law or theology who know many things of which their contemporaries are totally unaware. Every ethnic group has its thinkers. Among the Kuba of Zaire, for example, we know of three men who, on the basis of the same system of symbols, had worked out three very different philosophies. Among many peoples, the secret traditions are the privilege of very restricted groups forming secret societies. The Asante royal family knew a tradition about their origins of which the general public was ignorant. In Rwanda, only the Biiru specialists knew the royal rituals, and even then they only knew them all when they were all together, since each group of Biiru knew only part of them. Secret practices and traditions are found in almost all the rituals for the enthronement of kings throughout Africa.

Each tradition has its own social surface, which has to be identified precisely, if the text is to be interpreted properly. The specialized custodians of the essential texts are given special training for the purpose and they learn the 'tricks of the trade' – often in the form of chanting – to enable them to memorize extremely lengthy traditions. Furthermore, they are often surrounded by various interest groups that monitor their performance. Genealogists, drummers, custodians of tombs, priests of national religions, and the like are never alone: they officiate under scrutiny. Thus by examining all these linking factors, whether methodological (transmission of the tradition) or social (the presence of interest groups), the historian is in a position to gauge the validity of a tradition as accurately as possible.

Another interesting criterion is the frequency with which traditions are proclaimed. For example, the Sigi ritual among the Dogon in Mali is transmitted only once every sixty years or so. The content of the messages conveyed on those occasions is likely to vary more radically than in a tradition that takes the form of an annual festival as in, say, southern Nigeria. But, here again, everything depends on the demands of the society itself. If it keeps strict watch over fidelity to the tradition, frequency of performance will enhance that fidelity. On the other hand, if the society attaches little importance to faithful reproduction, very frequent performances of the ceremonial will corrupt the transmission more rapidly than less frequent ones would do. This is true of popular songs and of the narratives that are most often in demand.

The mental framework of tradition

This mental framework is made up of collective ideas that are generally unconscious because they have been absorbed and have become patterns or models of thinking that shape all modes of discourse. For instance, all the kings in a particular dynasty may display the same qualities, which form part of the ideal royal stereotype. One king may be 'the magician', another 'the just', a third 'the warrior', rather after the manner of a Western film! As a result, all victories are credited to the warrior king, even though they may have been won by the just king, and so on.

Hence, it is necessary to dig down into the all-embracing system of values and social positions and roles in order to penetrate the message of tradition. For example, McGaffey has discovered that the Kongo have a basic system consisting of four ideal and complementary positions in society – those of witch-doctor, soothsayer, chief and prophet. Similarly, in the traditions of the Bight of Benin, the role ascribed to fate, the store set by generosity and the blame attaching to jealousy with its overtones of witchery are all ethical and philosophical constants or values underlying the mode of discourse. Until traditions have been prised away from the foundations on which they rest, after an attempt to discover how far the oral text is merely a reflection of the basic model, it is difficult to venture a cogent interpretation. The questions that have to be asked, for example, are how people conceive of ideas such as time, space, causality and historical truth.

The concept of time has already been discussed in Chapter 2. However, time as conceived by the family, which can be measured by births and by reference to exceptional happenings, plainly stretches back for only three or four generations. Consequently, the most likely prospect of being able to go furthest back in time is offered by institutions embracing the largest possible number of people, as in the case of the empires of the Sudan. The way in which time is conceived in structural terms is therefore very important. In the Great Lakes region of East Africa, people have a cyclical conception of time, which eventually takes on a spiral form. Moreover, history proceeds in accordance with dual time-standards, one being the dimly perceived time of the original chaos and the other historical time proper. In other cases, as among the Bateke, the passage of time is not linear, but alternates between generations, and this obviously has an impact on the way in which traditions are presented.

A people's conception of space often involves a significant direction in which its origins tend to be situated. Rivers often represent the fixed axis for the cardinal points. However, relative formulations such as 'downstream', 'upstream', or 'towards the summit' can give rise to confusion stemming from the present-day location of the traditionalist. Only precise references to the movements of the sun can contribute to determining space data.

The idea of cause is naturally common to all peoples, but it is not always applied in the same manner. For example, an origin situated at the very beginning of time may be assigned to every identifiable object or phenomenon.

Historical truth is essentially bound up with the fidelity of the oral record that has been handed down. That truth may, of course, amount to the same thing as the 'truth' of the ruling class, as in the case of the Idoma of Nigeria, or to acknowledging the fact that the tradition conforms to what the previous generation had to say. Here again, it is true that mental imagery plays a leading role. For instance, a large number of narratives concerning the origin of the Kuba remained unclear until a sort of cosmological standard of discourse was discovered, whereby migration takes place by canoe from downstream (the sacred) to upstream (the profane). It would be a grave mistake to conclude, with the functionalists, that there is nothing objective in traditional texts and that they are merely the projections of the mental structures of the people concerned: any mode of discourse, including written texts, reflects the author's ideological universe to varying degrees. All people express themselves in accordance with the ideas instilled in them by their social group, education, interests and so on.

Chronology

Without chronology, there can be no history, since it would not be possible to distinguish what precedes from what follows. Oral tradition always gives a *relative* chronology, expressed in the form of lists of leading figures or generations.[1] There are no numerical dates. Hence the relative chronologies have to be linked together and an attempt must be made to work out numerical dates.

In this connection, two factors have to be acknowledged. On the one hand, processes are at work that distort the chronology either by prolonging the duration of events or else by foreshortening it, in a concern to make the facts conform to the current ideal norms of the society. On the other hand, in some regions, in, for example, Rwanda, Zaire (Lake Kisale) and Mauritania (Kumbi Ṣaleḥ), archaeological excavations based on the indications obtained from traditional sources have demonstrated the reliability of those sources. Indeed, in both elementary societies and kingdoms, instances are recorded of the chronology being distorted. In the first type of society, the tendency is to eliminate 'useless' ancestors, in other words those ancestors whose descendants no longer form an identifiable group. The same is true of king-lists, which may delete the names of usurpers or of monarchs who did not undergo all the initiation rites, sometimes extending over a period of several years. There are examples where reigns of kings who abdicated and subsequently returned to power were counted as a single reign. All this reduces the length of the historical process.

In other instances, the process is prolonged: for example, in order to give a semblance of legitimacy in cases where successions are stated to have followed that pattern, as a result of which the lengths of dynasties are quite unduly extended, since collaterals are shown as fathers and sons. This tactic was employed during the colonial period to 'age' the pedigrees of chiefdoms seeking formal recognition and to make them more venerable.

A large number of studies have shown that the average length of a dynastic generation is between 26 and 32 years. Hence, to convert a relative chronology of generations into absolute dates, it is first necessary to calculate the average between the first absolute chronological reference supplied by a written date and the present day and, if that average is situated between 26 and 32, it can be projected into the past to obtain the approximate dates for each generation of kings.

If the same method were used to determine the average length of reigns, the results obtained would be much less reliable, since account would have to be taken of changes in the rules of succession and in life expectation. The margin of error is accordingly much greater. Increased chronological accuracy can also be achieved by combining two relative chronologies to form a single one. A battle between two kings (A and B) whose names are known constitutes a synchronism. Moreover, if A and B both met king C, it is possible to produce a particular chronological equation relating A, B and C.

Naturally, if in the course of a reign the tradition mentions a major climatic or astronomical occurrence, such as an eclipse, and if that occurrence can be identified from existing tables, it is possible to take advantage of a most valuable absolute date to reconstruct the relative dates available.

1. A dating method that enables an event to be situated before or after another without it being allocated a numerical date in one of the main calendar systems.

Evaluation of oral traditions

Once the literary and sociological data have been fully assessed, an attempt can be made to assign a degree of probability to a tradition. The more two independent traditions agree, the closer one comes to certainty. However, the problem lies in proving that the sources are really independent, because of the vast intermingling that went on even before the pre-colonial period and because some of the facts gathered during the colonial period were inserted into the traditional narratives. In cases where agreement is the outcome of a comparison with archaeological data or written documents, the confirmation is even more valid, provided the sources are genuinely independent, as they were in the cases of Kumbi Ṣaleḥ and Lake Kisale.

In the event of a conflict between a tradition and an archaeological source, the latter should prevail, unless it involves a deduction rather than an objective finding, in which case the oral source may be more probable. Whenever an oral source has been well tested, it can be considered as valid as a written source, apart from the fact that written quantitative information is more reliable. On the other hand, explanatory information involving psychological and sociological motivations often emerges more clearly from oral tradition.

Collection and publication

It cannot be over-emphasized that sound historical criticism calls for inside knowledge of the entire society concerned and that, through all the data collected by all those working with him, the historian must have obtained a grasp of the civilization from within. For that purpose, spontaneous knowledge of his own original society is not enough; he has to rediscover it through a systematic effort of reflection.

The collection of traditions calls for a great deal of time and patience. Thus, even when sampling techniques are used to compare the variants of popular sources, it is no easy matter to determine the sampling criteria, which should be based on the rules governing the origin of those variants. There have been occasions when a process of contamination has resulted in 'traditional' informants passing on written or broadcast information with which they have been in contact. Naturally, there can be no question of collecting all the traditions of a people, and sources have to be sought in the light of specific historical problems that have been defined beforehand. Unfortunately, patience is sometimes lacking and attempts are made to cover a vast area as quickly as possible. In such cases, variants are missing and it proves impossible to draw valid conclusions. On the other hand, even though a collection exercise may not provide the historian with such material, if it is carried out properly it can be a mine of information on the linguistics, literature, collective thought and social structures of the group concerned.

Finally, unless the work is published, it cannot be made available to the world of scholars. At the very least, the sources investigated should be classified and supplemented by an introduction, notes and an index, so as to constitute a body of archives available to everybody. This work is often combined with the publication of a study based on the corpus of source material, which should explain how the traditions were collected and provide a brief list of sources and informants, so as to enable the reader to

form an opinion on the quality of the collection and to assess the choice of variants. The publication of the texts in full is a task that often requires collaboration among specialists in such diverse fields as history, linguistics and sociology.

Conclusion

Oral traditions are being collected all over Africa, but the subject matter is still too often confined to political history and work has been chiefly concentrated on Central and East Africa, where such traditions often represent the only historical sources. However, certain epic or cosmogonic narratives, such as the epic of Sundiata, convey information dating back to the very remote past.

In some instances, the traditions collected by the earliest European travellers, like those recorded by Cavazzi in the Upper Kwango region, are particularly interesting, since they reflect social and political changes that took place over a very considerable time-span. Furthermore, the collection and interpretation of traditions has tended to remain at a somewhat superficial level, especially when the work has been done by ethnographers. All too often, traditions have been regarded solely as 'myths or legends of origin'. As a result, the entire history of Africa remains set fast in the somewhat over-simplified image of endless and hopelessly entangled comings and goings of peoples. In point of fact, even though the traditions are not rich in quantitative data and even though they fail to record changes that are unconscious because they occur too slowly, they are still irreplaceable as evidence of the historical developments that occurred within various civilizations. For all its wealth of written documents, colonial history would be dry and forbidding without the contribution made by informants who, through tradition, add the priceless African view of things.

8 *The living tradition*

Oral tradition is the only path that can lead us right into the history and spirit of the African peoples. We still have among us some of the great depositories of this tradition, who can be said to be the living memory of Africa, but theirs will probably be the last generation. Oral tradition is a fragment of the cultural heritage of mankind that has been miraculously preserved by a combination of circumstances.

Some people tend to wonder whether oral tradition can be regarded as trustworthy. This is hardly the proper question. The value of any testimony depends on the reliability of the informant who, regardless of whether the testimony be written or spoken, is always human. Furthermore, if we trace back the chain of written evidence, we shall find its origins in oral testimony, which lies at the root of all human transmission. In point of fact, when a person recounts an event in writing, he usually refers to a witness; and if he witnessed the event itself, he usually goes over it in his mind before putting it down on paper.

The real problem, therefore, is the value of the person who is testifying and, more specifically, of the bond between Man and speech, and that bond is strongest in oral societies. In societies where writing does not exist, there is an intimate bond between Man and the words he utters. A written commitment is less constraining. Since the word is considered as being the sacred agent of occult forces, it is venerated as such and is handled with caution. These checks and balances guarantee the authenticity of verbal testimony.

If a real African traditionalist were asked, 'What is oral tradition?', his final reply might be, 'It is total knowledge'. In spite of a widely held belief, oral tradition is not confined to tales and legends or the mythical or historical narratives recounted by 'griots'* or old story-tellers. Oral tradition is the great school of life: it deals with religion, with the natural sciences in such fields as mineralogy, medicine and the pharmacopoeia, with apprenticeship in skills, with history, with games and pastimes, with love and death.

Knowledge in African oral societies is not something abstract and separate from life; it is bound up with Man's tangible social behaviour. Through the divine Word, it is connected both with the present-day world and with the origin of all knowledge.

* *Translator's note*: 'Griot' is given in the standard French dictionary, Robert (1969), as a word of unknown origin meaning 'a West African Negro belonging to a special caste. The griots, often chosen by princes to be their advisers, are at once poets, musicians, singers and magicians.' Although 'griot' is a familiar term in France, it remains a rare and foreign word in English-language works. However, since the word was used throughout the French original of this chapter, it is also used in the English version.

The divine origin of the Word, the agent of creation

The Komo, one of the leading initiation schools of the Sudanic savannah, teaches its initiates that the Word, *Kuma*, was an attribute of God alone, who used it to create things: 'The word of Maa Ngala (God) creates life!'

In the beginning, there was only a living void, existing in the life of the One Being, who gave himself the name of Maa Ngala. He created *Fan*, the primordial egg, which contained the nine fundamental states of existence in its nine divisions. When the egg hatched, none of the beings that emerged could speak. So, in order to have somebody with whom he could converse (*Kuma-nyon*), Maa Ngala took a piece from each of those beings and mixed them together and then, breathing fire into the mixture, formed a separate being to whom he gave part of his own name, which means Man. As a synthesis of all that exists, Man is the repository of the actual instrument of creation: the Word. It is Man who replies to God and to whom God replies. The Word emanating from God is divine, while the Word that rises up to God is sacred.

The three potential qualities that God vested in Man were knowledge, will and ability, through the mediation of the Word. In Fulfulde, the word for 'speech' (*haala*) is derived from the root *hal*, meaning 'to give strength' and, by extension, 'to achieve'. It is said of the first man that 'conversing with God gave Kiikala strength'. Indeed speech, through the vibrations that it sets in motion, activates and propels all things, even material things, just as it prompts anybody whose name is called to turn his head and answer. This is why speech is the main active agent in African magic. The word magic is always used in a pejorative sense by scientists and Europeans generally, whereas in Africa it simply designates the management of forces, a process that is neutral in itself, but that may prove helpful or harmful, depending on the way in which it is used. As the saying goes, 'magic and fate are not bad in themselves. It is the use to which they are put that makes them good or bad.' Good magic – not the magic of sorcerers, but that of initiates and 'masters of knowledge' – aims at purifying men, animals and objects, so as to restore order among the forces through the agency of speech.

The traditionalists

In Bambara, traditionalists are known as *doma* or *soma* 'those who know'. In Fulfulde, they are called *silatigi* or *gando*, words meaning the same thing. In some cases, they are given the title of 'makers of knowledge'. They may be master initiates and therefore initiators in special traditions, such as metal-working, weaving, hunting and fishing, or else they may possess complete knowledge. In the Sudanic savannah, there are the great specialized initiation schools, such as the Komo, the Kore, the Nama, the Do, the Diarra Wara, the Nya, the Nyaworole, which are all in Mali.

Knowledge is not compartmentalized, however. As a rule, the master of knowledge is a 'general practitioner' versed in the science of plants, of the earth with its agricultural and medicinal properties, of water, and also in astronomy, cosmogony, psychology and other subjects. What is involved, in fact, is an eminently practical science of living, which consists in mobilizing the energies available so that they may serve life. The great

doma with total knowledge were the Fula Ardo Dembo, the Bambara brothers Danfo Sine and Latif and, still living, Iwa and the great blind musician Banzoumana.

During the colonial period, the influence of the traditionalists was played down, on the grounds that they might be focal points for resistance movements, and they took refuge in the bush. By the end of the twentieth century however, all the great repositories of tradition in this region of Africa will probably have disappeared.

The authenticity of transmission

Genuine traditionalists have a scrupulous regard for truth. For them, lying is not merely a moral fault, but a ritual taboo which, if violated, would put an end to their function. As the saying goes: 'Better for the world to be cut off from you than for you to be cut off from yourself through lies.' A Master of the Knife, or officiant at sacrifices, a Dogon from the Pignari region of Mali, was once compelled to lie in order to save the life of a hunted woman he had hidden in his house. He thereupon resigned his office, because he considered that he no longer fulfilled the ritual conditions required to perform his duties properly. Before embarking on an important narrative, Danfo Sine used to say: 'Hold firm the reins of my tongue, O ancestors, guide my words as they come forth, that they may follow and respect their natural order.'

The *doma* traditionalists, whose function is to teach in a way that stimulates their listeners when the need arises, should not be confused with griots, minstrels and house captives, whose main function is to entertain and who accordingly have the right to misrepresent the truth and invent lies. Griots, it is said, 'are allowed to have two tongues'. The public does not confuse the two. When Danfo Sine spoke, he was accompanied by two witnesses, whom he called upon to supervise and bear out what he had to say. It is the practice for traditionalists to quote their sources by saying 'I hold this from So-and-so, who held it from So-and-so', etc. They pay tribute to the historical or mythical originator of the tradition by crouching down and placing the tip of the elbow on the ground, with the forearm raised. The evocation of this chain of transmission is of the utmost importance, for if the rules of transmission are not respected, the magical and sacramental current will not flow.

If the *Komo* bard happens to add anything to the message he has received, he takes care to warn his audience by saying: 'This is what I am adding. If I am wrong, do not forget that, like you, I live on a handful of millet, a mouthful of water and fresh air. Man is not infallible!' The enhancement of knowledge does not depend on the quantity of words a person may utter, but on the conformity of his life with those words.

Since oral tradition is speech that has been lived and experienced, transferring it to other people is difficult: this is one of its weaknesses compared with writing. I remember that in 1928, when I was stationed at Tougan, in Upper Volta, a young French anthropologist came to make a study of the chickens sacrificed at circumcision ceremonies. The French district commissioner assembled the elders and urged them to give their full co-operation to the anthropologist, insisting that they tell him 'everything'. The Master of the Knife, to whom the request was addressed, replied: 'He wants us to tell him everything? But has he come to be circumcised?' When he learnt that the anthropologist had only come to gather information, the old sacrificer decided that the

situation warranted 'putting him in the straw', which is a device used, when there is no alternative, for spinning an empty yarn (the 'straw') without going into the heart of the matter.

Apart from the esoteric teaching provided in the great initiation schools, traditional instruction is dispensed by the community and the family, and is also directly bound up with everyday living. Tales and legends are rich in practical and moral lessons, while proverbs are missives bequeathed to posterity by the ancestors. Some games based on mathematical laws train the mind while transmitting ciphered occult knowledge: the Banangolo game in Mali, which is based on a numeral system connected with the 266 *siqiba* or signs corresponding to attributes of God, is an example.

If an old teacher comes upon an ant-hill in the bush, he can adjust his teaching to the people listening to him: he may speak of the insect itself, the laws governing its life and the 'class of being' to which it belongs, or he may draw a moral lesson on the life of the community and what it entails in the way of solidarity and abnegation, or else he may enter into the realm of more recondite knowledge.

In the Sudanic savannah, everything that exists on our planet is divided into three main categories or 'classes of being', and these are subdivided in turn into three groups:

at the bottom of the scale, the 'mute' 'inanimate' being whose language is regarded as being occult; these beings are solid, liquid and 'smoking' (gaseous);
in the middle grade, the 'immobile animate' beings (plants);
lastly, the mobile animate beings, which are terrestrial, aquatic and flying beings.

In this 'history of nature', man stands out, because he unites all the realms – animal, vegetable and mineral – because he was made up of a fragment of everything that existed before him, and also because he has been endowed with speech and is consequently the companion of God and the guardian of nature. The complexity of man is expressed in the maxim: 'There are many persons in the person of every person.'

The traditional crafts

The traditional crafts and trades are the great vectors of oral tradition. The craftsman's work is important because it is in the image of divine creation. Bambara tradition teaches that when Maa Ngala created the universe, he left things unfinished so that Man could complete them, alter them and finally perfect them. The craftsman's task is therefore to repeat the process of creation through speech:

The smith forges the Word
The weaver weaves it,
The leather-worker beats it smooth.

Every craft or trade teems with symbols. The weaver (*maabo* in Fulfulde) holds the key to the meaning of each of the 33 parts of the loom. Of the eight main parts forming the frame, the four vertical ones symbolize the four mother elements (earth, air, fire and water) and the four points of the compass, while the four transversal parts symbolize the four collateral points. Added to these eight parts is the weaver himself, together forming nine elements, which represent the nine classes of being, the nine orifices of the

body (the gateways for the life forces), the nine categories of men among the Fulani, and so on.

Before starting work, the weaver touches each part of the loom and pronounces an invocation. The to-and-fro movement of his feet is supposed to speak as follows:

> Fonyonko! Fonyonko! Two by two, two by two!
> When one goes up, the other comes down
> The king dies and the prince is crowned,
> The grandfather dies and the grandson is born,
> The quarrels of divorcing couples mingle with the noise of the marriage feast.

While the shuttle says:

> I am the vessel of Fate.
> I sail between the reefs of the warp
> That stand for Life.
> From the right bank I pass to the left
> Unreeling my gut (the thread)
> To add to the fabric
> Then back from the left bank I pass to the right,
> Unreeling my gut
> Life is perpetual coming and going,
> A permanent gift of the self.

The strip of cloth wound round a stick on the weaver's lap represents the past, while the unwound reel of thread symbolizes the mystery of the morrow.

The weaver's gestures consist of eight movements back and forth (the feet, the arms, the shuttle and the rhythmic crossing-over of the weft threads), corresponding to the eight wooden parts of the frame and the eight legs of the mythical spider, which passed on its skills to the weaver's ancestors.

The smith works in the same mythical and creative universe. He is known as the 'First Son of the Earth'. His forge is called *Fan*; it bears the same name as the primordial egg, the first sacred forge from which the entire universe emerged. Furthermore, the four mother elements are necessarily present in the forge: water in a small pot, fire, the air of the bellows and a small pile of earth.

Sexual symbolism is also present. The two round bellows operated by the smith's assistant are assimilated to the two male testicles. The air filling them is the substance of life conveyed through a tube, representing the phallus, into the furnace, which symbolizes the womb where the transforming fire does its work. Similarly, the anvil symbolizes femininity and the hammer the virile organ.

The smith knows about the forces of life. The word for 'smith' in Fulfulde is *baylo*, the transformer. As Master of the Knife, he performs circumcisions. The blast-furnace smith, who both extracts and smelts metal, possesses the highest degree of knowledge. He combines knowledge of minerals of the 'Sons of the Womb of the Earth' with a knowledge of plant life. He is capable of detecting a seam of gold merely from examining the plants and pebbles on the surface of the earth.

Natural wealth was not exploited out of the profit motive alone, but in communion

with the universe. In the Baule region, there are strict rules about how gold, the divine metal, could be exploited.

In short, the craftsman's work was not merely a straightforward creative activity. It was more in the nature of a re-creation of the world. The work was not confined to the acts and gestures of production: it was embodied in the whole way of life through the prohibitions and obligations associated with the function that created social status.

Thus each craft or activity was a path leading to initiation: the path of the smiths (*numusira* or *numuya* in Bambara), the path of the farmers, the path of the weavers, the path of the Fulani herdsmen (the *lawol fulfulde*) represent codes for living pertaining to each group and are scrupulously handed down by tradition. What is remarkable, however, is the fact that as each path is explored more deeply, it can lead to Unity, of which it is only a specific reflection.

Hence, despite the sexual taboos separating the groups (endogamy) and despite the ritual secrets, at the outset there is no ranking order that discriminates against some people, for each path is a different one by which everybody can climb to the same summit. The saying 'God made the craftsman' is followed by 'war and the nobleman made the captive'. It can be seen, therefore, how the notion of a ranking order was gradually introduced through a division of labour other than that of the traditional crafts. Originally, the Fulani clans were led by the *silatigi*, the Master Initiates, but these were superseded by the *ardo* (headmen or kings).

The warrior function, which probably emerged from the development of the traditional crafts, may have relegated the latter in certain regions of the savannah to the rank of 'castes' that were subject to certain prohibitions, but, in exchange, were entitled to seek and receive anything they wished from the nobles.

In the Mande tradition, the most highly considered caste of craftsmen is that of the smiths, followed by the weavers, woodworkers, leather-workers and public entertainers. Each group also has three subdivisions: among the smiths, for example, there are blast-furnace smiths, blacksmiths and workers in precious metals, or jewellers.

Hunters, fishermen and farmers correspond not so much to 'castes' as to ethnic groups. Hunters are, in fact, great experts on the natural world, as are healers, who may belong to any caste or ethnic group. However, some ethnic groups are particularly skilled in traditional healing: the Dogon, for example, excel in the art of setting broken bones and curing leprosy, tuberculosis, paralysis and other diseases.

Public entertainers or griots

Griots are responsible for entertaining the public and for enlivening the proceedings at official or private ceremonies. They can be divided into three categories:

- musicians, singers and composers, who can play all kinds of instruments, such as the single-string guitar, the kora, different types of hand-drum, and so on;
- ambassadors attached to royal courts or to individuals, with responsibility for mediating in marriage alliances, or when disputes break out;
- genealogists, historians and composers of oral texts, who are usually great travellers because they are not attached to any particular individual or family.

8.1 *Valiha players. The instrument is wooden with steel strings (Musée de l'Homme)*

8.2 *Tukuloor musician playing the 'ardin' (Kayes, Mali, No. AO–292).*

Unlike freemen or nobles (*horon* in Bambara), griots have no particular responsibility towards the words they utter and are not even under any obligation to exercise discretion or to have absolute respect for the truth. They can sometimes tell brazen lies without being held to account. People accept their lying without being taken in by it because everyone knows that griots have two tongues and a 'crooked mouth'. Again, unlike nobles or freemen, who have to watch their words, griots can say whatever they like because they can always contradict themselves. They speak for their masters in protestations of love, in political negotiations and even in business transactions or in the settlement of disputes. The Bambara word for griot, *dieli*, also means 'blood'. Indeed, griots, like blood, circulate in the body of society, which they can cure or make ill, depending on whether they attenuate or exacerbate the conflicts within it.

It should be emphasized that not all griots are impudent and shameless, nor are they all opportunists. Among them are men known as *dieli-faama*, or royal griots, who are in no way inferior to nobles and freemen when it comes to courage, morality, virtue or wisdom, and who never misuse the rights that custom has conferred on them. They stimulate and bolster the courage of people at difficult times by invoking the qualities of their ancestors and, in the past, they had no hesitation in dying in battle alongside their masters.

Before the circumcision ceremony, they exhort the young men to show proof of courage by telling them: 'Your forebear' – and they cite the name – 'who was killed on the field of battle, swallowed the gruel of flaming iron (bullets) without flinching. I hope that tomorrow you will not be afraid of the smith's razor-sharp blade.' At the *Soro* ceremony among the Bororo Fulani of Niger, the griots' songs sustain the young men, who must keep smiling and not move a muscle in protest as they receive stinging blows to the chest. Griots are found not only at feasts, baptisms and marriages, but also at times when the community works together, and their rhythms and songs spur on young people to emulate their elders.

The secret of the hold that griots have on groups higher up the social scale lies in their knowledge of genealogy and family history. If, in telling the history of a dynasty or clan, they succeed in arousing feelings of pride, they are handsomely recompensed by the freemen or nobles concerned, some of whom have no hesitation in stripping themselves of their own garments or jewellery to reward the griot for having displayed such skill, insight and artistry in glorifying their ancestors. This even happens in cases where a nobleman has fallen on hard times and the griot may be more affluent than he is. From father to son, therefore, the griots store up a host of facts and events in their memories and become veritable living libraries, the archivists of African society and, in some instances, great historians.

It has to be repeated yet again, however, that they are not the only traditionalists. They represent only one branch and even that is not the most reliable, for it is often difficult for them to achieve the status of *doma*, or Masters of Knowledge, for which silence, discretion and control of one's tongue are required. Yet, just as a traditionalist who is not a griot can be a great historian, so a griot can rise to the rank of *doma*–traditionalist if he has undergone the necessary initiation, except for the Komo initiation, which is forbidden. Once he has become a *doma*, a griot is absolutely trustworthy, for he combines the talents of an entertainer with the virtues of self-

control, as in the examples of Iwa and Banzoumana of Mali.

However, the category of public entertainers, occasional historians and mountebanks covers a wide range of types, such as the *bammbaado* (literally, one who is carried on the back, because they are a burden on society) and the *tiapourta*, nobles who have come down in the world and who are even more shameless than the worst griots, because they ask the griots themselves for gifts.

How one becomes a traditionalist

Anybody in the Sudanic savannah could become a Master of Knowledge or *doma*, since initiation could, in one way or another, lead to the attainment of that status. There was no segregation and everything depended on individual ability. Knowledge was so highly esteemed that it had precedence over everything else and conferred nobility on those who possessed it. A Master of Knowledge in any field could sit on the council of elders, regardless of whether he was a noble, a craftsman or a house captive. According to the proverb, 'Knowledge has neither race nor paternal doorway (clan). It ennobles its man.' Education in that society was lifelong. Until they were 42, men were still supposed to be attending the school of life and were primarily required to listen at meetings in order to add to the knowledge they had acquired in the course of their initiation. From the age of 42 onwards, they were still required to pay heed to people more experienced than themselves. The saying went: 'Every day, the ear hears something new.'

Young craftsmen, after their initiation, set out to travel from village to village, sometimes with their tools on their backs, so that they could improve their skills by contact with fresh sources of experience. Whenever they arrived in a locality, they were directed to the homes or districts of their fellow craftsmen. If they were respectful and polite, they were even able to acquire secrets that added to their own skills, for it is said that 'The old man's secret can be bought with good manners, but not with money.'

Young *horon* did not usually travel far, since they were needed for the defence of the home territory. On the other hand, Masters of Knowledge such as healers tended to travel a good deal in order to enhance their knowledge. In fact, there was a network of special routes protected by the kings and gods, which they took to avoid being molested. When they arrived at their destination, the local dignitary acting as their host was responsible for their safety and comfort. Such travellers often included genealogists, who could only extend their knowledge by seeking information locally. This was true of Molom Gaolo, the eminent genealogist who was familiar with the family history of all the Fulani of Senegal. When he grew too old to travel, he sent his son Mamadou Molom to carry on his research throughout Mali. At the time I knew Molom Gaolo, he had managed to compile and memorize the past history of some forty generations.

The influence of Islam

The specific features of the African memory and the manner in which it was transmitted orally were not affected by the spread of Islam, which adapted itself to African traditions whenever those traditions did not violate its basic tenets. The symbiosis was sometimes

so complete that it was difficult to single out the contribution made by Islam. Celebrated Islamic schools where tuition was purely oral taught the Muslim religion in the autochthonous languages, apart from the Ku'rān and the canonic prayer. Examples that can be cited, among many others, are the oral schools of Djelgodji and Barani in Burkina Faso, Niafunke and Nara in Mali, and those of Shaykh Uthmān dan Fodio in Nigeria, Tierno Bokar Salif at Bandiagara and Shaykh Salah, the great Dogon marabout. In addition to sharing the same view of the universe as sacred and the same conception of the role played in it by man, both traditions show the same concern for citing their sources (*isnad* in Arabic) and for preserving the master's words unaltered, the same respect for the chain of initiatory transmission (*silsila* = chain in Arabic), and the same system of pathways to initiation. To the existing categories of Masters of Knowledge, there were added those of the marabouts and the great Sufi Shaykhs, although the basic structure of society, with its crafts and its 'castes', went on unchanged. Islamic culture only represented a further source of ennoblement of the mind.

How a body of oral material was collected

I personally received instruction from early childhood and gradually pieced together the traditional elements that subsequently enabled me to write the *History of the Fulani Empire of Macina in the eighteenth century*. As I belonged to the family of the provincial ruler Tidjani, I was brought into contact with the travellers and courtiers who flocked to the house. As I also assiduously frequented the Fulani story-teller, genealogist and historian Koullel, friends of my own age soon started to call me Amkoullel, or 'little Koullel'. When my family moved to Bougouni, I made the acquaintance of the great Bambara *doma* Danfo Sine, and then of his younger brother Latif.

Later, in Bamako, I came to meet a variety of sometimes antagonistic groups, each of which had a different version of the history of the empire of Macina. These included Macinanke themselves, the Tukuloor, their adversaries, and other ethnic groups, such as the Bambara, Marka, Sarakole and Songhay, which had all been involved in the events to varying degrees. It was from that time onwards that I started to record the traditions in a systematic manner over a period of more than fifteen years, during which I travelled as far as Senegal and Kano, in Nigeria, in search of oral sources. I discovered that the thread of the narrative recounted by the thousand or more informants to whom I listened was always the same and that the differences in detail were only due to failings in the informant's memory or to differences in temperament. The experience proved to me that oral tradition was perfectly valid from the scholarly viewpoint.

Features of the African memory

In societies where everything hinges on the transmitted word, memory is a highly developed faculty. For example, there are illiterate traders who engage in vast business transactions, who lend sums of money to innumerable people and borrow from others, and who keep absolutely accurate accounts in their heads of all the movements of goods and money without the slightest mistake. One of the features of verbal memory is its ability to restore a narrative in its entirety, from beginning to end, exactly as it was

received. In the account of the Tukuloor wars, we are told what embroidered robe (*bubu*) the great hero Oumarel Samba Dondo wore at a particular battle, who his groom was and what became of him, what the name of his horse was and what became of it. In oral narrative, there are no insignificant details, and that is why everything is recounted without any omission or else the narrator refrains from telling the story altogether, by saying: 'If you haven't time to listen to me, I'll tell the story some other day.'

This is an enormous advantage for the historian, since both internal and external criticism can rely on certain details to bear out or invalidate a text. To take the tale of Thianaba, the mythical Fula serpent, for example, the 'legend' traces its adventures and migration through the Sudanic savannah. In about 1921, Belime, the engineer in charge of building the Sansanding dam was curious enough to follow the trail of the geographical clues given in the legend and discovered to his surprise that he was following the former bed of the river Niger.

Conclusion

There can be no doubt that Africa is going through a period of major change, and this accounts for the contradictions that can be observed. 'Modern' young leaders or managers make use of borrowed codes, mental attitudes and ideologies to administer societies that have not yet moved into the modern world and do not understand why they should be under a particular obligation or condemned for a particular practice. It is true that, for some time now, a great many educated young people have felt a need to study their ancestral traditions and discover their basic values, in a bid to find their own roots and the secret of their innermost identity. But the dominant system is pulling in the other direction. There have already been several breaks in transmission, such as that caused by the enlistment of soldiers who, in the two world wars, left their homelands and were thereby severed from the initiation rituals that would have linked them to the mainstream of tradition.

The same is true of young people who have attended school or those from rural areas who have been caught up in the clutches of large towns and cities. At a time when we have with us the very last generation of the great repositories of oral tradition, the question of transmission is particularly acute. One possible answer would be a huge effort to collect the data available. Researchers engaged on this task will have to have infinite patience and the 'heart of a dove' (so that they never become heated or angry), the 'skin of a crocodile' (so that they can rest their heads anywhere and on anything), and the 'stomach of an ostrich' (so that they can eat anything they are offered without feeling revulsion or falling ill). They must also bear in mind the words of Tierno Bokar, the sage of Bandiagara:

> If you wish to know who I am,
> If you wish me to teach you what I know,
> Cease for awhile to be what you are
> And forget what you know.

9 *African archaeology and its techniques, including dating*

When an archaeologist discovers an artefact, he usually starts studying it by purely archaeological means, such as recording the stratum in which it was found, deciphering the text it bears, describing its shape, ascertaining its dimensions, and so on. The data obtained is then studied from the stratigraphic, philological and typological standpoints, as a result of which, in some cases, significant archaeological information may be obtained regarding its date and origin. In most cases, however, the archaeologist may not be able to find any data that answer his questions or help him to draw any conclusions from the information available. In such cases, he has to submit his find to other disciplines for scientific investigation. Such investigations are expected to furnish useful information about its constituent material, origin, manufacturing technique, age, purpose, and so on. It should be stressed, however, that investigations such as these can only be regarded as being another criterion by which the archaeologist can tackle a particular problem: the scientific evidence has to be taken together with stylistic, philological and stratigraphic considerations.[1]

Other scientific techniques that may assist the archaeologist include field surveys of underground archaeological sites without actually excavating them and the conservation of the ancient objects and monuments discovered. The scientific techniques used have the advantage of being applicable to all archaeology. They apply to African archaeology as much as they do to European, Asian or American archaeology, although the approach may sometimes differ. They cover a vast subject area which will be examined in the following order:

1. the analytical techniques used in archaeometry;
2. the aims of archaeometric investigation and analysis;
3. dating techniques;
4. techniques used in archaeological prospecting;
5. conservation techniques.

Analytical techniques in archaeometry

The techniques of analysis have evolved to such a degree that it is sometimes difficult to decide what technique to use on a particular sample in order to secure the information needed. The main aspects of this question are discussed below.

1. E. T. Hall, 1970, pp. 135–41.

Choice of the method of analysis

Archaeological samples are exceptionally valuable for two reasons. The first is that the quantity of material available is usually so small that it may be hardly sufficient for one complete analysis and, if fully used up, may be impossible to replace. The second is that part of the sample has to be kept for future reference or display. Accordingly, great care has to be taken to ensure that the maximum amount of information will be obtained from an archaeometric analysis. The three criteria determining the method of analysis to be adopted can be summarized as follows.

Availability of material

If a large enough amount of material is available, wet chemical analysis is preferable for determining the percentages of the principal constituent elements in the sample, while atomic absorption analysis can be used to determine the percentages of akali metals, such as sodium and potassium. For trace elements and compounds, however, X-ray fluorescence and X-ray diffraction analyses are to be preferred, although these will give results that may be within only 10–20 per cent of the correct answer.

If only a very small amount of the sample is available and several elements have to be estimated, it can best be analysed by spectro-photometric methods or by X-ray diffraction.

If the archaeologist is not prepared to provide a fragment of the object, however small, the material can be analysed by emission spectrometry or by X-ray fluorescence, provided the size and shape of the object permit the relevant apparatus to be used.

The kind of material to be analysed

Archaeological materials vary greatly in kind. Some of them are wholly or partly organic, such as foods, ointments, resins, oils, waxes and so on. Others – like metals, pigments, ceramics, glass and plaster – are inorganic. Organic materials are usually subjected to ignition, saponification, solvent extraction, infra-red radiation or thermal analysis.

The kind of information sought

To save time and expense, the analysis must be conducted in accordance with a well-planned programme designed in collaboration with the archaeologist, with a view to its yielding an answer to clearly specified questions. For example, ancient copper and bronze look superficially similar, so that a test need only be made to determine the presence of tin in order to differentiate between them. This is usually done by treating a small part of the sample with concentrated nitric acid.

Presentation of the results

Since the archaeologists who are eventually going to study the findings of the scientific investigations and to use them for their own comments and conclusions are not usually scientists themselves, the results should be presented to them in a readily understandable manner. They should not, for example, be expressed as gramme equivalents of a certain constituent per 100 grammes of sample. It is more helpful if all the results are expressed as percentages so that they can be universally understood. Moreover, this makes it easier to compare results obtained in different laboratories.

Methods of examination and analysis

In the light of these considerations, the most important analytical techniques used in archaeometry are as follows.

Examination under a magnifying-glass or microscope

Examination under a simple magnifying-glass (10 × or 20 ×) is often very useful for obtaining a first impression of an ancient artefact or a sample. A binocular device[2] is even better, since it permits observation of deep cavities which magnifying-glasses are not strong enough to penetrate. A much clearer picture can be obtained from examining samples under a compound microscope, and this method can primarily be used for the following purposes.

1. *Identification.* In most cases it is possible to identify a given sample, whether pure or composed of a heterogeneous mixture, by studying microscopically its grain-size or the crystalline features of its constituents.
2. *Qualitative analysis.* Techniques now exist for carrying out analyses involving precipitation, dissolution, observation of gas evolution and other processes on very minute samples.
3. *Quantitative analysis.* Microscopic methods are particularly valuable for the quantitative analysis of complex heterogeneous mixtures. These make it possible to determine the number and size of the different ingredients. If the density of each ingredient is known, their percentage volume in the mixture can be converted into approximate weight percentages.[3]

Radiography

Radiography is very useful in examining works of art, since it makes it possible to detect, for instance, whether any objects have been inserted inside a wrapped mummy, or whether there is any decorative inlay concealed under layers of corrosion. This information is essential in deciding on the correct procedure to be followed in unwrapping mummies or conserving metal artefacts. The X-ray photographs taken of the royal mummies in the Cairo Museum, for example, revealed that even some of those that had been unwrapped contained jewellery that had escaped detection because it was covered by a thick layer of resin.[4]

Determination of specific gravities

In antiquity, gold usually contained small proportions of silver and copper impurities. However, gold objects are so precious that in most cases no samples, however small, can be removed for purposes of analysis. Caley[5] hit on the idea of determining their specific gravity – a completely non-destructive method – in order to ascertain the percentage of gold in artefacts. Since the specific gravity of gold (19.3) is almost double that of silver (10.5) or copper (8.9), the presence of small amounts of those metals can accordingly be detected.

2. A magnifying-glass with twin eye-pieces.
3. I. M. Kolthoff, E. B. Sandell, E. J. Meehan and S. Bruckenstein, 1969.
4. J. W. Halpern, J. E. Harris and C. Barnes, 1971, p. 18.
5. E. R. Caley, 1949, pp. 73–82.

Conventional chemical analysis using wet methods
These methods are generally used for the qualitative and quantitative analysis of mortars, plasters, corrosion products of metal artefacts, foodstuffs, cosmetic materials, the refuse of embalming materials and so on. Iron objects that have been discovered at Niani, in Guinea, and that date from the thirteenth to the fifteenth centuries of the Christian era, have been subjected to chemical analysis and have been shown to contain impurities of copper, phosphorus, nickel, tungsten, titanium and molybdenum that were probably present in the original ores.[6]

Emission spectrometry
This technique is used in the analysis of ancient bronzes, ceramics, mortars, pigments, etc. There are several factors that make emission spectrometry particularly useful compared with other methods of trace analysis. The degree of sensitivity is generally adequate and makes it possible to detect a high proportion (up to 20 per cent) of most of the elements present. Spectrographic analysis of the naturalistic Ife 'bronzes' of Nigeria, for instance, has shown that they are made of brass, not bronze.[7]

Atomic absorption analysis
This method is suitable for use on samples of any inorganic material, such as metals, cements, solders, glass, glaze, salts and so on. The advantage of this method lies in the high degree of accuracy (with a margin of error of only 1 per cent) that can be obtained with samples of only 5–10 mg.

X-ray fluorescence
Since the depth of penetration of X-rays is limited, this method can only be used on the surface of objects, and is therefore only suitable for analysing such materials as glass, porcelain and pottery glazes, obsidian, and most kinds of stone. However, ancient metal objects tend to suffer from depletion, that is, the less noble metals migrate partly to the surface, and hence the surface analysis of such objects by this method may give very different results from those obtained if the object as a whole were analysed.[8]

Neutron activation analysis
Neutrons and gamma rays have a much greater power of penetration than X-rays. This makes it possible to analyse greater specimen thicknesses and hence to disregard the decuprification effects in metals.[9]

Aims of archaeometric analysis

The most important aims of archaeometric investigation and analysis are as follows.

6. A. Muzur and E. Nosek, 1974, p. 96.
7. F. Willett 1964, pp. 81–3.
8. E. T. Hall, 1970, pp. 135–41.
9. ibid.

Precise identification of materials

The precise identification of archaeological remains is essential, if archaeologists are to be able to produce a proper description of objects in scientific journals or museum guidebooks. It is also important to pinpoint the nature of the materials of which artefacts are made, since a significant interpretation of the object involved usually depends on ascertaining the exact nature of those materials. Errors of identification are unfortunately not uncommon and have given rise to considerable perplexity in some instances. Copper is sometimes mistaken for bronze, although the discovery and use of bronze imply some degree of cultural change. Bronze is likewise sometimes mistaken for brass, as a result of which wrong conclusions may be drawn as to the date of the object, since brass was first made in about the middle of the first century before the Christian era, whereas bronze had already been known and used for some 2000 years before that time.[10]

Since most inaccurate identifications stem from dependence on the object's visual appearance, it should be emphasized that the identification of archaeological material has to be based on chemical or X-ray diffraction analysis, if misleading interpretations are to be avoided.

Translation of unknown ancient words

Accurate identification sometimes serves to clarify the meaning of unknown words. At Saqqara in Egypt, for example, two pots were found in the tomb of Pharoah Hor-'Aha (First Dynasty, about 3100 before the Christian era). Each of these pots bears the hieroglyphic inscription corresponding to the word *seret*, the meaning of which was not known at the time. Chemical analysis showed that the pots contained cheese, and it was accordingly concluded that *seret* was the word for cheese.[11] Another example is the word *bekhen* in hieroglyphic found on some stone statues. Since the word had been identified in other instances with greywacke, a kind of schist, and since it was used in texts referring to Wadi-Hammamat, it was concluded that *bekhen* most probably corresponded to the greywacke of Wadi-Hammamat.[12]

Detection of the sources of materials

The presence on an archaeological site of numerous specimens of material of foreign origin is a clear pointer to the fact that such materials were imported through trade or commerce. In instances where the sources of the materials can be located, the trading patterns can be identified. Obsidian, for example, is known not to occur naturally in Egypt, and yet it was used there from as early as Predynastic times, that is, prior to 3100 before the Christian era. Objects made of this obsidian have been examined and compared with the same material from neighbouring countries and the Egyptian obsidian has been found to be very similar to the obsidian of Ethiopia. It was concluded, therefore, that trade relations had existed between the two countries from very early times.[13]

10. E. R. Caley, 1948, pp. 1–8.
11. A. Zaki and Z. Iskander, 1942, pp. 295–313.
12. A. Lucas, 1962, pp. 416, 419–20.
13. ibid.

Trace impurities in copper ores and artefacts can also help in establishing the relationship between artefacts and the kind of ore from which they were made. Thus trade routes can be identified.[14]

The existence of nickel in an ancient iron artefact provides a means of determining whether the iron is of meteoric origin or man-made, since meteoric iron always contains nickel in the proportion of 4–20 per cent. The celebrated iron dagger of Tutankhamen was examined by emission spectral analysis and was found to contain quite a large quantity of nickel, thus proving that the iron was of meteoric origin.

Ascertaining the purpose for which materials were used

It is sometimes difficult to know the purpose for which certain materials could have been used, and chemical analysis can be of considerable assistance in this regard. For example, a very large alabaster jar containing a strange substance was found in the tomb of Neferwptah (about 1800 before the Christian era), which was discovered in the Fayum depression in Egypt in 1956. Chemical analysis showed it to be composed of roughly equal parts of lead sulphide and resin. Since this compound had never been encountered before, there was no way of telling for what purpose it had been placed in the tomb. However, when the prescriptions listed in the Ebers Papyrus were consulted, it was found that prescription no. 402 stated: 'another remedy for the removal of white spots appearing in the eyes: black kohl (galena) and Khet-'wa (resin) are ground to a fine powder and put in both eyes'. From this text and the chemical composition of the substance in the jar, it was concluded that it was an eye medicine and that Neferwptah most probably had leucoma in one or both eyes, which was why she was supplied with a large quantity of the medicine for use in the hereafter.[15]

Determination of the details of ancient technical processes

The examination of ancient objects by scientific methods can yield information about the techniques ancient peoples used in their chemicals industries, as can be seen from the following examples.

Manufacture of Egyptian blue

Specimens of this blue pigment have been subjected to chemical and microscopic analysis and to X-ray diffractometry. These researches have shown that Egyptian blue was made in ancient times by heating a mixture of sand, powdered limestone, malachite and a flux of common salt.[16]

Microscopic examination of metal objects

The metallographic examination of metal objects can show whether they were produced by casting or hammering, or by a combination of both processes. For example, a copper staple from the Cheops Boat, discovered behind the Great Pyramid at Giza in 1954, was shown by this method to have been shaped by hammering.

14. P. R. Fields, J. Milsted, E. Henricksen and R. W. Ramette, 1971.
15. N. Farag and Z. Iskander, 1971, pp. 111–15.
16. A. Lucas, 1962, pp. 416, 419–20.

Examination of the refuse of embalming materials
Examination of samples of refuse from embalming materials discovered at Saqqara, Luxor and Mataria, in Egypt, has shown that they contain a small amount of soap composed of solid fatty acids, which was formed as a result of the saponification of the fats in the body under the action of natron during mummification.[17] It was accordingly concluded that the substance in question was used during the mummification process to stuff the body cavities prior to dehydration on the mummification bed.[18]

Glass-fritting crucibles
Investigation of the remains of a glass factory at Wadi-el-Natrum has shown that glass was made in crucibles in the Egypt of the Roman period.

Authenticity testing

For many years, the only means of judging the authenticity of an object was through the historical and aesthetic approach. More recently, however, with the immense strides made in scientific research, it is possible to determine whether objects are genuine or not with a greater degree of certainty. The most effective scientific methods used for testing the authenticity of objects are listed below.

Examination under ultraviolet light
This technique is particularly useful for examining ivory and marble. Under ultraviolet light, different types of marble fluoresce different colours, and the surface of ancient marble often has a characteristic fluorescent colour very different from that of fresh stone of the same kind. Similarly, although not visible to the naked eye, alterations or repairs to an ancient marble or ivory object, or even to paintings, may become strikingly conspicuous when the object is scrutinized under ultraviolet light. Infra-red light and X-rays have also been found useful in detecting forgeries.[19]

Examination of surface corrosion
Ancient metals usually corrode at a slow rate, and a coherent corrosion layer or crust is formed with the passage of time. In counterfeit metal objects, an artificial crust is usually applied to the surface in order to give it an ancient appearance. This crust does not form a very strong bond and it can be readily removed by solvents such as water or ethyl alcohol.

Analysis of the material forming the object
A very striking example of the type of technique used is the analysis of the core of ancient Egyptian faience. Whereas the core of genuine ancient Egyptian faience is made of quartz frit, the body core of modern counterfeit faience usually consists of kaolin or china clay, and this affords a quick and reliable test of authenticity. Another example can be seen in the fact that ancient metals contain a number of impurities such as arsenic,

17. Natron = sodium carbonate crystals.
18. Z. Iskander and A. E. Shaheen, 1964, pp. 197–208.
19. E. R. Caley, 1948, pp. 1–8.

nickel, manganese, and so on, since adequate metal refining techniques did not exist in antiquity. Hence, if a small sample taken from an inconspicuous place on the artefact is analysed by neutron activation or X-ray fluorescence and proves to be free of such trace elements, the object is most probably a forgery.

Identification of pigments and media in paintings
Microchemical techniques are useful for identifying, to within a reasonable degree of accuracy, the pigments used in paintings. If the pigment proves to be one that has only recently been discovered, then the painting is a forgery.

Examination of surface patina and polish
In the course of time, many stones acquire a surface patina, which is formed through the migration of iron and manganese salts to the surface, where they are deposited as oxides forming a kind of epidermis or patina. Since this patina forms an integral part of the stone, it is coherent with the surface and cannot be easily removed by washing with a neutral solvent or by scraping. It is accordingly possible to distinguish an authentic aged surface from one that has been freshly carved, even if it has been artificially patinated.

Thermoluminiscence testing of pottery
A very small percentage of radioactive elements is present in pottery, as well as in the soil in which it is buried. These elements emit a given quantity of radiation, which causes electrons to accumulate in the body of the pottery over a period of thousands of years. When the pottery is heated to a temperature of more than 500°C, the accumulated electrons produce a thermoluminiscent effect which varies with the age of the specimen. Thermoluminiscence therefore provides museum curators with very strong evidence for determining whether an object is genuine or not.

Dating techniques

There are several scientific techniques for dating ancient materials and the main ones are listed below.

Rough dating by archaeometric analysis

Analysis of specimens belonging to the same group of materials – such as mortars, glass, faience, metals and pigments – but dating from different periods can give results that may be used as a rough pointer to the dates of other specimens, as in the following examples.

Dating by the analysis of glass beads from West Africa
'Akori' beads were subjected to X-ray fluorescence analysis and were found to fall into two groups, group A of which had a much lower lead content. In West Africa, the group A beads are found on relatively old inland sites, dating from 430 to 1290 of the Christian era, whereas the group B type is found only in younger contexts. The

discovery of such beads in a tomb or stratum can accordingly offer a means of roughly dating the site.[20]

Dating of rock paintings by analysis of albuminous binders
The age of rock paintings can be estimated by determining the number of amino acids in their albuminous binders after hydrolysis. The higher the number of these acids, the older the painting. This method has been used to determine the age of 133 rock paintings in Southern Africa to within a 20 per cent degree of accuracy.

Dating by analysis of mortars
Analysis of a variety of mortars used in Egypt has shown that lime mortar did not exist prior to the time of Ptolemy I (323–285 before the Christian era).[21] Hence, any monument in which the bricks or stones are bonded by this lime mortar can be considered as being subsequent to that period.

Radio-carbon dating

The radio-carbon method developed by W. F. Libby and Anderson is based on the fact that the tissue of plants and other organic matter contain, in addition to ordinary carbon, an infinitesimal amount of a carbon isotope with a different atomic structure. This isotope is carbon-14 and it is formed by the action of cosmic rays on the nitrogen in the atmosphere. During the lifetime of organic matter, the radioactivity of the carbon-14 fixed in its tissues remains constant, but as soon as the organic matter dies the radioactivity starts to decay.

This decay occurs at a rate and over a specific period known as the half-life, or the time at the end of which half of the radioactive body has disintegrated and its radio-activity has accordingly been halved. The half-life of carbon-14 is 5568 years. The amount of carbon-14 has been shown to be the same in all tissues, in all regions and at all periods.

All that need be done is to remove the carbon in a sample of wood, fabric, copper, charcoal, bone or food taken from an archaeological site and to measure its residual radioactivity in order to calculate the time when the sample stopped living in relation to the half-life of the carbon isotope. The procedure usually consists of four steps: purification of the sample, combustion, purification of the carbon dioxide gas obtained, and counting of the particles emitted.

Care has to be taken to eliminate stray radioactivity and to provide for a margin of error above and below the value obtained. However, since the half-life of carbon-14 is relatively short, other methods, such as potassium-argon dating, can be used for longer time-sequences.

The accuracy of the method has been tested by means of a comparative study of historically well-dated samples and their corresponding radio-carbon datings,[22] in

20. C. C. Davison, R. D. Giauque and J. D. Clark, 1971, pp. 645–9.
21. A. Lucas, 1962, pp. 416, 419–20.
22. R. Berger, 1970; I. E. S. Edwards, 1970; H. N. Michael and E. K. Ralph, 1970; E. K. Ralph, H. N. Michael and M. G. Han, 1973.

particular on the basis of Egyptian chronology, which covers the longest and best-known time-span. Even so, factors such as the weakening of the Earth's magnetic field can affect the accuracy of the technique.

Potassium-argon dating

The basic principle

Naturally occurring potassium contains 93.2 per cent of the isotope potassium-39, 6.8 per cent potassium-41 and 0.0118 per cent potassium-40. At the time the Earth was formed, potassium-40 accounted for about 0.2 per cent of the total, but most of this decayed into two daughter products: calcium-40 and argon-40, the latter in the form of a gas retained between the grains of minerals. Since potassium-40 has a very long half-life – of 1330 million years – it has continued to exist in the extremely small proportion of 0.0118 per cent.

Furthermore, the fact that the radio-carbon method is not accurate for periods more than 70 000 years before the Christian era means that a long gap exists in the chronology of biological development from that period to as far back as 10 million years ago. This gap can to some extent be filled by the potassium-argon technique.[23]

Potassium-argon dating is most widely used for two reasons. First, potassium exists in the Earth's crust in the proportion of 2.8 per cent by weight. It is therefore one of the most abundant elements, entering into virtually all compounds. Second, the half-life of potassium is long enough for appreciable amounts of argon-40 to have been formed in certain minerals at periods that are particularly interesting from the geological standpoint. By measuring a given mineral's radiogenic argon-40 concentration and total potassium content, it is possible to determine its age by means of a radioactive decay equation.

Problems to which potassium-argon dating could provide answers

Problems that could be solved by applying the potassium-argon dating technique to certain periods of the Pleiocene and Pleistocene include the determination of an absolute time-scale that would make it possible to situate the origins of Man and the age of fossils co-existing in different parts of the planet. At Olduvai Gorge, in Tanzania, potassium-argon dating has been used to determine the ages of the basalt layers and the overlying tuff formations, in a bid to determine the precise age of the Zinjanthropus remains found in Bed I of the bottom tuff layer. Curtis and Evenden have concluded that the Olduvai basalts are at least 4 million years old.

Archaeomagnetic dating

A simplified picture of this method can be obtained from the following description of some of its features.

Palaeomagnetism

This involves the study of the remnant magnetism of archaeological remains. It is based on the fact that the Earth's magnetic field is constantly changing in direction and

23. M. J. Aitken, 1961.

intensity. Archaeomagnetic investigations based on the measurement of remnant magnetization in baked archaeological objects and in rocks show that the Earth's magnetic intensity over the past 8500 years reached its peak in about 400–100 before the Christian era, when the intensity was about 1.6 times its present value, and dipped to its lowest point, at some 0.6 times the present intensity, in about 4000 before the Christian era.[24] These effects, or variations in direction and intensity, are known as the 'secular variation'. This variation is regional in character and forms the basis for magnetic dating, since the changes in the Earth's magnetic field leave their trace in baked pottery in the form of thermo-remnant magnetism (t.r.m.).

The application of thermo-remnant magnetism to archaeological dating

In order to apply the t.r.m. technique to dating baked clay that has remained *in situ* since it was fired, it is first necessary to determine the behaviour of the geomagnetic field direction by taking measurements on archaeological structures of known age in the region concerned. The results are plotted on a curve showing the secular variation in that region over a long period of time. The date at which a baked clay specimen was fired can then be determined by comparing the direction of the magnetic field in the specimen with the secular variation curve.

As far as is known, this technique has not yet been used in Africa, but it is hoped that it will be in the near future, especially since it has been significantly improved in recent years.

Thermoluminescent dating

Thermoluminescence is the emission of light that occurs when a substance is heated. It is quite different from incandescence, or red-hot glow, and is caused by the release of the energy stored in the form of tapped electrons in the heated material.

The origins of thermoluminescence

All pottery and porcelain contain small proportions of radioactive components (a few parts per million of uranium and thorium and a few per cent of potassium). In pottery, the radiations emitted by cosmic rays bombard the crystalline materials, such as quartz. The resulting ionization produces electrons which, when heated, are dissipated and release their excess energy in the form of photons (light particles).

The intensity of this light, or thermoluminescence, is directly related to the age of the pottery specimen, but it also depends on the specific thermoluminiscent constituents in the pottery sample and its surroundings.[25] By measuring the amounts of uranium, thorium and potassium present in the pottery specimen and the surrounding soil, it is possible to measure the annual radiation dose received by the specimen. In principle, its age is then determined by means of the following equation:[26]

$$\text{age} = \frac{\text{accumulated radiation dose}}{\text{dose per year}}$$

24. V. Bucha, 1970, pp. 47–55; V. Bucha, 1971, pp. 57–117.
25. M. J. Aitken, 1970, pp. 77–88; E. T. Hall, 1970, pp. 135–41.
26. M. J. Aitken, 1970, pp. 77–88.

Accuracy of the results and prospective uses for the technique
At the present time, absolute accuracy of about plus or minus 10 per cent is obtained with this technique. This is not quite as accurate as the results obtained from radio-carbon dating and can be ascribed to the numerous difficulties arising, such as the circumstances in which the specimen was buried and the degree of humidity of the surrounding soil.

Despite its limited accuracy, however, this technique has the advantage over radio-carbon dating in that archaeological sites usually contain many more pottery specimens than organic matter. Moreover, the event being dated is that at which the pottery was actually fired, whereas the radio-carbon dating of wood or charcoal corresponds to the date at which the tree was felled rather than that at which it was subsequently used.

This technique is likely to have widespread applications in Egypt. Hitherto, the Neolithic and Predynastic cultures have largely been dated in terms of their characteristic pottery types, but it will now be possible to determine the exact age of these cultures by the thermoluminescent dating method.

Techniques used in archaeological prospecting

The basic purpose of the use of scientific techniques in field prospecting is to elicit information on buried archaeological sites before they are excavated or without having to excavate them at all. Such techniques offer a means of saving considerable time, effort and expense. Among the scientific techniques used in archaeological prospecting, mention can be made of the following.

Aerial photography

This technique is primarily used for identifying archaeological features from their geometrical layout. It has two main applications. In the first place, it provides a clearer 'bird's-eye' view of the points where the individual surface traces fit together to form a more meaningful overall pattern.[27] Aerial photographs can accordingly be used to identify areas that need to be excavated if a complete picture of the entire archaeological complex is to be obtained. This method was used to study the Karnak temples at Luxor in Egypt, where the site covers an area of about 120 hectares.

The second application of the technique is designed to reveal the existence of buried archaeological structures in cultivated land from the crop marks created by the differing soil humidity conditions. Crops growing above a buried stone wall will be weak and will show up as a more lightly-shaded line, whereas those growing on top of a buried ditch will be more abundant and will therefore be darker in appearance. The geometrical pattern formed by these marks makes it possible to identify the existence of buried structures, which can then be excavated.[28]

Soil analysis

Remains of ancient inhabited cities and cemeteries can usually be located by analysing the soil. Since calcium phosphate is the main constituent of the skeleton and other

27. R. E. Linington, 1970, pp. 89–108.
28. M. J. Aitken, 1961.

human waste, the amount present will naturally be much higher in land that was formerly occupied or was used for burial purposes. The limits of such archaeological sites can accordingly be determined by measuring their phosphate content.

Pollen analysis

Flowering plants are usually pollinated by birds, insects or the wind. Wind-pollinated flowers produce large quantities of pollen grains, most of which fall to the ground without being fertilized. These pollen grains usually decay, but if they happen to fall on suitable soil, such as mud or peat bogs, they may become fossilized and can then be readily examined under the microscope. The identification and enumeration of the various types of pollen present in a specimen can be useful for the information they can provide on the ecological environment in which human remains and artefacts were situated, and knowledge of that environment may, in turn, point to the life-style that prevailed at the time.

Electrical resistivity surveying

This was the first geophysical technique to be adapted to archaeology. It involves sending an electric current into the ground and measuring the ground's resistance. This depends on the nature of the soil, the volume of water retained in its pores and its soluble salt content. Hard and compact rocks such as granite and diorite display very high resistivity compared with clayey soils. Hence, resistivity surveying is mainly used for detecting stone-built structures buried in muddy soil or structures cut into rock that have subsequently become earth-filled.[29]

Magnetic surveying

This is the most widespread technique currently being used in archaeological prospecting. It involves measuring the intensity of the Earth's magnetic field at points above the existing ground surface of the site being prospected. The variations in the measurements can reveal the existence of archaeological features. The technique can be used to detect buried iron remains, baked pottery structures such as kilns and furnaces, soil-filled shafts driven into rock, or rock structures buried in clayey soils.

Very significant variations in intensity are recorded in the case of buried iron objects, but they are much weaker in other instances. Hence, the magnetic surveying technique can only prove useful if the detection equipment is sensitive enough to detect only very slight variations, as is the case with the proton magnetometer developed at Oxford University.

Magnetic surveying has a number of advantages over the resistivity method, in that it is simpler and quicker to use and the results are easier to interpret.[30]

Probing the Egyptian pyramids with cosmic rays

Cosmic rays consist of a stream of electrically-charged particles known as 'mu-mesons' or 'muons'. These rays reach the Earth with equal intensity from all points in the sky. Cosmic rays have a very high penetrating power: they are much more penetrating than X-rays and their velocity is almost equal to that of light.

29. M. J. Aitken, 1961.
30. R. E. Linington, 1970, pp. 89–108.

The probing of the pyramids with these rays is based on the fact that muons lose energy as they pass through matter. The energy loss (or absorption of muons) is proportional to the density and thickness of the matter through which they pass. The intensity or quantity of cosmic rays passing through the matter being examined can be estimated by means of an instrument known as the spark chamber which, in the case of the pyramids, was placed in an underground room. Muons that have passed through a void (or an unknown chamber or passage) are slowed down to a lesser degree than those passing through solid rock, and hence cosmic rays passing through voids have a greater intensity. This fact is detected by the spark chamber. With two spark chambers oriented horizontally at a vertical distance from each other of 0.3 metres, it is possible not only to detect the existence of a hidden chamber, but also to indicate its location to within a few metres. Excavations can then be started in the direction of the void or chamber predicted by the rays.

Probing by this technique was started in the Second Pyramid, which belonged to the Pharaoh Chephren, of the Fourth Dynasty (2600 before the Christian era). The cosmic rays enabled the precise location of the pharaoh's burial chamber to be determined.

Conservation techniques

In Africa, the problem of conservation is primarily bound up with the highly fragile nature of the materials involved and the advanced deterioration of stone monuments.

The extreme fragility of materials

Owing to the very hot and dry conditions prevailing in many African countries, artefacts made of organic materials, such as parchment, papyrus, leather, wood, ivory and so on, tend to become fragile. Such materials have to be handled with great care, for they are otherwise liable to crumble away. In dry climates, they first have to be kept in a closed moist system, wrapped in damp absorbent paper or steam-treated in an appropriate receptacle, so that their flexibility can be wholly or partly restored. Following such treatment, they can be unrolled or unfolded without breaking into pieces.

When they have regained their malleability, such artefacts should be exhibited or kept in air-conditioned museums or stores at a temperature of 17 $\pm$ 2°C and a relative humidity of 60–65 per cent, so that they do not become brittle again, as they would if exposed to dry climatic conditions.

The advanced deterioration of stone monuments

The deterioration of stone monuments is a serious problem which will be discussed in greater detail below.

The main causes of deterioration

The main agents causing advanced decay of stone in Africa are the migration of salts and marked changes in the atmosphere.

Migration of salts

In the presence of water or moisture from saline soil, soluble salts migrate into stone monuments through the phenomenon known as capillary rise. In dry climates, these

salts travel in the form of aqueous solutions from the interior of the stone to the surface, which they may cause to disintegrate, or else they remain just below the surface and give rise to flaking. These effects are more pronounced at the base of walls or columns where the stone is in direct contact with the salt-logged soil, as can be seen from some of the columns at the Buhen temple in Sudan.

Marked atmospheric changes

In Africa, stone is seriously affected by wide-ranging variations in temperature and humidity, and these eventually result in the flaking of the surface layers of most kinds of stone.

At many sites, especially in coastal regions, both factors of decay combine and can cause considerable damage to monuments, as in the case of the Roman temples at Leptis Magna and Sabratha in Libya.

The inadequacy of surface treatment

Extensive trials have been conducted in a bid to consolidate damaged stone surfaces by treating them with organic preservatives or inorganic silicates. Such treatment has proved not only ineffective, but indeed dangerous, since it has stepped up the rate at which the stone has deteriorated and started to flake.

Over the period from 1962 to 1975, an international committee composed of ten experts in stone conservation engaged in a study of the problems of stone deterioration and protection.

Prospects for renewed hope in finding a solution

Professor Lewin has developed a new method for strengthening limestone and marble surfaces.[31] This entails treating the damaged parts with a solution composed of barium, urea and glycerol. After this treatment, the stone becomes markedly harder and more resistant to deteriorating agents.

The method was used in July 1973 to strengthen the disintegrating surface on the neck of the limestone statue of the Sphinx at Giza. The outcome has so far proved satisfactory, but it will have to be kept under observation for at least ten more years before this technique for halting the deterioration of limestone can be regarded as being acceptable.

Remedial measures

Despite the hopes that can be placed on the technique developed by Professor Lewin, the problem entailed in using chemical treatment to protect stone monuments has still not been solved. In the meantime, a number of structural measures can be recommended:

1. The surfaces of outdoor monuments exposed to the direct action of the sun's rays should not be treated with any preservative solutions obstructing the pores in the rock, since the surface layers would otherwise be liable to scaling.
2. The soil on which the monuments stand should be periodically cleansed of its salt

31. S. Z. Lewin, 1968.

concentrations by washing it out with water. This water should subsequently be removed through a properly designed drainage system.

3. In instances where monuments are imbibed with soluble salts that are liable to give rise to the formation of mould, these should be removed by washing with water and by coating the salt-infested parts with wet sandy clay until almost all the salts have been removed.
4. If the monuments are fairly small, they can be removed from their open-air location and housed in a museum or shelter, where their surfaces can be protected from the adverse effects of atmospheric agents.
5. If the monument no longer has a roof, a covering shelter should be built to protect any internal wall paintings or reliefs from direct sunlight and rain. This will to some extent halt the damage caused by the marked variations in temperature and humidity.

Recommendations regarding restoration work

The patina of old monuments should not be washed off or removed in any way, with the aim of bringing out the original colour of the stone. Cleaning of the facades should be confined to removing dust without touching the patina, since this is the most important archaeological feature the monument possesses.

When ancient monuments are being restored, the only course should be to rebuild parts that have collapsed at their original locations. Replacements and additions should be avoided, unless they are needed to support the parts that have collapsed or to protect old surfaces from weathering.

The mortar used to renovate walls should, as a rule, be identical with the original mortar, unless this was made of gypsum. The mortar recommended in all cases of reconstruction is salt-free lime-putty mortar, since it is readily malleable and porous and is accordingly not liable to prevent slight movement of the stones due to temperature variations. As a result, there is little risk of strains or cracking occurring.

10

History and linguistics, and theories on the 'races' and history of Africa

PART I: History and linguistics

Aada koy demgna woni (Fulfulde)
Lammii ay dekkal demb (Wolof)
Speech is what gives shape to the past

The African sees a link between history and language wherever he turns. *'Hanki koy daarol awratee'*, as the Fulani say: 'We meet the past in stories'. This idea is akin to the thinking of the Greeks and Arabs. However, as far as Africans are concerned, owing to the lack of writing in many instances, its special feature is that history is seen less as a science and more as a form of wisdom, as the art of living given substance through speech.

Linguistics, the science of language, has a twofold bearing on history. On the one hand, language as a system and tool of communication is a historical phenomenon. On the other, history is a product of language on two counts: as discourse and as historical evidence.

Every language can provide internal technical data bound up with its actual structure, but can also offer extra-linguistic data, which refer back to the entire general context. Language is a mirror of people's lives and of the civilizations to which they belong.

The linguistic sciences and history

All the sciences relating to language can be of value to history, although some of them can contribute more directly than others. For instance, the study of the relationships between languages can provide historians with ideas about the relationships between peoples. It is only proper to add, however, that even comparisons such as these cannot be made except in terms of a study of internal structure of the languages concerned. This is why there is no branch of linguistics to which historians can remain completely indifferent.

Scientific classification of languages and the history of the African peoples

Classifying languages is one way of beginning to study relationships between peoples. A distinction can be made between several types of classification.

A *genetic classification*, which goes deepest, makes it possible to detect the kinship and hence the original relationships within a particular family of languages.

A *typological classification* is based on purely structural criteria, such as noun and verb forms. These may be the same in languages that are far removed from one another, such as Wolof and English. Typological similarity therefore in no way implies that the languages concerned are related. Conversely, typological differences do not necessarily mean that the languages bear no relationship to each other. In some cases, it is even necessary to go beyond the lexicon and make a combined study of phonological, morphological and syntactical structures in order to identify the kinship, if it exists.

A *geographical classification* represents the most elementary process whereby languages that are physically close to each other are grouped together. This has been a typical approach in a number of attempts to classify African languages into such groups as West Atlantic, Senegal–Guinea, Niger–Chad, and others. This practice is unfortunate, since it disregards the linguistic interpenetration resulting from migrations, invasions and so on.

Any really valid classification must take account of all the representative elements and demonstrate that the resemblances are neither fortuitous nor the outcome of borrowings. In some variants of Kiswahili, for instance, up to 60 per cent of the words are of Arab origin, yet in its actual structure Kiswahili is plainly an African language.

Linguistic analysis for classification purposes must also take account of the phonetical, morphological or syntactical changes which specialists are capable of detecting and which should not be an obstacle to the classification process. For instance, the forms *neds* (Ancient Egyptian), *neddo* (Fulfulde), *nit* (Wolof) and *ned(a)* (More) must be related.

Reconstruction of a language

The idea here is to proceed by analysis back to the original common trunk or proto-language of which the different languages belonging to the same family are all branches. This can be done by taking sound shifts as a basis. If it is known, for instance, that, in one variant, *p* becomes *f* and, in another, *u* becomes *o*, and so on, then *Fa* = *Pa*, *Lu* = *Lo*, etc. Hence, the original forms can be reconstructed. From phonology, it is possible to move on to the common lexical stock and work out the percentages of words in common in the vocabularies of the languages being compared, although it should be borne in mind that such a comparison in itself does not prove anything. Lastly, there are the structural similarities in the noun, pronoun, verb and other systems to be investigated.

Once comparisons such as these have been carefully made, the relative age of the materials and hence of the languages involved can be assessed and an attempt can be made to indicate the relationship in which they stand to one another on the particular language tree. This exercise can shed startling light on the history of ethnic groups and multinational or multi-ethnic civilizations.

This type of research is made much easier when the languages being dealt with have had a written form for a considerable length of time. The task is an extremely difficult one when the languages involved have been transcribed quite recently, even though the fundamental or basic vocabulary of human societies changes very slowly.

In black Africa, for instance, by taking black African words recorded from the

eleventh century of the Christian era onwards, first in Arabic and subsequently in European texts, it has been possible to produce a rough estimate of the rate at which the words changed, so that some of them can be regarded as being signposts, as it were, to the forward movements of the peoples speaking them.

This approach has been taken even further. Researchers such as Swadesh have asserted that although a people's cultural vocabulary is likely to be unstable, the base vocabulary – the names of the parts of the body, vital or natural phenomena, and the numbers from one to five – is very stable. They claim that the latter's very slow rate of change is constant in all languages and that it can even be measured. However, the mathematical formula developed by Swadesh to measure the time-span separating two languages on the basis of his claim has been applied to the Voltaic languages and the results are not conclusive, probably because other extra-linguistic factors may influence the rate of change.

Linguistic classifications and ethnocultural relations

The existence of relationships

A large number of studies carried out by linguists in Africa have revealed remarkable instances of the relationships existing between certain groups of languages. Indeed, W. H. I. Bleek demonstrated this as early as 1862 in respect of the languages of the Bantu peoples. Similarly, the work done by Mlle Homburger and Cheikh Anta Diop has laid stress on the kinship existing between Ancient Egyptian and a large number of present-day African languages such as Hausa, Wolof and Songhay.

Moreover, certain African languages are so pervasive that they have become superimposed on many other languages as vehicles of communication or have sometimes taken their place. This is true of Lingala, Hausa, Kiswahili, Yoruba, Twi, Ibo, Bambara-Dyula, Fulfulde, Wolof, and others, which are spoken by millions – indeed tens of millions – of people of differing origins. From this point of view, the two main languages of East and Central Africa are Kiswahili and Lingala, and the corresponding languages in West Africa are Hausa and Bambara-Dyula. Arabic is also widespread along the southern edge of the Sahara and down the East African seaboard.

The Africans themselves often have an intuitive, if unvoiced, sense of the kinship of their languages, which they see as implying the existence of blood ties or as being the outcome of such ties. This is true of the Fulani and Sereer, the Fulani and Tukuloor, the Marka and Sarakole, the Bisa and San, and so on. However, precise linguistic or historical grounds for these empirical observations have still to be identified before the myths or legends of origin, teeming with details and anecdotes, can be confirmed or invalidated.

By contrast, in the case of etymological science and the origins of vocabulary, African masters versed in the history of words – traditionalists of speech – exist in all ethnic groups.

Since the nineteenth century of the Christian era, the Indo-European languages have been the subject of far-reaching comparative studies, and linguists have attempted

similar exercises in respect of African languages. They have included W. H. I. Bleek, followed by Meinhof and later by Guthrie for the Bantu languages; Delafosse for the West African languages; C. L. Lepsius, A. N. Tucker and G. W. Murray for the Nilotic languages; Basset for Berber; Bauman, Westermann and J. H. Greenberg, all of whom made their contributions before increasingly decisive findings were made by Africans themselves. However, some scholars wonder whether all these efforts are not premature, inasmuch as only a strict scientific description of all the languages concerned could warrant typological or indeed genetic comparisons that must currently remain in the realm of speculation.

The need for more research

Even the task of listing all the African languages has not yet been conducted on a scientific basis. At an estimate there are in Africa between 1300 and 1500 systems of speech that may be classified as languages, although in fact a good number of these are probably dialects or varieties of certain parent languages. When it is borne in mind that the monographs on these languages often contain no more than a few hundred more or less correctly transcribed words, the time is clearly not ripe for an all-embracing synthesis covering the entire continent. Three linguistic areas can be taken as examples of the degree to which tentative conclusions are unreliable as long as the disagreement on data and methodology persists.

First, relations between the so-called 'Negro African' languages and the Semitic languages, marked by thousands of years of exchanges, are difficult to disentangle, especially since the data for Ancient Egyptian go back 4000 years and those for Semitic languages some 2500 years, whereas the studies on Chadic, Berber and Cushitic are only based on reliable information from the nineteenth century onwards. When, in 1947, M. Cohen published his *Essai comparatif sur le vocabulaire et la phonétique du Chamito-sémitique*, a language group which, in his view, embraced Egyptian, Berber, Semitic, Cushitic and Hausa, he was immediately challenged by Leslau and Hintze, while Greenberg dissociated 'Chadic', with its very indistinct borders, from the group, since some linguists have seen links between this Chadic group (Sara) and languages classified under the 'West Atlantic' heading, such as Sereer, Fulfulde, Wolof, etc. Whereas the initial tendency was to add the African continental languages to the better-known Semitic group, the reverse pattern whereby they are centred on the 'Negro African' groups now tends to prevail. Evidence of this can be seen from the symposium on 'The Peopling of Ancient Egypt', organized by Unesco in Cairo in 1974, at which it was stated that Ancient Egyptian 'could not be isolated from its African context and its origin could not be fully explained in terms of Semitic'.

Second, there are also considerable difficulties of classification in connection with Cushitic (Somali, Galla, Sidamo, etc.). Three different classifications exist, and each linguist (including the Soviet scholar Dolgopolskij) has his own preferred classification. The approach to the problem differs significantly. Whereas Greenberg concentrated on vocabulary comparisons, Tucker and Bryan base their comparisons on the pronoun system and the verb structure.

Lastly, the 'West Atlantic' coastal group from southern Mauritania to Sierra Leone is still a subject of controversy, inasmuch as Koelle, whose conclusions were approved

by Delafosse and Westermann and subsequently by Greenberg, recognized their specific character, whereas W. Wilson, D. Dalby and D. Sapir cast doubt on their originality. Such disputes, which can prove rewarding, will continue until descriptive monographs cover the entire field.

Ideological distortions

History and ideology almost always go hand-in-hand. The first large-scale linguistic and historical studies conducted on the African continent coincided with the slave trade and then with colonization, and this accounts for their Eurocentric and racist bias. The Hamitic theory was devised to explain any perceptible historical progress on the continent as being the result of the civilizing action of white or 'brown' conquerors, the latter being the colonizers despatched by capitalist imperialism.[1] Men like C. G. Seligman, in his *Races of Africa*, saw all the historical movements and language relationships on the continent through the distorting spectacles of racism and racialism and, when ascribing some measure of progress in Central and East Africa to the Bantu, felt compelled to turn them into 'Hamiticized Negroes'. W. Taylor even went so far as to write: 'From its wealth of vocabulary, its sonorous diction and the delicate shades of meaning it can express, I certainly do not think that it [Fulfulde] belongs to the [black] Sudanese family.' Hence there was widespread confusion between the categories of race, languages, culture, ethnic origin, and so on.

In point of fact, contrary to all the gross misrepresentations mentioned above, the Senegalese languages (Wolof, Fulfulde, Sereer, etc.) are in many respects much closer to the Bantu languages than to the geographically adjoining Mande languages. Ancient Egyptian is closer to the 'Negro African' languages than to the Semitic or Indo-European groups to which it has been assimilated as a matter of principle. Fulfulde, the language of the Fulbe, is a 'Negro African' language, whereas the Hausa language spoken by the Fulbe's subject peoples in the Muslim empires of the central Sudan is related to the so-called Hamitic group. For centuries, the Mande and Wolof hegemonies under the authority of princes speaking 'Negro African' languages held sway over peoples who were classified by racist linguistics as Hamites, pre-Hamites or Berbers. A large number of Fulbe groups, for instance, were subjected as minorities to the Mossi, Bambara, Songhay and other monarchs of the Sudan.

Auxiliary sciences

Typological analysis

Cultural typology, as it is known in the English-speaking world, and the definition of cultural circles and cycles by the German school of Frobenius, and subsequently Bauman and Westermann, have tended to obscure the language picture, in that non-linguistic cultural factors, such as the use of iron and iron-working, governmental structures, the pantheon of gods and so on, interfere with and overshadow the strictly technical

1. See Chapter 11 below.

analysis of language, to the extent that linguistic kinship in this field becomes a mere by-product of general 'cultural' relationships.

Onomastics

Onomastics covers the study of place-names (toponyms), personal names (anthroponyms), names of rivers and lakes (hydronyms), etc. Such names represent one of the reference keys that languages offer for detecting historical contacts, convergences and influences. The names of families characterize an ethnic group or caste whose activities can be traced back by the mere fact that such patronyms or ethnonyms are present.

Toponyms are eloquent linguistic 'fossils' for the historian. Certain suffixes or prefixes, such as *dugu* in the Mande group, *saare* among the Fulani, *ker* among the Wolof and Arabo-Berbers, *daaru* in Hausa, etc., which are used to designate villages or urban settlements, automatically offer a clue to the presumed founders of the settlements and are pointers to the routes taken by peoples.

Semantic anthropology

Semantic anthropology is concerned with discovering the culture of a human group through the agency of its language. Language is like a bank or a museum into which, over the centuries, each ethnic group has deposited all it has built up and accumulated in the way of mental and material tools, memories and resources of the imagination. By means of an in-depth and wide-ranging study of the language (both infra- and supra-linguistic), through religious documents, fables and legal customs, medical and educational prescriptions, instruction in crafts and technical skills, it is possible to uncover the entire grid pattern underlying a culture or civilization: how people think, how they behave in society, what their attitude is to animals, plants and nature in general, their conceptions of war, love, the hereafter, human destiny, and so on.

In the African countries, where written texts are so rare, this provides an invaluable means of exploring the entire history of an ethnic group and an attempt can even be made to sketch out actual developments from changes in linguistic material.

Linguistic documents and historical thought

Does this mean that African griots should be given an opportunity for teaching and engaging in research? The predominance of the spoken word over writing in many of these societies has to be acknowledged. On the other hand, we should bear in mind that literature in the strict sense – thought committed to writing – is generally more firmly established, more stable and more suited to scientific research. In addition, in linguistic terms, the scope for dialectalization is greater with the spoken word. The more fragile oral language remains richer because it can bring into play such features as accents, intonation, silences and tempi, because it can adapt itself to different environments, because it keeps closer to the people for whom it is sometimes the only vehicle of expression, and because it conveys cultural features that cannot be found in writing.

Thus spoken language and written documents are complementary elements that are essential for reconstituting a people's culture, especially in Africa.

The graphic tradition – African writing

Writing, an instrument of commerce, administration and science, took root and proliferated in urban civilizations. This was the Phoenician tradition. However, in the still earlier Egyptian tradition, the aim was to materialize thoughts and turn them into acts, through the very presence of the graphic document; the same is true, although to a lesser degree, of the word, which creates by virtue of its very enunciation. Writing demonstrates, proclaims, protects, exalts and magnifies. This is the meaning of the *Palette* of Narmer and the *Récade* of King Glélé of Dahomey. It is not by chance that the origin of Egyptian writing is ascribed to the jackal god Thot, who also invented magic and science: the jackal-headed god of the Dogon is the guardian of creative speech.

The Egyptian hieroglyph is essentially pictographic: its value as a sign and in terms of effectiveness lies in its materialization of living beings, objects and ideas. The later cursive script was only current outside the temples, in the same way as hieratic writing was used for secular purposes and popular demotic was essentially utilitarian. This conception of writing as being an instrument for acting on the forces of the world remained the basis of graphic representation in Africa among such peoples as the Bambara, Yoruba, Nsibidi, Dogon, etc. Among other peoples, writing soon became secular in purpose. However, the unity of the writing systems originating from Africa does not reside only in their magical or ideological intentions, but is also revealed in actual tangible techniques used for expressing ideas. There are three such techniques: the use of painted, engraved or carved reproductions of the being or object through pictograms; the use of symbols to represent something through ideograms; and the use of phonograms. For instance, a drawing of a hoe originally designated the tool. However, the word for hoe was pronounced *mer*, which also meant to love. Hence the drawing of the hoe came to mean love and to designate all the other homonyms of *mer*.

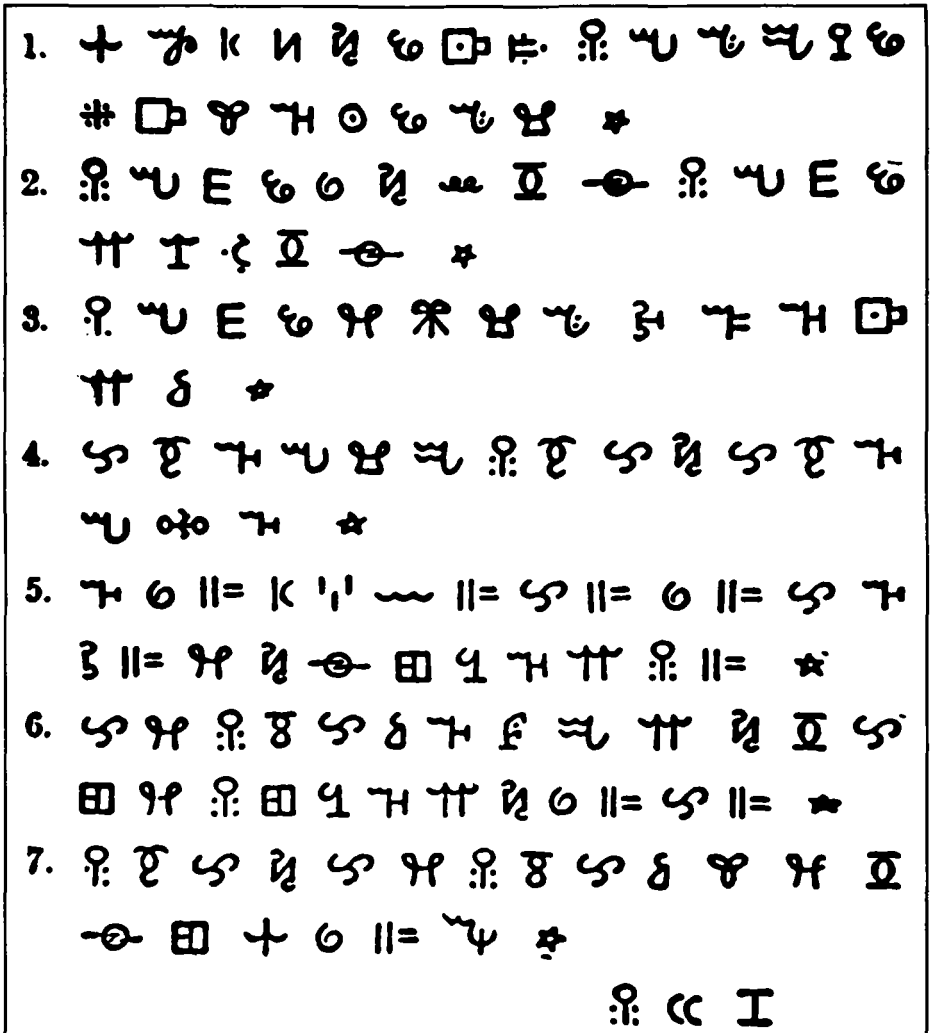
The graphic representations dating from the time of the pharaohs and of certain African kings abide by the same technical rules of symbolization. For instance, the *Récade* of King Dakodonu or Dokodonu of Dahomey (+ 1625–50) shows a pictographic symbol representing a silex 'da' with, below it, a drawing of the earth 'ko' with a hole in the middle, 'donon'.[2] If these different picto-phonograms are put together, they give the name of the king: Dokodonu. This technique is a virtual reproduction of that used on the *Palette* of Pharaoh Narmer.[3]

Hieroglyphic writing is found in forms of varying sophistication in the graphic symbols of many African peoples. In the seventeenth century Gavazzi de Montecudolo reported its existence among the peoples of Congo and Angola.

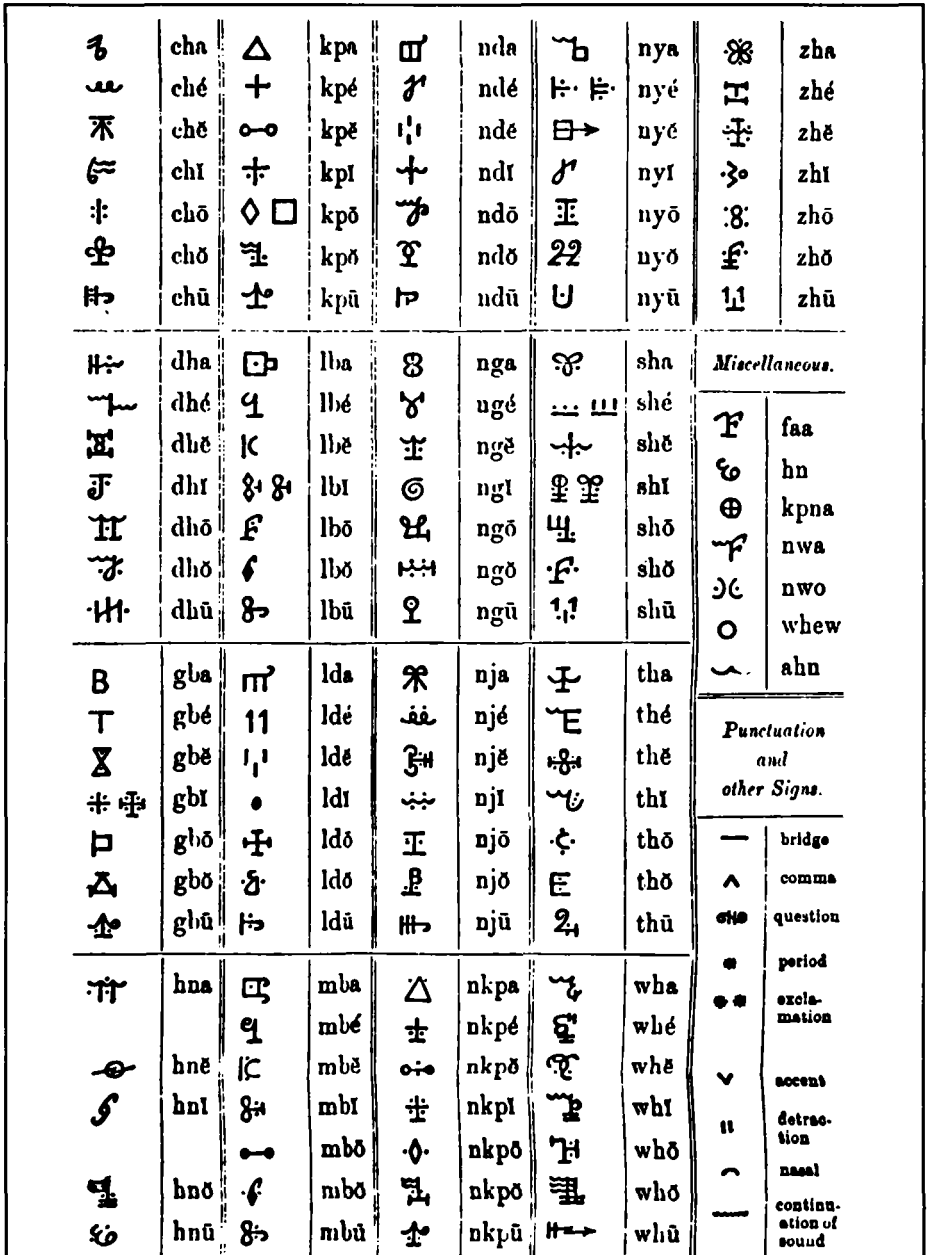
Ideographic systems exist in many regions. In this respect, the Gurma have a very complex system of divination. The diviner, the *tambipwalo*, draws signs in the sand and interprets them. He then gives the person consulting him a kind of prescription consisting of signs carved with a knife on a piece of calabash. These abstract signs designate the altars, the places where he must go to make sacrifices, what kind of animal he should

2. *Récade*: an engraved sceptre representing the authority of the King and authenticating the mission of his messengers.

3. *Palette*: a stone plaque on which an engraving or a drawing is represented.



10.1 *First page of the first chapter of the* Qoran *in Vai (from T. Obenga, 1973,* Afrique dans l'antiquité, *Présence Africaine)*



10.2 *Phonetic chart of Vai characters (from T. Obenga, 1973,* Afrique dans l'antiquité, *Présence Africaine)*

	Egyptian pictograms (about 4000 before our era)		*Nsibidi pictograms*[34]
A_{27}		man running, an arm outstretched *inw* = messenger	 Dayrell$_{107}$, man running an arm outstretched
			 Macgregor (p. 212), a messenger
F_{22}		mammal's stomach; *ḫ.t.* = stomach, body	 Dayrell$_{127}$, symbol containing fish bones
I_1		lizard; *ʿš ȝ* = numerous, rich	 Talbot$_{51}$, lizard
I_{14}		woman or snake (*ḥ f'w*); worm (*ddfi*)	 Macgregor (p. 212), snake; Dayrell$_{104}$, very long snake; *uruk —ikot*, snake in Efit and *ikaw*, in Uyanga.
N_8		*wȫn* : to rise	 Talbot$_{33}$, sc sun shining, nant, *ũtinn* sun in Efik and in *dũawng*, in Uyanga.
N_{11}		lunar crescent; *i' ḥ* = moon	 Talbot$_{36}$, lunar crescent; *ebi* = moon, in Uyanga.

10.3 *The Egyptian and West African graphic systems (from T. Obenga, 1973,* Afrique dans l'antiquité, *Présence Africaine. Note 34 suggests comparisons with J. K. Macgregor, 1909, E. Dayrell, 1911, and P. A. Talbot, 1923)*

10.4 *The Palette of Narmer (from C. A. Diop, 1955,* Nations nègres et culture, *Présence Africaine)*

sacrifice, how many times, and so on. It is in fact a system of coded writing.

The Ifa divination system is also remarkably rich. The tables (of which there are hundreds!) drawn up by the diviner constitute the 'threads' or words of the gods governed by Ifa, the god of destiny. This divination system, which is found all along the coast of the Gulf of Benin, is based on combinations of graphological tables designed to produce a given mythological strategy.

Dogon and Bambara ideographic writing are now quite well known after the research carried out by M. Griaule and G. Dieterlen. The Nsibidi writing of the Ibo in southern Nigeria is also of the ideographic type.

In some instances, a qualitative step forward is taken with the introduction of phonetic systems based on words, syllables or single phonemes (sounds). This last and most elaborate stage constitutes alphabetic writing.

Tafineq, the Berber writing of the Tuareg, probably owes something to the Punic peoples of Carthage. The Nubian system of writing developed in the tenth century of the Christian era through contact with Coptic writing, and the Ethiopian writing of the Tigriniya and the Amharic is linked to the Sabean script of southern Arabia. Mention must also be made of the Bamum script, invented by Sultan Njoya in the nineteenth century.

The syllabic or alphabetic writing systems that were fairly widespread along the Liberian and Guinean coasts and in the Sudanic regions from the eighteenth century onwards were probably autochthonous in origin, although there was perhaps an indirect European or Arabic influence in some instances. This is true of the Vai script of Liberia, which emerged in the nineteenth century in an area where the existence of an earlier hieroglyphic script has been reported. In this script, a dot is placed alongside the image of a man to indicate large numbers of people. A similar method of denoting the plural, but consisting of dashes, was used in Pharaonic writing.

In other words, the claim that the idea and practice of writing existed throughout all the stages of African history is borne out by the very large number of experiments attempted by African peoples. Most of the systems invented were not developed to any great extent, but this was probably because of the immense distances separating the small communities scattered over the vast landmass of the African continent.

PART II: Theories on 'races' and the history of Africa

The question of what constitutes a race is very difficult to answer in scientific terms. If we start from the original unity of humankind, the 'racial' differences we see today can only be accounted for by evolution.

Two conditions are required for raciation to occur. In the first place, a group may be sufficiently isolated for one of its genes to be transmitted more frequently than another, so that the group will eventually become distinguished from neighbouring groups by a particular characteristic originally acquired purely by chance. This is what is known as genetic drift, and it may have played a considerable role in Africa among small endogamous groups which, for a variety of reasons, established isolated communities in forest environments, for example.

The other, even more far-reaching pattern of differentiation is that whereby a group

preserves the genetic equipment that suits it best in a given environment. This process is known as natural selection and it presumably came into play on account of the differing conditions created by latitude, humidity or drought, the natural environment (forest or steppe), and so on. It has been observed that the average height of populations increases with the temperature of the hottest month of the year, and that a narrow nose warms the air inhaled better in a colder climate. Although black peoples have the same number of sweat glands as whites, they perspire more and this keeps their bodies cooler.

The morphological approach

At the outset, therefore, race was defined on the basis of visible, external criteria, such as skin colour, type of hair and shapes of the skull, nose, lips, and even buttocks! However, the advocates of this method have never managed to agree on the key measurements or on the methods used for taking them. In the case of colour, for example, there is an infinite range of intermediate shades between people who are unquestionably white and those who are likewise unquestionably black. At what point does a person stop being black and become white? The exceptions are certainly more significant and more numerous than the rule!

The demographic or population approach

Accordingly, many scholars have preferred to characterize races not so much by individual appearance as by the frequency of certain genetic or blood factors, such as the distribution of A, B and O blood groups. Landman defines a race as being 'a group of human beings who (except in a few cases) display more genotypic similarities, and also very often more phenotypic similarities, to one another than to members of other groups'.[4] Hence, the characteristics of blood cells would appear to be far better criteria for distinguishing one human group from another than external signs. Unlike darkness of skin or frizziness of hair, which exist to varying degrees, blood factors are either present or they are not.

However, a distinction can be made between three types of factor. Certain blood factors exist in all 'races' without exception. Others are present in all groups, but are preponderant in certain 'races'. The Ro chromosome, for instance, is known as the 'African chromosome' because of its particularly high frequency of occurrence in black people south of the Sahara.[5] Lastly, a third type of blood factor is found primarily among certain racial or geographical groups.

The definition of race

This way of differentiating between peoples also comes up against very considerable difficulties, in the first place because there are an increasingly large number of factors of differentiation and these tend to give results that are sometimes aberrant. 'Race' as determined by genetic factors and 'race' as characterized by external features do not

4. A phenotype is a visible external characteristic.
5. Chromosomes are the cell elements containing the genes, which are the vectors of heredity.

coincide. For instance, the Pygmies and San of Africa, who are very close to the blacks of New Guinea and Australia in terms of phenotypes, are closer to the Europeans in blood structure and genes, whereas the Australian aborigines are closer to the Japanese and Chinese in terms of blood structure and genes. Hence, external appearance seems to be much more closely related to climate.

Furthermore, the work done by R. C. Lewontin on blood markers has shown that, for the world as a whole, 85 per cent of the variations occur within nations. There is only a 7 per cent variation between nations belonging to the same 'race' and only 7 per cent between 'races'. In short, there is more difference between individuals in the same 'racial' group than there is between 'races'.

This is why more and more scholars are coming to deny the very existence of races. According to J. Ruffié, Man first emerged in the tropics and evolved for a long time in a hot climate. 'It was only during the second ice age, thanks to his efficient control of fire, that *Homo erectus* opted to live in a cold climate.'[6] The human race, then, became more polytypic as it diversified and adapted to differing environments. Little by little, however, Man learned to defend himself against all the specific environments he encountered by developing culture, in the form of clothing, housing, food, and so on, to such a degree that the human species is tending to become monotypic again. Having severed its dependence on the ambient conditions, and as a result of the close contact between peoples, mankind is now virtually a single pool of intercommunicating genes.

In 1952, Livingstone published his celebrated paper on 'The non-existence of human races'. The fact is that, depending on the criteria selected, whether it be skin colour, the shape of the skull or the nose, the nature of the hair, genetic features, etc., the resulting map of the races differs every time. 'In the light of the most recent advances in human genetics, no biologist nowadays any longer admits the existence of races within the human species.'[7] Bentley Glass considers that the white race differs from the black by no more than six pairs of genes. In terms of numbers of genes, there are often greater variations than this both among whites and among blacks. This was one of the reasons for the Unesco declaration that 'Race is not so much a biological phenomenon as a social myth.'[8] What better illustration could there be of this claim than the fact that in South Africa a Japanese is regarded as an 'honorary white' and a Chinese as 'coloured', whereas a man who is considered to be white in Brazil is considered black in the United States. The truth is that all the peoples of the world are of mixed blood, and are likely to become increasingly mixed.

Even so, the myth of race continues to do untold harm. Since Hitler asserted that between the Aryan 'Prometheus of Mankind', and the black 'half ape by descent', there was the intermediate Mediterranean type, the racial myth is still very much alive. In the objective development of peoples, two factors contribute to the typical profile of a group: the genetic heritage (heredity) and the environment.

Against that background, what can we say about race where the African continent is concerned? It emerges from a great many recent studies that the blacks came into being on the continent some 120 000 years ago and that the black pigmentation was, in fact, a

6. E. Mayr, quoted by J. Ruffié, 1977, p. 115.
7. J. Ruffié, in 'De la Biologie à la Culture', p. 110.
8. Four Declarations on the Racial Question, Unesco, Paris, 1969.

protective adaptation to harmful radiation, especially ultraviolet rays. The 'whites' appeared on the planet much later – about 55 000 years ago. The Arab-Berbers, who are 'Mediterranean' types, subsequently spread to the south of the Sahara, the Horn of Africa and the eastern seaboard.

In the regions where the Arab-Berber world touched the black group, which also comprises the Khoisan, the Nilotic peoples, the Fulani and the 'Ethiopians', certain peoples display distinctive signs of mixed breeding. This is true of certain Tuareg groups, the Haratin and the Somali, as well as of certain Fulani and Hausa, Tukuloor, Songhay, and so on, in the Sudanic belt. In this, as in other instances, the decisive factors in the process of differentiation are the geographical environment and the isolation of intermingling of peoples through invasions, migrations and intermarriage.

All in all, the remarkable variety of African physical types is a sign of the very protracted and slow-moving evolution undergone by groups that were for a long time fairly isolated. Naturally, the findings of anthropology, psychology and sociology have shown that no human group or 'race' is better equipped than any other as far as the degree of intelligence is concerned.

The historical primacy of culture over biology has been plain ever since the offspring of the same primordial couple have roamed over planet earth, having probably set out from the African continent. When will people come to realize that it is culture, and not the nuts and bolts of biology, that makes them what they are and that can develop their humanity?

11

Migrations and ethnic and linguistic differentiations

German ethnographers and linguists were the first to embark on the systematic study of African cultures, well ahead of their European counterparts. A 'Colonial Institute' was established in Hamburg as early as 1907, whereas the School of Oriental Studies in London opened only in 1916 and did not become the School of Oriental and African Studies until 1947. The systematic teaching of African languages in France started later still. Germany accordingly played a predominant role in African studies in the period immediately prior to the First World War.

The theories of the German school and recent discoveries

Hegel's thesis, whereby Africa was the home of the 'non-historical peoples' who had taken no part in the spiritual development of the world, has been recalled in earlier chapters. These ideas were the basis for much of the scientific research carried out on Africa in the nineteenth century, as evidenced by the rather sketchy picture painted by H. Schurz, who compared African history to a heavy sleep leaving no memories, unlike the eventful sunlit day, which he regarded as symbolizing the path trodden by the European races.

In Hegel's view, the light of the spirit first dawned in Asia and, in his wake, historians like Stow considered that the earliest inhabitants of Africa, the San, had arrived from Asia in two migratory waves.

Similarly, F. Stuhlmann, a geographer of the German cultural and historical school, hotly disputed the evolutionary theses, which saw the development of mankind as a uniform process. He advanced the diametrically opposed thesis of specific 'cycles of civilization', differentiated by the features of material culture, with the diffusion of such features from one 'cycle' to another taking place through migrations. Leo Frobenius and Ackermann both upheld the same theory. They saw the process of human occupation in Africa as a set of sequences: first, the Pygmies and the San, low-statured peoples originating from Asia and possessing virtually no material techniques; then the fuzzy-haired Negro peoples coming from South-East Asia, with their rudimentary agriculture, their round and square huts, a few wooden implements, and bows and arrows as weapons. These people were held to speak 'isolating-type' languages and were thought to have been followed by proto-Hamites from northern Asia, who spoke agglutinative

languages with noun classes, used the hoe to cultivate cereals (sorghum), and also reared small-horned cattle. The intermarriage of these peoples with the Negroes was supposed to have given birth to the Bantu peoples. After this came the invasions of the light-skinned Hamites, who arrived through the Suez isthmus; they were said to have been the ancestors of the Fulani, Maasai, Oromo, Somali and Khoikhoi peoples, and to have disseminated further decisive culture elements such as long-horned cattle, spears and leatherwork. The next wave brought the Semite peoples, the purported creators of the civilization of Ancient Egypt, who introduced corn, bronze, the plough, and so on. Then it was the turn of the Hyksos and Hebrews and of the Habashat, who settled in the Ethiopian highlands. The last to arrive were the Arabs, in the seventh century of the Christian era. This splendid scenario, which does honour to Stuhlmann's imagination, is set out in a work published in Hamburg in 1910 and was the inspiration for the ideas of many other ethnographers, including Seligman in England and Honea in Austria.

In linguistics, the Hamitic theory propounded by Meinhof was naturally based on the four main sequences of this hypothetical process. To begin with, there were the click languages of the primitive peoples, and then the very rudimentary isolating languages spoken by the Sudanic Negroes. These were followed by the nobler agglutinative languages resulting from the intermarriage of the black Bantu with the Hamites. Finally came the eminently superior inflected languages of the Hamite conquerors.

This all-embracing, wholly extroverted conception of African history and linguistics prevailed throughout virtually all of Europe until the Second World War, even though it had been undermined and shaken in its foundations by research that produced a series of incontrovertible facts and attracted a good deal of attention. In 1924 came the discovery of the Australopithecines in South Africa and this was followed by a host of other discoveries of anthropoids that can be linked to all the racial groups. The theory of the purported migratory waves of Asian origin collapsed, therefore. As the palaeontologist Arambourg has stressed, Africa is the only continent where all the stages in the development of man – australopithecine, pithecanthrope, Neanderthal and *Homo sapiens* – can be read off from the ground strata, complete with the tools used by each. This view was borne out by the study of the prestigious heritage of cave art, which covers a range that is unique to Africa. Darwin's thesis whereby Africa is the common cradle of all mankind is accordingly confirmed.

There can be absolutely no doubt about the age of the archaeological evidence, since this has been authenticated by scientific dating using the carbon-14 and potassium-argon methods. These dates confer on the Sahelian and Saharan regions of Africa a role that is as old as, if not older than, that attributed to the Near East.

At Tassili N'Ajjer in Algeria, for instance, potsherds have been dated to 8000 before the Christian era, and at Acacus, on the borders of Algeria and Libya, a negroid-type skeleton bearing traces of hide clothing was unearthed and was dated as early as 9000 before the Christian era. In Neolithic camps discovered in Lower Nubia, organic remains have been collected that bear witness to the harvesting and preparation of wild cereals some 13 000 years ago. Thus the gathering of grain from cereals was practised in the Nile valley 4000 years earlier than in the Near East. The Fertile Crescent, a term normally confined to the region stretching from Mesopotamia through Palestine to Egypt, extended well beyond that area into the African continent, and its nucleus, which was the starting-point not only for peoples, but also for the main techniques of

11.1 *Voltaian (A.A.A., Naud)*

11.2 *Chief, nomad, Rkiz, Mauritania (B. Nantet)*

11.3 *Fulani woman, Bororo, Tahoua, Niger (B. Nantet)*

11.4 *Djerma Songhay woman, from Balayera, Niger (B. Nantet)*
11.6 *Zulu woman (A. Robillard, Musée de l'Homme Coll.)*

11.5 *Pygmy from the Congo (Congo Press, Danday, Musée de l'Homme Coll.)*

11.7 *Fulani woman (Archives outre-mer)*

plant and animal husbandry, seems to have been located west of the Nile, as both the remains already mentioned and the rock paintings and engravings in the Sahara testify. The sequences and significance of the human peopling of Africa was therefore completely reversed by all these discoveries: in fact, Africa – and not Asia – was the source of the first migrations throughout the most protracted periods of prehistory up to the emergence of Pharaonic Egypt. It was only then that movements of peoples towards Africa began, and the influence these exerted was primarily on the periphery rather than on the main landmass of the continent.

Anthropological and linguistic problems

It can be argued that anthropological characteristics generally provide more reliable pointers than cultural data such as languages or clothing, which often undergo rapid change, although there are exceptions and biology and culture are constantly interacting. Although the black population of the Americas is, in cultural terms, closely assimilated to the Western world (apart from its music, dances and religious beliefs), the anthropological type has remained distinctly African. The same is true of the Siddi, the black Africans who were taken from the eastern seaboard to India. At the beginning of the nineteenth century, these people still spoke their own language, but they now speak the languages of the Indian peoples – Gujarati, Urdu, and so on – among whom they are immersed. However, they have preserved their physical identity to a great extent. It is also possible to cite the case of the Berbers, who still display a number of characteristic physical features, in spite of their assimilation of Arab culture.

On the basis of that principle, the anthropological map of Africa can be said, on the whole, to reproduce the ancient pattern of the major anthropological groups that are sometimes rather hastily termed 'races'. The Mediterranean type, for instance, has exhibited distinctive features of its own since the very remote past, probably as a result of the adaptation of the 'African' group to a new biotype and through interbreeding. The same can be said of the 'Ethiopoid' peoples in the north-eastern corner of the continent. The southern tip of Africa, on the other hand, which was to some extent isolated by mountains and the Kalahari desert, served as a refuge for the San. The very special ecological conditions of the forest areas and their isolation were instrumental in the formation of the anthropological type represented by the Pygmies.

It is not easy to identify the Sudanic or Congolese negroid type in the earliest strata, owing to the destructive effect of the acid soils. However, all the evidence points to this type having been autochthonous, and its presence in the Sahara appears to predate and predominate that of any other human group. This seems to have been the situation in the Nile valley, and especially in Egypt, where historical records bear witness to an increasingly complex mixture. Greek sources, for example, speak of dark-skinned southern Ethiopians, as well as of other lighter-skinned Ethiopians. This could be said to be the situation in Africa even in the present day. In any event, interbreeding can be said to have been more pronounced wherever human groups converged, as in river valleys and lacustrine basins, for climatic, ecological or other reasons. In every instance, the individual features of the different types were shaped by the environment and through interbreeding, and those different fixed features were then transmitted by

heredity. As a general rule – although there are a good many exceptions – the forest African is smaller and lighter-skinned than the taller and darker-skinned African of the savannah and the Sahel. The impact of the environment is so strong that similarities can be observed between groups that are separated by considerable distances, but live in the same kind of physical setting. For instance, the Wolof of Senegal and the Dinka from the upper reaches of the Nile both tend to be very tall and to have very dark skins.

However, there are much more complex situations which oblige historians to exercise their perspicacity, as in the case of the Pygmies and the San. Contrary to what had first been thought, the Pygmies of Africa and those of southern Asia do not belong to the same group and their resemblance probably stems from the way in which they adapted to the same environment. The African Pygmies, who now live in isolated groups in the forests of Cameroon, Gabon, Central African Republic, Zaire and Rwanda, seem to have ranged over much broader areas in the past. Evidence of this can be seen in popular traditions, which speak of dwarf populations; some written sources, too, refer to the presence of Pygmies in places where they no longer exist.

The earliest mention of Pygmies is to be found in inscriptions dating from the sixth dynasty of the Ancient Pharaonic Kingdom. Inscribed on the walls of the tomb of Herkhuf at Aswan is a fragment of a letter from the Pharaoh Pepi II, in which the young king thanks Herkhuf for having sent him the gift of a dwarf called Deng, a name that is to be found in the present-day languages of Ethiopia in the forms *dank*, *denk*, *dinki*, *dinka*. The same letter recalls that, a century earlier, a similar dwarf had been presented to Pharaoh Isesi of the fifth dynasty. Hence it is probable that present-day Ethiopia and Sudan were inhabited at the time by groups of Pygmies who were gradually pushed back into forest retreats.

The San provide another, albeit fairly complex example in that the usual practice is to group them with the Khoikhoi in a so-called 'Khoisan race'. This has come about because of the similarity of life-styles; in fact, in Khoikhoi the word *khoi* means man, whereas the word *san* comes from *sa* (to gather or harvest fruit, pull up roots and capture animals). In addition to the 'modes of production', both languages are characterized by the use of click consonants, not to mention the fact that the two groups are both light-skinned. Even so, there are significant differences between the two: the Khoikhoi are taller and their womenfolk are commonly steatopygic (that is, they have highly developed buttocks).

Even from the linguistic standpoint, the two differ in respect of the forms of the pronouns they use: the Khoikhoi pronouns have two genders and three numbers (singular, dual and plural), which do not exist in the San languages. The Khoikhoi lived in *kraals* or village-like settlements, worked metals and raised cattle, whereas the San were hunters and gatherers. There seems to be no grounds, therefore, for combining the two groups under the same heading.

The San probably represent the remnants of the original population of this part of the continent, over which they ranged to a much larger extent before being confined to the inhospitable and waterless regions of Namibia and the Kalahari.

Toponymy and hydronymy reveal words of San origin as far as Kenya. Cave paintings in Southern Africa depict the San fighting against very tall, darker-skinned black warriors. Likewise, the Hadzapi group from near Lake Ayasi (Tanzania) would

seem to be a further indication of the previous area occupied by the San.

Even so, the establishment of the earliest groups of Africans should not be reduced to an over-simplified pattern whereby the Pygmies lived in the forests and the San in the savannah lands. Other groups certainly existed alongside them, such as the Otavi, who are also very close to the San, but differ from them in having a very dark skin and thick lips. Their system of counting is also significantly different from the decimal system used by the Khoikhoi. The anthropo-linguistic map of the continent accordingly became very complex from an early date, as evidenced by the presence of click-language pockets in the midst of areas that are now Bantu-speaking. There are sometimes cases of linguistic interferences, with click consonants being used in Bantu languages, and these are a pointer to the influence of the pre-existing strata of San or Khoikhoi peoples.

Even though the initial overwhelming isolation may have been instrumental in causing the linguistic and anthropological maps to coincide, these factors were slowly dissociated and diversified, and adopted a dynamic pace of their own, whence the host of languages that exist today. Nevertheless, a number of main language areas can be singled out.

Main language areas

Semito-Hamitic or Hamito-Semitic languages

Originally, the languages spoken in the continent of Africa were known as Hamitic, and those of the Near East were Semitic. Nowadays, after Cohen showed how little significance could be attached to that purely geographical breakdown, these languages are classified in five groups: Semitic, Cushitic, Berber, Ancient Egyptian and Chadic.[1]

Palaeo-African San and Khoikhoi languages

The main features of the Palaeo-African languages are click sounds and the isolating structure, and they also include the Kwadi languages of Angola and Hadzapi of Tanzania.

In spite of the contrary views of linguists like Greenberg, the Khoikhoi languages, with their different grammatical structure, cannot be included in this group. Khoikhoi language seems to have come from north-eastern Africa and to have been superimposed on the San, some of whom, in fact, adopted the Khoikhoi language, although the Khoikhoi, in turn, appear to have borrowed the click sounds from the San languages. Moreover, small groups linguistically related to the Khoikhoi, such as the Sandawe of Tanzania, appear to mark the route that their migration took. Like the Hadzapi and the peoples speaking Cushitic languages, they bear witness to an original peopling stratum preceding the Bantu.

1. According to the Cairo Symposium of the Peopling of Ancient Egypt, this classification can no longer be upheld. Cf. *Unesco General History of Africa*, Volume II, Chapter 1.

So-called Negro-African languages

This term, which was coined by Delafosse, is open to controversy, since it makes use of geographical and 'racial' connotations to qualify languages. Moreover, Meinhof and Westermann were somewhat premature in classifying them into the two groups, Sudanic and Bantu. However, since the studies conducted by Westermann himself, and especially since the wholesale review of the classification of African languages by Greenberg, this distinction has been discarded. In 1954 Greenberg distinguished sixteen linguistic families which, over the years, he narrowed down to twelve and then to four, an example which goes to show the uncertainty and difficulty involved in attempts to produce a classification.

Out of the four families retained, the Afro-Asiatic group turns out to be none other than the old Semito-Hamitic family. As for the so-called Khoisan language, it combines the San and Khoikhoi languages, in our view mistakenly. The third and by far the most widespread family is the Niger–Congo group, to which Greenberg subsequently added the Kordofan languages. Lastly, in his view, the fourth family is composed of the so-called Nilo-Saharan languages, although these have been little studied as yet. In 1972 Gregersen proposed that all the languages of the two last-mentioned families – the Niger–Congo and the Nilo-Saharan – be brought together in a single group, for which he proposed the name 'Congo-Saharan' and for which I personally suggest the name 'Zindj group'. This whole set of languages, characterized by the use of tones and noun classes, displays the same homogeneity as the Indo-European languages, for instance. Within this remarkable language complex, the Bantu languages show an uncommon structural and lexical consistency and yet, at the other extreme of the black African world, the Mande languages of West Africa display almost as clear-cut a similarity.

Outside these two major linguistic constellations, there are cases that are still the subject of controversy. For instance, the Gur or West Atlantic languages referred to by Westermann are extremely heterogeneous (see Manessy) and have been classified by British linguists as a distinct group, which they called the Mel languages, some of which have affinities with the Bantu languages. The diversity of this language mixture seems to reflect the historical situation of this extreme western region of Africa and of the mountain retreats where successive waves of migrants were blended together over the centuries.

The Nilotic languages of the eastern Sudan, which have not been very thoroughly investigated, display a very distinct and characteristic profile, probably the result of their having developed in isolation over a very long period.

The homogeneity of the Bantu family is a sign of its relative youthfulness, since the languages composing it have not had time to become diversified. Three main hypotheses have been put forward to account for the 'Bantu genesis'. Some people consider that the Bantu-speaking peoples came from northern Cameroon or Chad. The migrating peoples are presumed to have skirted the forest to the north, so as to outflank it on the eastern side, and then to have passed through East Africa to spread into Southern Africa. Other scholars, such as H. H. Johnston, believe that the Bantu came directly from the central African region in the Zaire Basin. Lastly, some linguists, such as Guthrie, situate the original Bantu nucleus in the Luba and Bemba country of Upper Zaire.

The Bantu-speaking peoples are sometimes even presented as being a biological and cultural unit, as a race endowed with a single civilization, whereas the term Bantu is really only a linguistic reference. Some people ascribe the spread of iron in the southern half of the continent to the Bantu, and yet the Bantu-speaking Bubi people of the island of Fernando Po had no iron implements when they were discovered by the Portuguese at the end of the fifteenth century of the Christian era. Indeed, the Bantu peoples differ from one another in colour, height and 'modes of production', while some are patrilineal and others matrilineal. Hence, a common language structure, consisting in this case of a noun class system based on a similar phonetic pattern and a single verb system, should not be mistaken for a common biological or cultural identity.

Even so, it is not being over-presumptuous to suppose that the peoples speaking languages with noun classes were compelled to withdraw from the Sahara as a result of increasing drought, and made for the mountains to the north, the Nile valley and the palaeo-Chad basin. These hunters and cattle breeders drove out the autochthonous peoples, who moved southwards into the forests. Some of the Bantu-speakers had a knowledge of metallurgy. On the rich ore deposits of the present-day Shaba, they proliferated and made use of that economic base as a springboard for further expansion. This brought them into contact with increasingly different peoples, which accounts for the decline in Bantu linguistic purity as they moved outwards from the technological and linguistic epicentre of the Zairean high plateaux. In short, the mode of production is never alien to the vitality of languages.

12

African linguistic classification and the language map of Africa

PART I: African linguistic classification

The genetic classification of languages is a logical operation that entails going back down the genealogical tree of the present-day languages, which can be regarded as forming its finest branches. These are the starting point for reaching the thicker branches, which are in turn connected to the main boughs attached to the original trunk. The trunk is the parent language from which, through successive differentiations, the offspring languages, and then dialects, sprouted. For example Indo-European produced a large number of branches, including Germanic, Slavic and Indo-Iranian. The Germanic branch subdivided in turn into an Anglo-Frisian dialect (English), a High German dialect (German) and a Low German dialect (Dutch). Comparative linguistics can be used to reconstruct the history and origin of this progressive differentiation within the same family, of this diversity in unity. It also links up with the cultural history of peoples.

The history of African linguistic classification

It is not possible to make any linguistic comparisons or to draw any conclusions as to the place a given language occupies in the genealogical tree without first embarking on a precise description of the factors to be compared. This is why it was not until the nineteenth century of the Christian era that a comprehensive survey could be attempted. Even so, the first grammars and dictionaries of African languages began to appear from the seventeenth century onwards, when Luis Moriano noted that the Merina language of Madagascar was 'very similar to Malay, which proves in an almost certain manner that the first inhabitants came from the ports of Malacca'.

It was also in the seventeenth century that Portuguese investigators remarked on the similarity between the languages of Angola and the Congo, on the one hand, and those of Mozambique, on the other, thereby foreshadowing the idea of the Bantu family of languages. Similarly, as far as the resemblance between the Ethiopian languages and the Semitic languages – Hebrew and Arabic – was concerned, the first attempts at classification were made at the end of the eighteenth century.

The *Glossarium Comparativum Linguiarum Totius Orbis* (Comparative Glossary of

Languages of the Whole World), which was published in 1790 with the backing of Catherine the Great of Russia, featured thirty African languages. In the early nineteenth century, dictionaries, grammars and comparative world lists were produced at an increasing pace. The first large-scale systematic work was the *Polyglotta Africana* compiled in Freetown by S. W. Koelle.

In the mid-nineteenth century, a number of conclusions emerged from this work, some of which are still valid today, although others have had to be discarded. They can be summarized as follows.

1. The term Semitic, introduced in 1781, is still used today to designate the Arabic and Hebraic languages, as well as an Ethiopian branch of the family consisting of Ge'ez, Amharic and Tigrinya. In addition, languages like Berber and the Cushitic dialects (Somali) were recognized from an early stage as being related to the Semitic family. They were known as Sub-Semitic or 'Hamitic', which was the term proposed by Renan in 1855.
2. In Central and Southern Africa, linguists drew a distinction between the Khoikhoi and San languages, on the one hand, and the Bantu languages, on the other, on account of the fact that *bantu* was the word for 'people' in most of those languages.
3. The languages spreading from the Atlantic as far as the Ethiopian massif were known for a long time as the 'Negro' languages, but shrewd linguists like Bishop O.E. Vidal and W.H.I. Bleek had already realized that some of them bore a striking resemblance to the Bantu languages. This fundamental insight was subsequently taken up and confirmed by Westermann and later by Greenberg.
4. The Malagasy language Merina was classified among the Malayo-Polynesian languages from as early as the seventeenth century.

R.C. Lepsius, F. Müller and R.N. Cust all published invaluable works of linguistic classification, although they resorted in some instances to racist criteria in order to lend support to various preposterous misconceptions. Lepsius eventually singled out two pairs of languages, which he placed in ranking order in relation to a clearly individualized basic group, Bantu. This gave the following breakdown:

(a) the Bantu languages and Mixed Negro languages (noun–class languages);
(b) the Semitic and Hamitic languages (gender languages).

The latter were purportedly related to Indo-European, which was said to be connected with Japhet, one of the sons of Noah, whose other sons were Shem (whence Semitic) and Ham (Hamitic). Hence this linguistic classification can be seen as turning into pure racist theorizing. In fact, Lepsius wrote: 'It seems, however, unquestionable that the three great branches of gender languages were not only in the past the depositories and organs of the historical process of human civilization, but that to them, and particularly their youngest branch, the Japhetic, belongs the further hope of the world.'[1]

Müller yielded to the same weakness by classifying languages by people's physical type, using such terms as the languages of the 'straight-haired peoples', the 'woolly-haired peoples', and so on. As a result, Khoikhoi was lumped together with Papuan

1. R. Lepsius, 1880, p. 90

among the languages of the 'frizzy-haired peoples', whereas Nuba-Fulah was elevated to the rank of the languages of the Mediterranean curly-haired peoples.

The end result consisted of six groups, classified in decreasing order of superiority, so to speak: (1) Semitic; (2) Hamitic; (3) Nuba-Fulah; (4) Negro; (5) Bantu; and (6) Khoisan.

Following Lepsius and Müller, it was not until the early twentieth century that quite important new classifications were produced by Westermann and Meinhof. In his work on the 'Sudanic languages' (1911), Westermann used that term to embrace all the African languages not included in Semitic or Khoisan and he therefore brought together in the same category all the languages of the three groups Müller had identified (Negro, Bantu and Nuba-Fulah), the basis for his argument being their etymological similarities and ancient forms. Meinhof, in his book on the Hamitic languages (1912), extended this group to cover Fulfulde, Maasai and Khoikhoi, on the grounds that they were gender languages, which he regarded as being superior to the rest.

By combining the findings of Westermann and Meinhof, we arrive at a fivefold scheme of things which prevailed until about 1950. The groups involved were Semitic, Hamitic, Sudanic, Bantu and San. In point of fact, in 1927 Westermann failed to pursue the key insight that suggested combining the 'Sudanic' and Bantu languages in the same group, and he did little more than point to a few detailed resemblances in vocabulary and grammatical structure without going so far as to relate them to one another.

On the other hand, three other linguists were already foreshadowing the present-day classifications. Sir Henry Johnston in his vast work on Bantu and Semi-Bantu asserted the relationship of many so-called 'Sudanic' languages with Bantu, on the basis of the existence of noun classes.

Delafosse, for his part, often used criteria that were more geographical than strictly linguistic. He limited Hamitic to Berber,[2] Egyptian and Cushitic. Hence, all the other languages that were not Semitic or Khoisan were regarded as forming a vast Negro-African family, in which Bantu was included.

In 1941, Mlle Homburger went even further when she started out from the premise that all African languages were derived from Ancient Egyptian and, even further back in the past, from the Dravidian languages of India.

In 1949–50, in the *Southwestern Journal of Anthropology*, J. H. Greenberg put forward a classification which, while taking account of the advances made up to that time, went beyond them in an increasing bid to integrate the African languages in a limited number of categories. The basis for his approach lay in the massive resemblances existing, in respect of both sound and meaning at the same time, between the roots of the vocabulary or the grammatical structures. The existence of only one of those criteria, gender for instance, was not regarded as being sufficient evidence of a relationship.

On the other hand, the absence of sex gender did not automatically preclude a language from being classified with other gender languages. Indo-European provides proof of this: Farsi (Iranian) and Armenian, which do not have sex gender, are considered as being related to the other languages which do.

This new classification sets out to be 'strictly genetic'. Its main features are as outlined at the bottom of page 118.

2. This view is refuted by M. El Fasi, who looks upon it as a political manoeuvre to dissociate Arabic from Berber, which he claims is also a purely Semitic language.

- I. *Niger-Kordofanian*
  - A. *Kordofanian*: Koalib; Tegali; Talodi; Katla; Tumtum
  - B. *Niger-Congo*
    - 1. Mande[1]
      - a. *North-West*: Soninke, Maninka, Bambara-Dyula, Vai-Kono
      - b. *South-East*: Mano, Dan, Gan, Guro, San (Samo), Bisa, Busa
    - 2. Others
      - a. *West Atlantic*[2]
        - *North*: Fulfulde, Sereer, Wolof, Dyula, Basari . . .
        - *South*: Temne, Baga, Kisi . . .
      - b. *Gur or Voltaic*
        - *Central*: Dagbane, More, Gurma Dagari, Grusi
        - *Others*: Bariba, Lobiri, Bwamu, Kulango, Senufo, Dogon . . .
      - c. *Kwa*: Kru, Akan-Guang, Gâ-Adangme, Yoruba, Nupe, Edo, Idoma, Ibo, Ido . . .
      - d. *Benue-Congo*
        - *Languages of the Benue basin*
        - *Bantu languages*[3]
      - e. *Adamawa-Eastern*
        - *Adamawa*: Mbum, Chamba . . .
        - *Eastern*: Gbeya, Zande . . .

II. *Afro-Asiatic*	A. *Berber*: Berber of the Maghrib and Mauritania, Tuareg		
	B. *Ancient Egyptian*[4]		
	C. *South-west Semitic*		Arabic Sabean Ethiopian languages: Tigrinya, Ge'ez or classical Ethiopian, Amharic, Harari . . .
	D. *Cushitic*		Northern Bedja . . . Central: Agau . . . Eastern: Somali, Galla . . . Southern: Burungi, Goroa, Alawa, Sànye . . . Western: Ari-banna, Sidamo . . .
	E. *Chadic*		Hausa, Gwandara . . . Kotoko, Mandara, Musgu . . .
III. *Nilo–Saharan*	A. *Songhay-Jerma*		
	B. *Saharan*		Kanuri, Kanembu, Teda-Daza, Zaghawa, Berti . . .
	C. *Maban*		
	D. *Furian*		
	E. *Chari-Nile*[5]		Eastern Sudanic: Nubian, Nilotic (Luo, Dinka, Nuer, Shilluk, Karomojong, Maasai, Turkana, Nandi, Suk . . . Central Sudanic: Bongo, Bagirmi, Mangbetu . . .
IV. *Khoi-San*	A. *Khoi-San*[6]		Northern San
	B. *Hatsa*		Central Khoisan: Khoikhoi, Naron . . .'
	C. *Sandawe*		Southern San

Notes and Points about this Table follow on page 118

Notes to Table on pages 116–7

1. *Mande.* Mande differs from the other languages in the Niger–Congo group in that it is lacking in certain lexical items and in noun classification. The last-mentioned feature sets it apart even from Kordofanian, although some linguists, like Mukarovsky, have suggested that it be placed in the Nilo-Saharan family.
2. *West Atlantic.* In view of the wide variety of languages in this group, Dalby suggests that the southern subgroup, for which he proposes the term Mel, be kept separate. This is not the opinion of Sapir, who upholds the unity of the group, except that he considers that Bijago, the language of the Bijago Islands, should be regarded as a separate branch, on a par with the northern and southern branches.
3. *Bantu languages.* Guthrie refuses to consider Bantu as being part of the Niger–Congo family. In his view, it is a genetically independent family and the resemblances with other languages stem exclusively from the influence that Bantu has had on fundamentally different languages. Greenberg situates the original nucleus of Bantu in the middle Benue valley, whereas Guthrie argues that it was in southern Shaba.
4. *Ancient Egyptian.* This was not the view held by the Cairo Symposium on the Peopling of Ancient Egypt (cf. Chapter 10 above). Coptic, which developed out of Ancient Egyptian, has died out as a spoken language, except in the form of Bohairic, which still survives in liturgical use.
5. *Chari-Nile.* The Nilotic subgroup (Maasai, etc.) is a subject of considerable controversy, since it has been classified at various times as Hamitic, Nilotic, para-Nilotic and even Semitic.
6. *Khoi-San.* See the conflicting opinion of Olderogge in Chapter 11 above.

General points

a. The Merina language became firmly established in the plateau highlands of Madagascar, as opposed to the coastal languages of African origin. It is a Malayo-Polynesian language, and is more specifically related to the Maanyan language of Borneo.

b. Meroitic is an extinct language which used to be spoken in the Kingdom of Meroe. It was written in both hieroglyphic and cursive forms. It now only exists in written form in archaeological remains that have been discovered between Aswan and Khartoum. Only the phonetic values of the letters are known. However, since the lexicon and grammar are virtually unknown and since there are no bilingual inscriptions, as in the case of Ancient Egyptian, it has not yet been deciphered, although it may one day be possible to solve the enigma by computer. Some linguists classify this language as 'Hamitic', although others regard it as being Nubian or Nilotic.

c. Mention naturally has to be made of the recent importation of European languages, generally as a result of colonization. They include English, the language of the black Americans who founded Liberia, which is also spoken in creolized form (Krio) in Sierra Leone, and Afrikaans, which developed from Dutch and is spoken in South Africa. Portuguese creole is prevalent in Guinea Bissau and the Cape Verde Islands. Lastly, some languages of Indian origin, especially Gujarati, are spoken on the East African coast.

Continued from page 115

1. The so-called Sudanic languages, which were extended eastwards to include the region east of the Adamawa, are closely associated with the Bantu languages, with which they form a vast group called 'Niger–Congo', stretching from South Africa (Zulu) to Cape Verde (Wolof) and Northern Cameroon (Fulfulde).
2. On the other hand, Hausa and a number of other languages in the same region are classified under the heading of 'Chadic' and form one of the five branches of another large family, also comprising Berber, Ancient Egyptian,[3] Semitic and Cushitic.
3. The 'Negro' languages not included in the Niger–Congo group are classified under Nilo-Saharan.
4. Khoikhoi and San are grouped together in Khoisan.

Hence the classification into four groups, see pages 116–7, should not be taken as being definitive, since it will almost certainly be amended as research progresses.

3. At the Cairo Symposium on the Peopling of Ancient Egypt, this viewpoint was refuted. Like Mlle Homburger, African researchers include Ancient Egyptian in the Negro-African group. Cf. Cheikh Anta Diop.

PART II: The language map of Africa

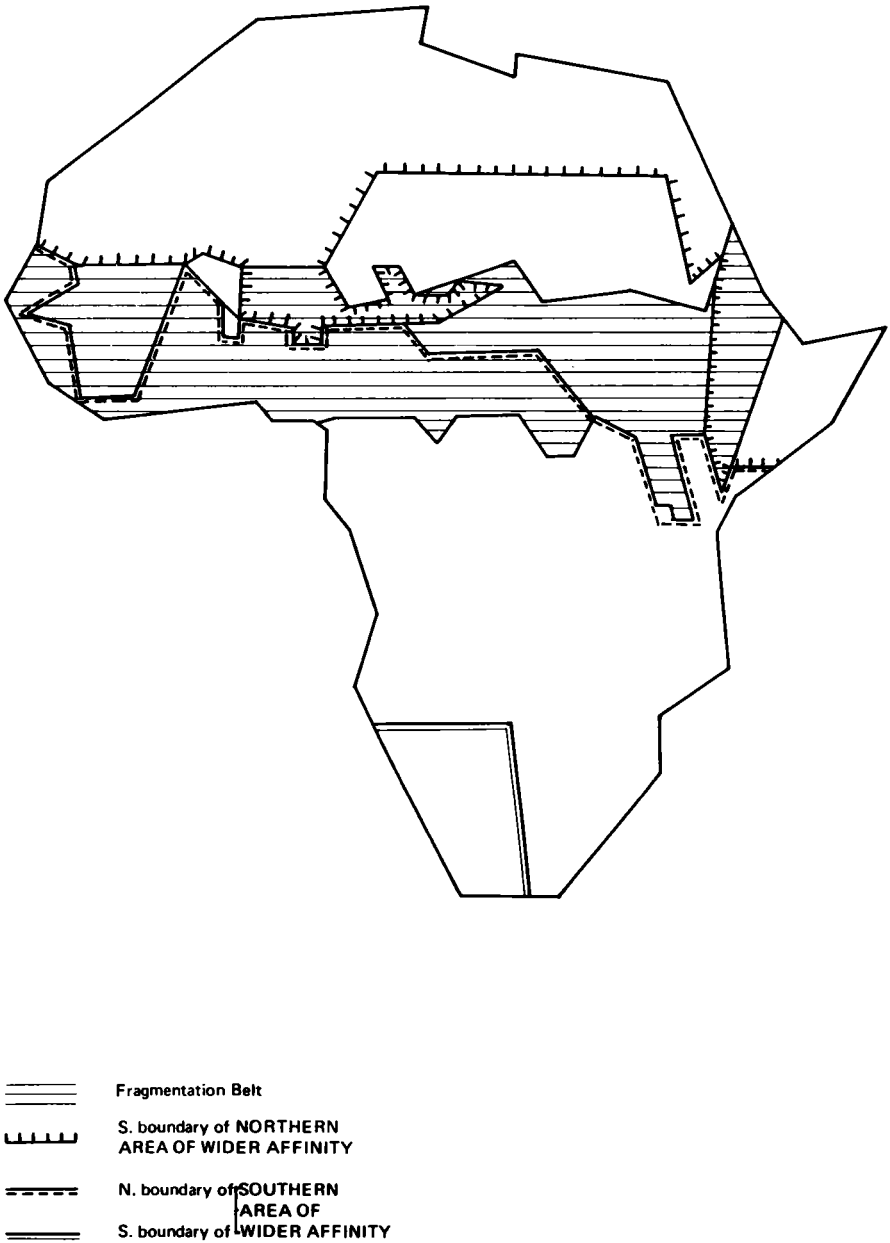
Although Africa is quite sparsely populated – it accounts for 20 per cent of the world's total land surface, but only 10 per cent of the population – it displays a greater degree of linguistic complexity than all the other continents. This is why efforts to put together this linguistic jigsaw have hitherto not proved altogether successful and, even in the case of the ethnodemographic map plotted by the Soviet Union, there is still some confusion.

The ideal map would obviously be one on which every African was represented by a dot that would light up in the colour corresponding to whichever one of the 1500-odd languages he happened to be speaking at that particular moment. The map would show movements in both time and space, and would be the reflection of a living reality.

Since such a map is a physical impossibility, for the past ten years the School of Oriental and African Studies and the International African Institute have been preparing a 1 : 5 000 000 scale map of the 'home' languages of Africa.

However, it is important to make a clarification as far as the classification of languages in Africa is concerned. Although the genetic approach is essential, it may present the drawback of suggesting that, since the languages spoken today came into being through a process of successive proliferation from fewer and fewer ancestors, as in a genealogical tree, it ought to be possible to trace present-day languages back to an original period when only a handful of 'proto-languages' were widely spoken throughout the continent. This is tantamount to confusing the exercise of logical separation and reconstruction by linguistic reasoning with the actual tangible course of the historical process. Languages that are quite unrelated may evolve through contact with one another towards a convergence which is now recognizable, but for which the genetic explanation alone is a very feeble justification.

Hence the key to the linguistic puzzle of Africa has to be found through an approach that calls for clarification as much as simplification. To this end, it is necessary to single out the major groups in which the languages display an internal unity among themselves, as well as an external unity in relation to languages outside the group. For example, if languages A, B and C are related (that is, if they display internal unity), at the same time none of those three languages should be more closely related to any other language X than it is to the two languages in its own group. This is what can be termed a complex unit. However, there are also languages that bear no relationship to any other, and these can be said to form simple units. On the basis of this twofold definition, it is possible to plot a linguistic map of Africa that becomes appreciably clearer. Out of a total of some 120 complex and simple units throughout the continent, more than one hundred are confined to a single zone stretching from the Cape Verde Islands to the Ethiopian and East African highlands. This relatively narrow belt, running south of the Sahara, and on average 1000 kilometres wide, accounts for two-thirds of the languages spoken in Africa. In other words, 1000 out of the 1500 African languages, or 66 per cent, exist alongside each other in an area representing 20 per cent of the total continental landmass. This area may be usefully termed the sub-Saharan fragmentation belt. Its area of maximum fragmentation is situated at the tip of the Horn of East Africa where, within a radius of 40 kilometres, languages belonging to all the families



12.1 *Diagrammatic language map of Africa (D. Dalby)*

identified by Greenberg are spoken. Since the same type of fragmentation is to be found in the Togo highlands, the Jos plateau, the Cameroon highlands and the Nuba hills, a causal relationship can be legitimately posited between ecological systems serving as places of withdrawal or refuge (for example, the desert fringes or mountain areas) and maximum language fragmentation.

Furthermore, the term 'family' suggests the idea of an origin linked with biological reproduction. This concept is by no means entirely applicable to languages. Areas where such 'families' exist might be more appropriately called 'areas of wider affinity'. Now, as it happens, the two main such areas, the 'Afro–Asiatic' and the 'Niger–Congo', are contiguous and are located in the area of maximum fragmentation. In fact, the languages of the northern area of wider affinity are divided into 17 simple and complex units, 12 of which are in the fragmentation belt; the southern area of wider affinity comprises 58 simple and complex units, 57 of which – indeed, all of them apart from the Bantu group – are likewise located in the fragmentation belt. All in all, the two areas account for 80 per cent of all the languages spoken in Africa.

Thus it is that the intermediate groups termed West Atlantic, Kwa, Gur and Benue–Congo have never been unanimously accepted, especially since the arguments elicited in their favour have not been altogether convincing.

The arbitrary nature of the linguistic divisions constructed by one researcher or another are disturbingly reminiscent of the colonial divisions of yesteryear. Even Greenberg, who so brilliantly demolished the Hamitic theory because it created a language group on premises that were, to say the least, misleading, was not immune from the same failing of attempting to define sub-families at any price. The Benue–Congo, the largest sub-family of them all, has been rebutted outright by J. M. Stewart, but he himself makes the mistake of perpetuating Greenberg's method by amalgamating Benue–Congo with Kwa and Gur (two equally arbitrary concepts) to form another subdivision, Niger–Congo, later known as Volta–Congo, which was bound to reflect the arbitrary nature of its component parts.

Many much more detailed monographs are needed for any scientific identification of the outlines of the groups that may exist between the major families and the basic units, which are currently the only irrefutable evidence. It will also be necessary to wait until people who actually speak these languages become linguists and start to tackle comparative linguistics in order to ascertain whether or not relationships exist between the host of neighbouring languages.

It is true that the language map of Africa is in itself a magnificent document on the prehistory and history of the continent. But only strict comparative linguistic analysis will make it possible to ask the right questions about the historical problems that still remain.

13 *Historical geography: physical aspects*

The history of the peoples of Africa has evolved in a particular physical, climatic and ecological setting which, although not the automatic cause of the historical process, is one of the conditions governing it.

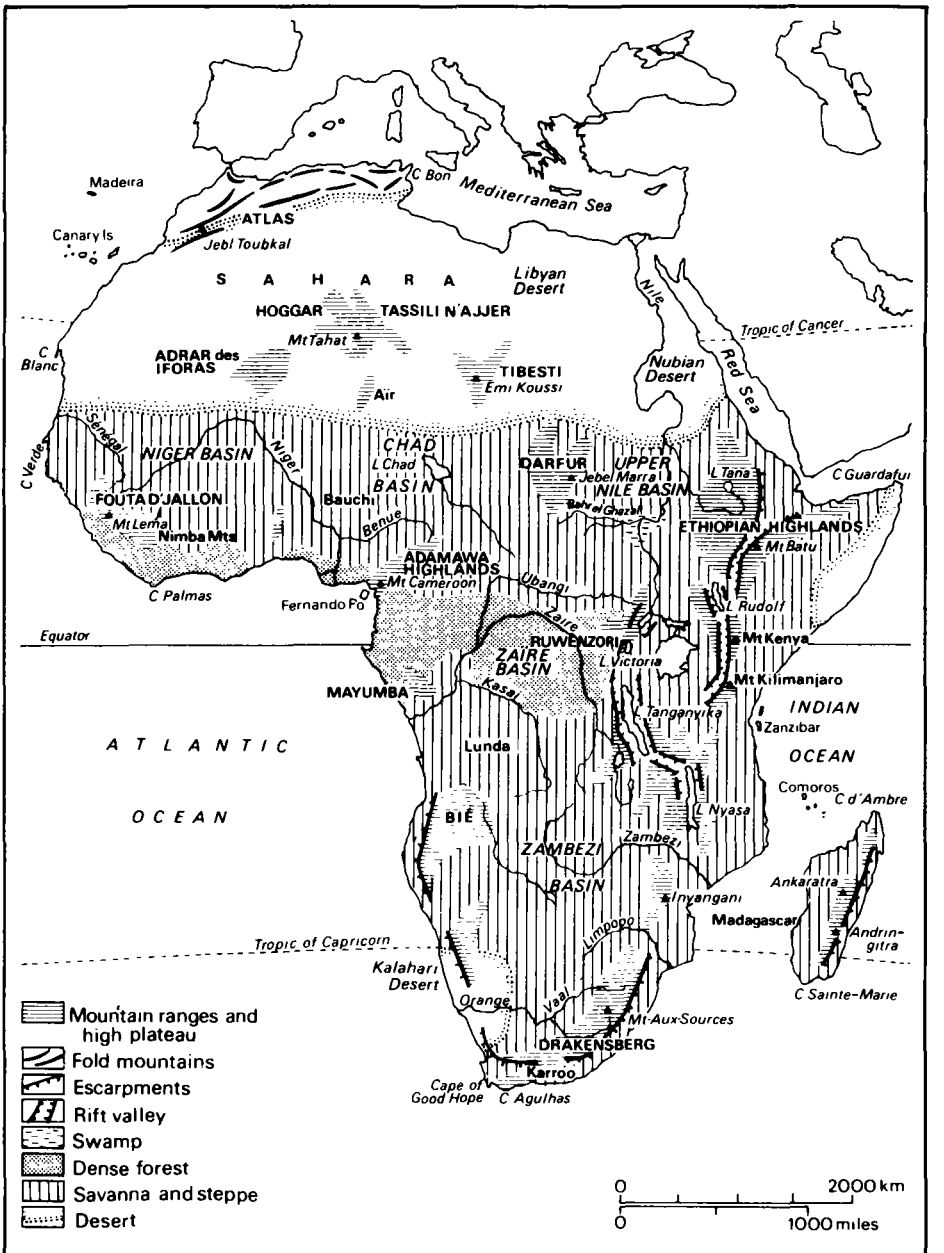
These conditions have not been set fast once and for all: they constantly interact with man, who is subject to them and reshapes them. In this context, the fact that the African climate describes an almost symmetrical pattern in zonal belts on either side of the equator, together with the striking originality of the natural environments, are not irrelevant to historical developments on the continent.

Architectural features of the African continent

The geological originality of Africa

A stratum of very ancient rocks forms the structure of the greater part of the continent. With the exception of the mountains of the Maghrib, which belong to the European Alpine system, and the Hercynian folds of the Cape and the southern Atlas, the whole of Africa and Madagascar is an old platform which has been stripped by protracted erosion and on which sediments have been deposited by the rivers and by wind action, especially in the main river basins in the interior.

These layers were subsequently subjected not so much to folding as to very slow deformation and bending. In some instances, too, massive uplifting, which gave rise to subsidence in other regions, produced the fold-and-basin pattern or undulating hill and valley profile so characteristic of Africa. Sometimes, the fractures take the form of gigantic furrows running north–south. These are the rift valleys, within which volcanic lava flows gushed out to form the most striking features of the landscape, such as Mount Kilimanjaro, the 'roof of Africa', culminating at an elevation of 6000 metres. On the western side of the continent the volcanic eruptions were less pronounced, but the imposing Mount Cameroon, some 4070 metres high, bears witness to the volcanic activity that occurred on the bed of the Gulf of Guinea.



13.1 *Physical map of Africa from J. Ki-Zerbo, 1978,* (Histoire de l'Afrique noire, *Paris, Hatier*)

Palaeoclimatic influences

Geological upheavals were largely instrumental in shaping the relief of Africa, but climatic changes also had their part to play. Alternating periods of torrential rainfall and arid phases caused widespread erosion, followed by heavy sedimentation, especially during the Quaternary.

The most spectacular testimony to this grandiose pattern of events is the Sahara. In this desert, covering almost one-third of the continent's land surface, remains have been found of tools made of stone, bone and wood, a variety of jewels and other ornaments, and paintings and engravings, as well as fossils of seeds, plants and giant animals, all of which bear witness to the teeming life that existed there for thousands of years. The arid periods eventually gained the upper hand and the largest desert in the world now stretches right across the continent at its widest point. It is true that the Sahara was never an impassable barrier: nomadic peoples and merchants found dozens of ways of crossing it with their caravan trails. Had the desert not existed, however, the continent's history would clearly have been very different: it would have been more closely integrated with the rest of the world and, above all, there would have been more internal cohesion between all its parts.

The massive character of the African continent

Africa is a gigantic emerged landmass stretching over a distance of 8000 kilometres from Bizerta, in Tunisia, to Cape Agulhas, and 7500 kilometres from Cape Verde to Cape Gardafui. Throughout this vast expanse, there are very few breaks in continuity or openings. It is like a great fortified bastion, with a scarcely indented coastline, unlike Europe, Central America or South-East Asia. Since the marine deeps start very close offshore, there are very few islands.

Moreover, the massive character of the continent's profile is underscored by the widespread presence of large plateaux with their weathered profiles, which are often folded at the edges and form an obstacle preventing the rivers from flowing coastwards. Only the Maghrib, with the Tell and Rif ranges in the north and the Atlas in the south, breaks the monotony of the landscape.

In the centre, standing out in marked contrast to the vast basin and low-lying plateaux of Zaire and the rift valleys stretching 4000 kilometres from Mozambique to the Red Sea, are the volcanic summits of Mounts Kenya and Kilimanjaro. Rift valleys played an important historical role in north–south movements across the continent, especially since access was impeded by the tropical forest in the Zaire basin and because the lakes studding the valley floors – Lakes Malawi, Tanganyika, Kivu, Edward, Mobutu (former Albert), Victoria and Turkana (Rudolf) – attracted human settlements to their shores from the earliest prehistorical times.

Africa's geographical isolation

Africa has never been completely cut off from the outside world. However, the absence of extensive plains as in Asia and North America prevented internal liaison and population concentration, while the obstacles round the edges, such as deserts and mountain ranges, inhibited external communication. The Atlantic Ocean was very little used.

Until the fifteenth century of the Christian era, when it began to be frequented by explorers and slave-traders, it was barred to seafarers, who were unable to go beyond the Saharan coasts, since their sailing vessels could not negotiate the return journey on account of the constantly southward-blowing trade winds.

The Indian Ocean, on the other hand, has always fostered African contacts with the Arabian peninsula, and even with India and China, since the outward and return journeys between Africa and Asia were made easier by the switch in direction of the monsoon from south-west to north-east. Here again, however, seamen were reticent about venturing into the interior and remained content with plying their trade along the coast.

The lack of good natural sites for ports has often been put forward as an explanation for the continent's isolation. It is a fact that the coasts are often straight, low-lying and sandy, or are cut through by rias – estuaries invaded by the sea – that are strewn with silt-laden lagoons, like those frequently encountered all along the seaboard between Casamance and the Congo. In addition, the African coast of the Red Sea, the Mozambique Channel and the eastern shoreline of Madagascar are fringed by coral reefs. Coastal navigation is difficult in many places, owing to the existence of heavy surf, in which the waves break in rollers against underwater sand ridges. However, the difficulties of access to the coast of Africa should not be exaggerated. There are many magnificent harbours and roadsteads that have made it possible for Africa to take part in the history of the Mediterranean peoples since earliest antiquity. Several unexploited port sites still exist on both the Atlantic and Indian Ocean seaboards. The truth is that the African peoples, even under the most outstanding empires such as that of Pharaonic Egypt – and in spite of such celebrated exceptions as the maritime hegemony of Carthage – have primarily remained dry-landers concerned with exploring, if not exploiting, the vast inner territory which the continent itself offered them as both challenge and reward.

The zonal character of the African climate

As the continent with the greatest area of land situated in the intertropical zone, Africa is accordingly the uniformly hottest continent of all. The closer one moves towards the tropics, the drier the heat becomes and, conversely, the moister it is near the equator.

Cosmic factors

Since Africa straddles the equator, the sun is never seen to descend very low on the horizon, which is why there is constant heat. At the equator, the sun oscillates around the zenith, so that there is no hot season as such and temperatures are always high. Towards the tropics, however, the contrasts between day and night and between seasons become more marked.

At the northern and southern extremities of the continent, where the sun comes down fairly low on the horizon during the winter, the seasons are more clear-cut.

The rainfall pattern

The main factors governing the weather in Africa are the air masses (tropical or equatorial, maritime or continental), which control the winds and cloud formations.

Two centres of high pressure (anticyclones) cover the North Atlantic (the Azores anticyclone) and the South Atlantic (the St Helena anticyclone). On the continent itself, two other anticyclones, one over the Sahara and the other over the Kalahari, are located almost opposite them. Unlike the first two, however, which are permanent features, the continental anticyclones are primarily active during the winters.

Thus, in winter in the northern hemisphere, the Azores anticyclone sends out cool winds – the Atlantic trade winds – towards the equatorial low pressures. These trade winds only affect a strip of the Saharan coast as far as Cape Verde. In the meantime, the Saharan anticyclone is the source of dry north-easterly winds, which become warmer as they move towards the Gulf of Guinea. This is the harmattan, which dries out everything in its path through the African savannah and the Sahel.

During the southern winter, the same pattern is triggered off by the Kalahari anticyclone, which sends relatively hot and dry winds as far as the Zaire basin. At this time, it is summer in the northern hemisphere and the low pressures over the Sahara suck in the moisture-bearing winds from the Gulf of Guinea that originate in the St Helena anticyclone. This is the Guinean monsoon, which pushes back the harmattan and, by mixing with it, causes the rainy season.

Some geographical factors, such as marine currents, relief and the lie of the coast, may have a local effect on climate. For instance, a warm north-easterly current flows along the Somali coast in summer, while a cold current flows in the opposite direction, from Arabia towards the equator, in winter.

The mountainous Guinean coast behind Conakry (Mount Nimba), which is caught by the full force of the monsoon, receives up to 5 metres of rainfall a year. By contrast, the coasts of Togo and Benin, as well as that of Somalia, which are parallel to the monsoon winds, receive less rain.

Climatic zones

Equatorial climates

From Cameroon to the Zaire basin, the position of the sun, which is almost always vertical, and the heavy rainfall of more than 2 metres a year produce a constant damp heat. The same pattern is encountered in the equatorial regions that are subject to the climatic influence of the Indian Ocean, although the rainfall is not so heavy.

Tropical climates

In these vast zones stretching from the equatorial regions to the deserts, the farther the distance from the former, the greater the heat and the sparser the rainfall. In the first Sudan sub-zone adjoining the equatorial zone, rain falls in more than six months of the year and the temperature range already starts to be more marked. In the second Sudan sub-zone proper, rain occurs during three to six months of the year, with the total precipitation varying between 600 mm and 1500 mm. The temperature range increases. In the Sahelian sub-zone, there is less than 600 mm of rainfall in a period of under three months, and the temperature variations are considerable.

The same staggered pattern occurs south of the equator, but the gradations are more marked because the continent tapers down towards the south and because of the greater

influence of the ocean air masses and the coastal relief. The coasts of Mozambique and the eastern seaboard of Madagascar are very steep and are exposed to winds which bring abundant rainfall, whereas the Atlantic coast, along which the cold Benguela current flows, is dry and heralds the presence of the Namib desert.

Desert climates
Desert climates are a feature of the regions situated on either side of the tropics. Rainfall amounts to less than 250 mm a year, and this dwindles to under 100 mm in the case of the Sahara. Even then, however, a distinction has to be made between the northern Sahara, with its winter Mediterranean rains, the central Sahara, with virtually no rain, and the southern Sahara, with tropical rains in the hot season. Owing to the thinning down of the continental landmass, the Kalahari is more subject to south-western oceanic influences.

Mediterranean climates
In the Maghrib and the southernmost tip of Africa, the main climatic features are a cool and rainy winter season and a very hot and dry summer.

African bioclimatic environments

Relief and climate combine to produce ecological complexes, each with its own hydrological, soil and botanical features.

Outflow of continental waters

The pattern of hydrological networks
More than half the continent consists of dry regions. In the dry Mediterranean region, the sparse, but violent rains result in expanses of runoff water that sometimes accumulates for a limited period in wādīs. In the tropical or equatorial regions, where rainfall is heavier, the main rivers and their tributaries form organized systems, but they often have difficulty in emptying. In fact, to drain seawards, the continental waters have to cross the coastal ranges through gaps marked by rapids and waterfalls. The river Zaire has 32 rapids between Stanley (Malibo) Pool and its estuary. The Zambezi plunges 100 metres at the Victoria Falls before flowing into the narrow Kariba gorge and passing over several basalt cataracts. There are six cataracts marking the course of the Nile between Khartoum and the Mediterranean. All the main African rivers – the Niger, Senegal, Orange, Limpopo, etc. – have stepped profiles, especially along their lower reaches, a fact which makes it easier to understand the compartmental pattern of human settlement on the African continent. Between these major river basins, there are a host of streams, pools and swamps without any regular external drainage outlet. Internal drainage is even quite spectacular in the case of the Chad and Okovango basins, the Macina – the inland delta of the Niger – and the Baḥr al-Ghazāl.

African river regimes
The river regimes are dictated by the rainfall pattern. On the equator, the streamflow is regular on account of the constant rainfall. In the tropical zone, the high-water period is

the outcome of the rainy season during the summer solstice, and this is followed by a winter low-water period, when the flow regime sometimes displays very sharp contrasts. In the Mediterranean zone, the violent storms and mountainous relief turn the rivers into torrents which swell in size during the winter and are reduced to a trickle in the summer.

The main African rivers

Owing to the length of their courses and the latitudes they cover, these main African rivers have regimes that are particularly complex and wide-ranging.

The Zaire system, which covers an area of 4 million square kilometres and is fed by powerful tributaries from both the southern hemisphere (the Kasai and the Lualaba) and the northern hemisphere (the Shanga and the Ubangi), has a regular and abundant streamflow of 40 000 cubic metres per second, second only to that of the Amazon.

The Nile, which extends over a distance of 6700 kilometres from the equator to the Mediterranean, receives equatorial inflows which spread out into the swamps of the Baḥr al-Ghazāl. Then, in the tropics, it receives two tributaries, the Blue Nile and the Atbara, which flow down from the Ethiopian highlands and give it the impetus needed to cross the vast deserts of Nubia and Libya before emptying into the Mediterranean. In spite of its modest discharge of 3000 cubic metres per second, it has been one of the planet's most useful rivers ever since antiquity.

The Niger has a very unusual regime on account of the loop described by its course. It starts out from Guinea, quite close to the Atlantic, and then strikes in the direction of the Sahara, which it skirts at the highest point on its curve, in an intricate pattern forming an 'inland delta'. Unlike its upper reaches, which are fed by a humid tropical climate, this middle stretch narrows down. On the other hand, the lower section ending at the Gulf of Guinea is increasingly replenished by sub-equatorial rainfall and by the inflows of the Benue. Hence the Niger has two abundantly flood-fed sections, which are to some extent combined downstream, but which enclose a middle section on which the streamflow is considerably weakened by evaporation and seepage.

African soils

The different soil formations are the product of the combined action of temperature and water. In the tropical zones, and especially in the Sudanic regions with a marked dry season, the warm, acid rainfall leaches the rocks, dissolving the basic minerals and carrying them deep into the earth. The soils are light and are sandy at the upper levels and clayey in depth. They deteriorate, if there is no plant cover. In some cases, iron oxides and alumina – both of which are useful minerals – rise to the surface, and combine with the topsoil to form a sterile hardpan or *bowe*, which is useless for agriculture. Similar soils are found to the north-west of Antananarivo in Madagascar.

In the very humid equatorial or tropical environment, decomposition of the rocks has given rise to soils that extend to some depth because they are protected from runoff by the forest cover, but they contain very little organic matter or humus.

In the regions bordering the desert, where lateritic hardpan is not easily formed, there are light and loose soils that are good for farming, but they have to be left fallow for long periods.

In the deserts, the *ergs* (sand dunes) and the *regs* (expanses of gravel scree) are quite sterile. The wettest and most frequented areas are the mountain ranges and oases.

Chemical weathering of the rock formations is less marked in the Mediterranean environments and the soils are generally richer.

Biogeographical areas

Dense rain forest

Biogeographical areas are the product of the climatic, hydrological and soil conditions already described. On either side of the equator, the dense rain forest consists of several layers of evergreen plant species. It thins out at the edges to form marshy thickets and clearings, which herald a less humid climate. This environment is hostile to man and teems with parasites, birds, reptiles and tree-dwelling mammals. Larger animals, such as the hippopotamus, the elephant and the leopard, live in the less dense parts.

Outside the equatorial zone, great rain forests are found on the slopes of mountain ranges exposed to moisture-bearing winds, as on the eastern coast of Madagascar.

Savannah and open forest

The transition from the forest to the savannah passes through a variety of increasingly bare landscapes. First comes the woodland savannah, with gallery forests bordering the rivers, then the savannah parkland in which wooded areas and high-grass savannah exist side by side. This is followed by the grassland savannah and scrub savannah, where the trees are fewer and smaller, and patches of bare land emerge. This type of formation is the paradise of herbivorous wildlife and the predators that feed on it.

Steppe lands

The typical feature of the steppe lands is the predominance of grass tufts and prickly thorn bushes. This is representative of the sub-desert Sahel in both West and East Africa, and also of the Kalahari and south-western Madagascar.

Mediterranean vegetation

This vegetation consists of evergreen oak, cork-oak, pine and cedar. All these species have evergreen leaves dominating a bushy undergrowth.

Conclusion

The vastness of the African continent meant that many of its peoples had little contact with peoples on the periphery until quite a late date. As long as the ecological conditions were favourable, internal development kept up a satisfactory pace, as in the prehistoric wet Sahara and the Nile valley of Ancient Egypt. However, as the climate deteriorated, the African peoples embarked on a long period of wandering. Inter-African trade between areas whose agricultural produce and minerals were complementary to one another led to trade with other continents, increasingly to the benefit of the latter. The gold of Nubia and Cush was exploited by Pharaonic Egypt. The gold of the Sudanic region and Zimbabwe became a source of prosperity for the Maghrib and the Near East, while still strengthening the great empires of the Western Sudan and

Mwenemutapa. Iron was traded in ancient times between north and south, while copper was the basis for transcontinental traffic towards the Indian Ocean. The salt mines on the edge of the Sahara played an important role between the kingdoms south of the Sahara and the Arab-Berber peoples. Since the fifteenth century of the Christian era, exports have increasingly taken over from these intra-continental trading patterns.

14 *Historical geography: economic aspects*

What have been the principal resources of the peoples of Africa since prehistoric times? Where and how were those resources exploited? In what respects did they slow down or quicken the pace of the continent's take-over by human beings?

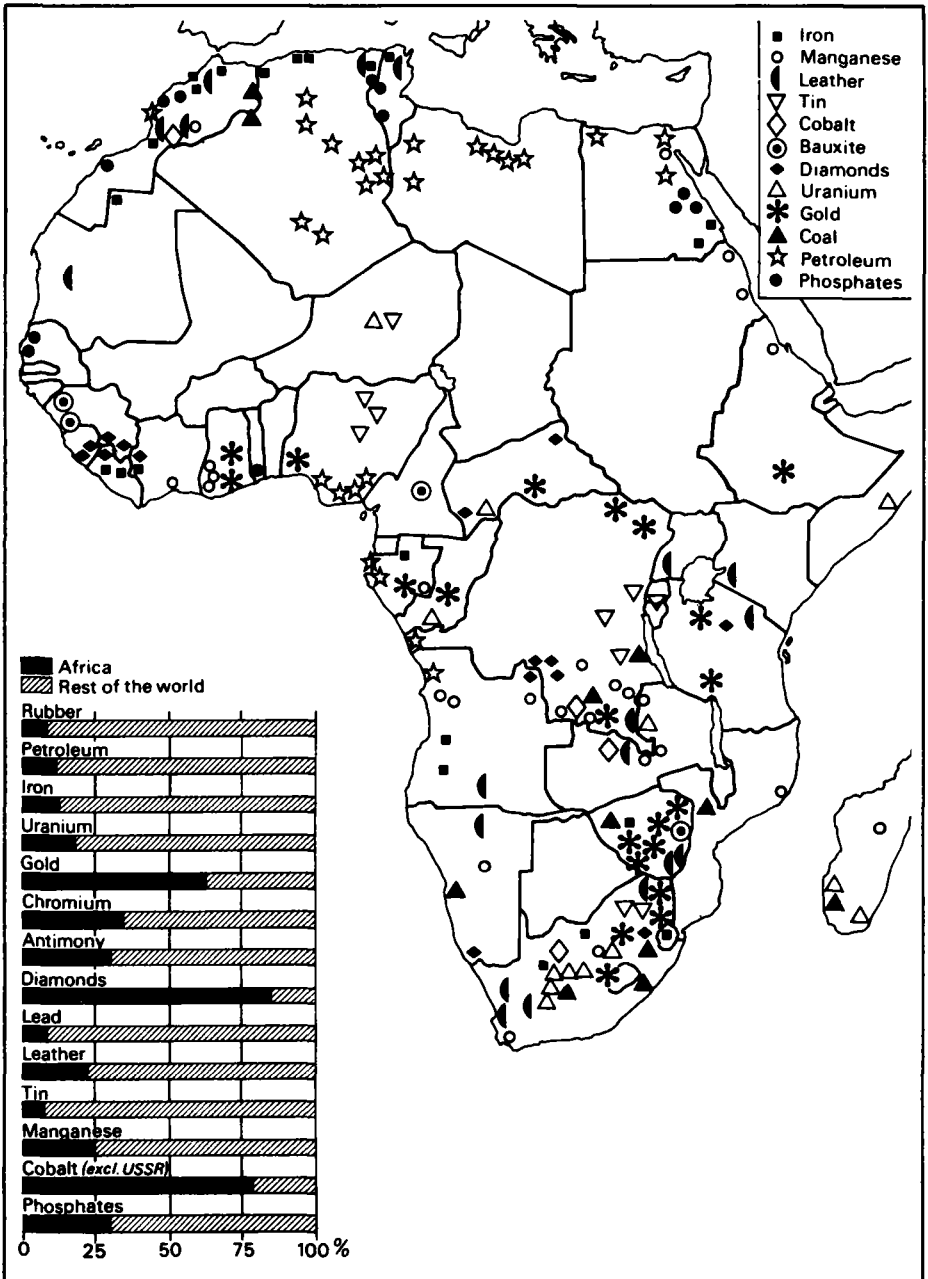
Minerals and the development of human technology

Among the resources available to man on the earth's surface, minerals are probably the most strategic in terms of the accumulation of goods and the mastery of nature. The ancient basement complex composed of crystalline rocks covering one-third of the continent contains extremely rich mineral deposits. The Copper Belt of Shaba (Zaire), which extends over a distance of more than 300 kilometres, is the world's largest source of copper ore, alongside which radium and cobalt are also to be found. In the Transvaal, in South Africa, a 500-kilometre strip rich in minerals such as platinum, chromium and asbestos runs on into Zimbabwe. The African diamond-bearing zone has no equal anywhere in the world: its greatest concentration is in South Africa, but deposits also exist in many other African countries including Zaire, Angola and Tanzania. The same is true of gold, tin, iron ore – which is almost commonplace – and bauxite, in respect of which Guinea alone possesses more than half the world's reserves.

The gigantic volcanic disruptions produced, among other resources, rocks that weathered into highly fertile soils or were capable of being shaped into stone implements, as in the case of the obsidian basalt in Kenya, which was of crucial importance in prehistoric times.

The sedimentary rocks covering two-thirds of the continental landmass are also very important as sources of mineral wealth: for instance, those in Namibia and South Africa contain iron-ore deposits. In other areas, there are widespread phosphate deposits and, in the relative absence of coal, vast petroleum and natural gas fields.

In some instances, these resources have been the driving force behind African history, as in the case of the trans-Saharan gold trade during the 'Middle Ages'. The interest the Arabs took in East Africa was largely motivated by the existence of Zimbabwe's gold and iron, while the colonial process resulted in Africa being relegated to the role of a supplier of raw materials.



14.1 *Mineral resources of Africa (from A. Journaux, 1976, 'L'Afrique', Coll. Hatier)*

In the prehistoric period, the basic human technology developed on the African continent was primarily applied to lithic or stone minerals, for the purpose of turning them into tools. Its requirements were met from rocks that were homogeneous in structure, hard and capable of being flaked, such as the volcanic glasses of the East African Rift Valley, which formed the basis of the Palaeolithic Capsian industry producing long blades and a variety of small-sized microlithic tools.

Other remarkable materials for this type of work included siliceous rocks such as quartzite and very hard fine-grained rocks such as schists and silicites, all of which were used in the Acheulian early stone-age industries. Flint was widely employed by the prehistoric peoples of Egypt and the Tunisian plateau, and chalcedony, or crystallized silica, was the basis for the Mesolithic Bambata industry of Zimbabwe.

Of the deep or intermediate igneous volcanic rocks, basalt, diorite and dolerite were used to manufacture weapons, such as throwing-stones and arrowheads, as well as vessels, statues, and so on. Even softer rocks such as limestones, or very soft rocks like steatite were not neglected, particularly in Egypt. In addition, clay formed the raw material for pottery-making all over the continent.

There was virtually no limit to the purposes for which minerals were used during the prehistoric period. They were employed in the construction of shelters and dwelling-places, with mud being used as plaster, and in the building of the Egyptian pyramids (granites and quartzites), as well as for making the pigments for rock paintings.

However, the most decisive qualitative changes came about with the use of iron in the latter part of the prehistoric period. The vast deposits with very high ore-contents that are now needed to produce a return on the enormous investments involved were not necessary in prehistoric times, and ferruginous laterite, which is so common in the savannah regions, was therefore widely exploited. In sharp contrast with iron, which spread far and wide once the technology involved had been invented, the early use of copper and tin was confined to certain very localized areas, such as north-eastern Ethiopia and Shaba, so that vast regions did not first go through a bronze culture before graduating to an iron age. One notable exception to this, however, was Mauritania, which had a flourishing copper age some five centuries before the Christian era.

Plant resources and population growth

Africa is predominantly a grassland continent, with grasses occupying 50 per cent of the surface area, as against 30 per cent for deserts and 20 per cent for forests. Plants were the staples of existence for thousands of years: not only did they support game animals, they also provided edible leaves, flowers, fruit and roots, yielded material for making tools, clothing and shelter, and were the very basis of the agricultural revolution that took place when seeds and saplings started being selected during the Neolithic period.

In this context, the pre-eminent sites for human occupation were located along rivers, lakes and the seaboard, in a grassland or woodland savannah environment. All kinds of resources – game, fish or shell-fish, or the plant cover with its varied produce – existed side by side at such locations. According to J. D. Clark, many of the wild fruits, nuts and plants available to the prehistoric Nachikufan population of northern Zambia, such as the fruits of the *mubuyu* and *musuku*, are still gathered and consumed by the present-day inhabitants of the region.

It should be borne in mind, however, that the vegetation zones have varied considerably since the very beginnings of time. The Sahara, for instance, underwent major phases of climatic change that were accompanied by far-reaching mutations in the landscape. In the Neolithic period, enormous numbers of large animals lived in the parkland forests, one of the last remains of which was the Tenere tree that is now preserved in the Niamey museum. By contrast, the equatorial forest is also believed to have gone through periods that were almost arid.

At that time, plant resources had a much wider range of uses than they do nowadays. Near Kalambo Falls, at the southern end of Lake Tanganyika, well-preserved wooden implements from the early Palaeolithic period consisting of pointed or obliquely-cut digging sticks have been discovered.

The heavy scrapers used by the Nachikufan populations of Zambia and Malawi, like the core-shaped stones of the Lupemban industry of the equatorial forest, bear witness to the use of stone tools to manufacture wooden implements. Conversely, wood itself was used to add the final touches to stone tools.

Trees were also used for their bark and leaves, which provided our prehistoric ancestors with clothing, containers and rope. Moreover, from the Mesolithic period onwards, branches of trees, thatch or matting were probably used to construct wind-breaks; the collapsed remains of one such wind-break were discovered at Gwisho Springs in South Africa. By the Neolithic period, shelters made of plant material, sometimes reinforced with mud, gradually came to replace the caves used in the past and were the first clear imprint of man's occupation of the landscape.

However, it was man's domestication of plants to produce new varieties that brought about fundamental and irreversible changes in his environment. In this regard, Africa learnt a great deal from Asia and Latin America, but it also contributed to the agricultural heritage of mankind through its own inventions, which in some instances spread to the world outside.[1]

The need to clear land in order to sow or plant crops also triggered off drastic changes in the plant cover, and the consequences of this are still affecting us today. Fire, which was used by man in Africa as far back as 60 000 years ago, first for his protection and subsequently for hunting and tool-making, also served to remove unwanted vegetation. This is the reason for the sometimes irreparable damage done to grasses and especially trees, and for the progressive extension of grasslands and the creation of 'derived' or anthropic savannah. From prehistoric times onwards, the vast African forests have been thinning out and disappearing through the agency of the climate and man. The grasslands that replaced them were easier to clear for cultivation and to travel across. It is understandable, therefore, that the main areas of human settlement in that period can primarily be detected in the savannah regions. It is also understandable that, under the effects of population growth, endless movements should have propelled peoples ever forward in inextricable patterns that are sometimes very difficult to trace, but for which evidence exists in archaeological, ethnographic, linguistic and historical documents. This was how new technological ideas and inventions came to be propagated, along with new socio-political concepts. Groups that decided to flee from too coercive a power system

1. See Chapter 27 below.

advanced yet further on a pioneering front to clear and take possession of an area that was fortunately almost boundless. If necessary, they retreated into the most inhospitable fastnesses, such as steep mountain ranges, arid wastes or heavily forested regions.

The main factor in population growth was the increase in agricultural production, in which at least 80 per cent of all Africans were engaged until the middle of the present century. According to Carr Saunders, until 1650 Africa was second only to Asia as regards its number of inhabitants. Its population of 100 million represented more than 20 per cent of the world total, whereas it has now fallen to 10 per cent. The empires and kingdoms that offered peace and security in return for domination were bound to foster economic development and population growth, and traces of their impact can still be seen right across the Sudanic savannah from Senegal to Chad, in Mali, the Mossi country and Hausaland. This population distribution was to undergo a far-reaching change with the coming of the slave trade and colonization.

Animal resources and cultural diversification

Africa is a continent with a particularly large number of mammals; indeed as many as 38 different mammalian families have been identified. All the regions of the continent could claim the presence of the larger wildlife species at one time or another.

The Mediterranean region was once the home of the lion and the elephant, as is evident from prehistoric fossil remains, accounts of Hannibal's campaigns against the Romans and reports of French colonial expeditions in the mid-nineteenth century.

Even today, the desert still preserves specimens of the teeming wildlife of the past in the shape of a variety of gazelles and the oryx. Unfortunately, from antiquity onwards, the Roman amphitheatres took a heavy toll of wild animals for their cruel bloodsports.

Nowadays, only the grassland plains of Africa still offer some idea of what the profusion of animal life must originally have been, although natural selection and changes in the environment have left their mark. The white rhinoceros, for instance, seems to have disappeared from the region between the Zambezi and the upper stretches of the White Nile due to changes in climate and vegetation, which favoured the more aggressive black rhinoceros. Some species, like the bongo, are disappearing as their dense rain-forest habitat is reduced in area.

For thousands of millennia, however, game resources were so plentiful that some African communities saw no point in seeking their food supplies in any other manner. Fish formed part of the African diet from as far back as the Mesolithic period. Rivers like the Nile and lakes such as Chad, Nakuru, Turkana and Edward bear widely scattered traces on their shorelines of fishing tackle in the shape of bone harpoons and fish-hooks. Canoes hollowed out of tree trunks or woven from papyrus are used by Africans even today. Despite the rudimentary nature of the equipment, large aquatic animals like the hippopotamus, the crocodile and the manatee have always been hunted and captured in Africa.

The incredible proliferation of wildlife was a factor that had both positive and negative aspects as far as the domestication of animals was concerned. There was ample scope for selecting varieties that could be readily tamed, but, at the same time, the sheer

abundance of wild animals offered an ever-replenished reserve which dispensed with the need for domestication. As a result, only the ass, the cat, the guinea fowl, the sheep and the cow appear to have been domesticated in Africa.

The first African pastoralists appeared in the Sahara in the Neolithic period. Although small varieties of stock were reared by all communities, only a minority mastered the skills involved in raising the larger breeds, and some groups, such as among the Tuareg of the Sahara, the Fulani of the West African savannah and the Maasai of the East African grasslands, developed the technique to the point where it became a more or less exclusive life-style. Occasionally, some groups managed to combine animal husbandry with agriculture, to the mutual advantage of both.

It may be asked what was the origin of this restriction of stock-raising, which was to prove so prejudicial to the agrarian revolution in Africa. The presence of other harmful zoological species may have been responsible for the limited development of pastoralism. The tsetse fly, for example, is the main vector of trypanosomiasis, a disease that causes sleeping sickness in man and spells death for his animals. The only areas spared from the disease are highlands and hot open short-grass country. Hence there is an ecological barrier to stock-raising which goes back to prehistoric times, to judge from the fossil impressions of the insect found in certain geological beds. The reduction in the area in which it is prevalent is probably due to the enormous climatic fluctuations that took place at the end of the prehistoric period. In any event, the movement of cattle herds from North Africa towards the south was subject to the existence of fly-free corridors and/or to the creation of densely populated areas that had consequently been deforested. An illustration of the latter situation is provided by the settlement, a thousand years ago, of cattle herders who merged with other peoples in what is now Rwanda and Burundi. It would not be an exaggeration to say that, without the tsetse fly, the history of Africa would have taken a different course. The fact that draught animals and the wheel were never used can be linked to the fly's destructive effects. These difficult conditions may have fostered the aggressiveness of the pastoral peoples, both among themselves and in their dealings with groups not possessing the same amenities. In this and other respects, mounted warriors played an important role in the formation of the states north of the equator.

Another adverse zoological factor was the presence of the mosquito (*Anopheles gambiae*), the vector of malaria. It prefers to feed on human blood, but since it does not spare animals either, it is very difficult to eradicate. It is habitually found in stagnant water and in hot and humid locations, but is less prevalent at higher elevations.

Blood serum analyses for large numbers of African groups that are more or less inured to the disease show that they and the malarial mosquito have lived alongside each other for a long time, indeed probably for several thousands of years. Inasmuch as it impairs the survival chances of non-adapted groups and is responsible for the loss of an incalculable number of days' work, malaria could be said to be a decisive factor in the history of the continent, to the extent that, in the nineteenth century, the presence of the *Anopheles* mosquito prevented certain regions of Africa from being settled by colonizers. The Europeans preferred to spare such areas from exploitation and surrender them to indirect rule because the loss of life they suffered was too heavy: they chose to settle instead in the more elevated regions of North, East, Central and Southern Africa.

Locusts – the desert locust, the African migratory locust and the red locust – represent one of the plagues of Africa to which reference is made in the Bible in connection with the divine punishment meted out to the Pharaoh of Egypt. These insects need bare ground to lay their eggs and abundant vegetation on which to feed. This accounts for their taste for well-weeded millet fields. If their feeding process is restricted, they congregate in enormous swarms and sweep down in a devastating wave on more favourable regions. A plague of locusts just before harvest-time spells famine. Combined with drought, it virtually condemns the community to extermination, to wholesale flight from the land, or to social upheaval.

Water resources and human mobility

Africa's predicament as far as water resources are concerned is hardly to be envied. Depending on the regions, it has both some of the highest and some of the lowest rainfall in the world.

The vast scale of the continent's deserts offers overwhelming proof of this drawback. In the Sudanic savannah, where as much rain falls as in Paris, people suffer from drought because what little rain there is falls only during four months of the year. The fertile river valleys are mosquito-infested and many rivers actually disappear altogether in the dry season. There are few regions, like in Egypt or Casamance, where control over the water supply makes it possible to obtain very high crop yields. The existence of an impervious basement rock in many regions fosters runoff and erosion. Shortage of water is a fact of life in Africa. It accounts for the unstable nature of human settlements that is scarcely conducive to capital accumulation, for the shifting character of rural labour that does not make for progress, and for the incessant comings and goings of peoples who were often peace-loving, but who were sometimes also aggressive and predatory, even from prehistoric times.

By way of a counter-demonstration, it can be observed that whenever a powerful authority has protected stable rural communities without over-exploiting them, significant socio-economic – and sometimes technological – progress has been recorded. It would even appear that the establishment of a powerful political structure and an agrarian religion are themselves the product of a more effective 'mode of production' which allows a division of labour to some degree.

Soil resources and the social evolution of communities

Africa does not have the vast deep-soiled sedimentary plains found on all the other continents, especially in the northern hemisphere. Different soil varieties follow each other in quick succession, and their fertility depends as much on the ground formation itself as on climatic conditions. In humid forest regions, for example, the luxuriant plant growth conceals the fragile nature of the soils. When the vegetation is cleared, the organic matter in the soil disintegrates. The fertility quickly declines and it is soon necessary to move on to another untilled plot.

Soil fertility is better in the less watered regions, but the sharp seasonal temperature differentials create a sterile crust of lateritic iron minerals, as in the case of the extensive

regions of the West African savannah and the plateaux at the margins of the Zaire–Congo basin. More valuable still are the less-watered Sahelian-type soils, although a minimum amount of rainfall is obviously necessary.

The rare soils in Africa that are really fertile are located in the East African highlands, where the red and chocolate-coloured soils are as rich as the deep alluvial soils on the floodplains of rivers like the Nile. When such sites are settled by a very dense population, an upward-moving pattern of technical inventiveness and structure-building develops, such as is recognizable in Mesopotamia and in the great plains of India and China. These conditions were almost met in the region situated between the two middle stretches of the rivers Niger and Senegal, and they account for the spectacular progress of that region, which was marked by the emergence of increasingly large and complex empires. The upheavals that took place in the sixteenth century of the Christian era put a sudden end to these developments.

Conclusion

At first sight, Africa might appear to be a continent that has been over-indulged by nature. A closer look, however, reveals the formidable obstacles lying concealed in the swarming animal life, the vast open spaces where the population has remained too thin on the ground and too caught up in its own toils, the untempered harshness of the climate, the deceptive ease with which so many soil formations can be tilled. All these factors resulted in a host of communities that were too small to undergo transformation or to stand up to external aggression, too small to take up the agonizing challenges with which any human community has to contend, if it is to gain in strength and quality. If we except the Nile valley in antiquity and a few isolated prehistorical and historical phases, the lesson to be drawn from African history and prehistory is that the peoples of the continent have never attained the critical mass from which great schemes can and must be launched. This longstanding lack of large integrated units is not a consequence of some curse, but the outcome of a combination of their own actions, their environment and foreign exploitation. This is not a deterministic theory. What history has done, history can undo. It is all a matter of lucidity and active awareness.

15 *The interdisciplinary methods adopted in this study*

The interdisciplinary approach

Written history has to be as faithful a reproduction as possible of history as it actually took place. However, history is so complex a subject area that no single discipline on its own can grasp all its facets and elucidate them. Hence, a variety of specialists have to come together and give one another a helping hand: this is the procedure that has been adopted by the International Scientific Committee for a General History of Africa. But, as soon as an interdisciplinary approach is mentioned, each branch automatically sees itself as directing the historical film, as it were. History itself is then liable to be relegated to a subsidiary role, since it is a universal discipline that all branches of knowledge need, if they are to understand the path they themselves have trodden. In the position it occupies at the crossroads of knowledge – the thoroughfare taken by everyone – history is both powerful and weak.

Until the twentieth century, written documents were the basis for any historical reconstruction worthy of that name. In the case of Africa, however, owing to the relative scarcity of written documents, history has been compelled to overstep its habitual bounds. The African proverb has it that 'when your mother is not there, you must suckle at your grandmother's breast'. Sheer necessity has resulted in the use of an interdisciplinary approach and the consequent escape from the overriding influence of the written word, which has tended to overwhelm all other sources and reduce them virtually to nothing.

Moreover, research in the human and social sciences in Africa has suffered from two contrasting, but equally unrewarding forms of bias. The first of these is the typically historicist approach, where human development is seen as a succession of events with dates, like beads on a string. Apart from those dates everything else, including such key factors as economics, social structure and culture, is disregarded.

The other aberration, which is even more serious, shows utter contempt for the sequence of events and concentrates solely on structures that are set fast in the timeless present of ethnography. This is a shortcoming displayed by certain linguists who are completely caught up in their own subject and are blind – or deaf rather – to the dynamics of languages. This is also true of functionalist anthropologists,

who overlook the fact that ethnic groups, despite the anthropologists – and even in spite of themselves – cannot stop developing.

Fortunately, concern about the problem to be solved is increasingly regarded as more important than discussions about which tools should be used to solve it. 'The realization', writes J. Desmond Clark, 'that archaeologists, linguists and cultural anthropologists or ethnographers are faced with many of the same problems and that the best way of solving them is by interdisciplinary teamwork, is one of the most encouraging and exciting factors in African studies today'.

Thus, the type of pseudo-history that trotted out one date after another, and the misguided analysis of structures dissociated from real life, are yielding to schools of linguists like Calame-Griaule and Houis, who are bringing back the notions of progression and links with culture, and to the exponents of dynamic sociology such as Balandier, who are rediscovering the historical, and hence conflictual, dimension of history.

This means that no single discipline on its own can give an account of the dense and intricate reality of the African world. There is a proverb from the Sahel which reminds us that one man alone cannot encompass a forest: there is no single explanatory principle that by itself can account for African societies. For instance, the structural analysis of kinship or of myths and ideological symbols cannot provide the key to an understanding of a social group unless, say, production relations are taken into account as well. As Lévi-Strauss acknowledges, it is impossible to dismiss economic and social conditions and to focus exclusively on kinship patterns.

In many instances in Africa, the chronology, for example, which may seem a straightforward historical matter, can only be traced back by calling on a combination of written records, archaeology, linguistics and oral tradition, four different sources which are complementary to each other, in the same way as a motorist's mileometer and watch, the milestones along the road and the directions he may be given by a local inhabitant provide him with thoroughly reliable information on the distance that he has already covered or that lies before him.

Our knowledge of Kumbi Ṣaleḥ, the capital of ancient Ghana, is only fully substantiated when the information contained in al-Bakrī's description is supplemented by the archaeological discoveries, which are even more eloquent than the account given by an external observer. Even oral tradition made its contribution here, leading as it did to the uncovering of the ruins.

In such circumstances, there can be no question of high- or low-quality sources ranging from top to bottom of the scale. In each given case there is a key source which acts as a foundation, to which the other sources act as a prop. For African prehistory or for Pygmy societies, written records are obviously not the best source, for there are none. For different periods and areas, the range of sources is governed and directed by a particular type of source. The key source is not the same for the Kirdi of northern Cameroon, the Asante of Ghana, the Kabre of northern Togo or the empire of Gao. Moreover, it may well be that such a key source will be identified only after research is complete, for although the source could be said to govern the outcome, it is the outcome itself that vindicates the source. For the African historian, therefore, the interdisciplinary approach is a question not so much of choice as of necessity.

How sources complement one another

A single source on its own often gives a blurred image of historical reality, and only a combination of several sources makes it possible to bring the picture into focus.

A report on *archaeological excavations* is liable to be little more than a disjointed catalogue of facts, a dismal enumeration, if it is not situated in the overall living context of which the excavated site forms only a tiny part. The archaeologist's findings raise questions for other disciplines, and the answers provided will enable the archaeologist to find a good many explanations that are outside his own purview. In the case of the great Zimbabwe ruins, for example, defence of the gold mines and religious considerations offer the best explanation for the layout of the fortifications. In other instances, the goods placed in graves and the positioning of the bodies in tombs remain incomprehensible, unless allowance is made for the concept of the after-life held by the peoples concerned. Plainly, the objects unearthed contribute in their turn to producing a more clear-cut picture of such concepts, in the same way as the excavations carried out in northern Ghana, which have brought to light architectural features similar to those of the Sudanic Sahel, make it possible to set or solve an interesting problem of cultural influences.

Like archaeology, *art* is illuminated by many other disciplines. Art, whether prehistoric or not, delivers up its secrets only if it is approached through familiarity with the entire environment, taking into account geology, social status, political structure, myth and religion. On the other hand, by recording rituals, scarifications, hair styles, costumes and scenarios, art acts as a museum of cultural, and even physical, anthropology.

History is accordingly at the very centre of art. In Yorubaland, for instance, the same artists carved in wood and later ivory, while others worked in clay and then in bronze. It is this changeover from one material to another which helps us understand the aesthetic forms used in working ivory or bronze, in precisely the same way as in prehistoric periods the switch from basketwork to pottery often accounts for the shape and decoration of pots. Masks, for their part, are a reflection of life in the villages, where they are recognized as personalities, even by children. But they also contribute to making the history to which they are witness. This is true of the large Bobo bird, buffalo and ancestor masks, for instance. In some circumstances, masks are consulted and accordingly serve as intermediaries for certain social groups in the context of the established pattern of forces. The cowries mentioned by Ibn Baṭṭūṭa at the court of Mali in 1352 were primarily intended for use as coinage, but they also served as adornments and as statutory gifts on social occasions and at religious ceremonies. To embark on the history of certain African societies without a knowledge of the rich language of cowries and masks would be like going into a library without being able to read: it would inevitably produce a defective version of their evolution.

When we turn to *oral tradition*, which has already been discussed in earlier chapters and which is now established as a fully-fledged historical source, it could be said to produce its best results only when it is combined with other sources, whose existence it has sometimes helped to reveal, as in the case of archaeological sites, artistic treasures, and so on. Indeed, before a start is made on any programme of excavations, it is advisable to set about collecting local traditions, which often make it possible to move

faster and in the right direction. However, in the event of there being several versions of the same tradition, other sources, such as archaeology or records of eclipses, may make it possible to decide between them.

Bound up as it is with tradition, *music* is incomprehensible unless it is related to the myriad cultural features of society. Drums are some of the greatest living books of Africa. As spokesmen for kings, oracles, heralds, battle cries or chroniclers, they translate and give impetus to the historical movement of villages and kingdoms alike. The most outstanding epics are, in fact, accompanied by drums and are sung by social groups which often add gesture to voice. In Africa, the combination of song, dance and music is a rich source of information on the immediate or remoter history of the group, since striking events, such as cattle epidemics, periods of drought or lean years and fat years, or the feats and failings of rulers, soon come to be used as material by local performers. Lastly, the comparative study of musical instruments and other musical features can point to the way in which cultures are disseminated. Nowadays, authentic African music is being superseded by its own magnificent, if ear-splitting and unfamiliar echo reverberating from the Americas. Such music is often less resourceful, but it is sustained by more affluent economic systems. Its harsher and more strident rhythms may be a reflection of the growing contradictions existing in African societies.

Linguistics is an inexhaustible historical source, for tradition is encapsulated in the living museum of language. Every language is both a psychological entity and a social phenomenon. Its vocabulary is like a sedimentary layer in which the realities forged by each people's history are deposited. But, conversely, it is language, the 'word', which conveys ideology and cultural or political messages and which makes and unmakes history and makes it afresh by creating the ideas and rules governing behaviour. Some of the concepts involved are literally untranslatable because they bear the stamp of an entire culture. For instance, the words *sanakuya* (in Bambara) and *rakire* (in More) lose a large part of their meaning when they are roughly translated by 'joking relationship'. They are words epitomizing a meaningful real-life African phenomenon existing in the alliances between ethnic groups and clans, in which 'joking' is only the tip of the iceberg, so to speak. The same is true of the concept of *dyatigui*, in Bambara, which by no means coincides with the simple notion of 'landlord', or of *tengsoba*, rendered literally by 'master of the land', although this does not convey the full meaning and disregards the incumbent's religious and indeed judicial authority. In short, every African term has to be rethought not so much in the word-for-word sense as with all the sociological and historical significance with which it is charged. Linguistic criticism accordingly becomes one of the most precious tools available to historians.

In the case of the ruins of the Lobi region of Burkina Faso, the suggestion that they were Portuguese in origin was ruled out by examining the line of the road leading to them and by the fact that the dating of the wall finishings showed them to be too recent. On the other hand, the local name of *kol na wo*, or 'stable for the foreigners' cattle', given to the site finally put the investigators on the right track, but the style of the pottery found in the ruins and the chronology of the migratory tradition in the area had to be taken into account before the builders could be identified as the Kulango.

The phenomenon of language, which is cultural, should on no account be confused with tribalism or the biological factor of race. The language of the Dagomba horsemen

who invaded the countries of the Volta basin in the fourteenth century of the Christian era is probably lost, having been supplanted by that of the local Kusase women whom they took as their wives and who became the mothers of their children. Moreover, the fossilized ethnohistory of the functionalists, who characterize societies in terms of hard and fast patterns, is neither authentic ethnography nor, indeed, authentic history, especially since it often disregards material cultures and the general movement of goods – such as the barter of salt for gold, kola nuts for cattle and captives for guns – which was instrumental in giving form to the West African kingdoms and empires, and which Leroi-Gourhan saw as being the matrix of civilization.

Thus we see that *dynamic sociology* must also form one of the principal strands in African historical research. It is not a matter of blindly shifting the analytical tools from one society to another, either in time or in space, for that would create more problems than it solved. For example, to calculate the average length of reigns, care should be taken not to transpose present-day averages to past centuries, since the degree of political stability is not necessarily the same. Again, the tradition of collateral succession – from one brother to another – in the Mossi kingdom of Yatenga cannot give averages identical to those for the kingdom of Wagadugu, where the succession went from father to eldest son. In the latter case, reigns tended to be longer and the number of generations higher. However, if we turn to the Gan kings (*Gan-Massa*), who were regularly chosen from among the youngest full-grown men, the average reigns are even longer. Hence, historians' calculations cannot be substantiated in the absence of a clear picture of the political sociology of the country being studied. Moreover, the actual concept of stability cannot be transferred wholesale from non-African societies and grafted on to the historical reality of the continent. In Ethiopia and the kingdom of Wagadugu, the elimination or banishment of unsuccessful candidates or collaterals ensured a measure of stability, but the price paid in terms of instability over a longer time-span has not been accurately gauged.

The *natural sciences*, starting with the use of computers for processing certain items of numerical data, form part of the interdisciplinary mix. The list of contributions made by the sciences to historical research is long and includes physical, chemical and biochemical methods used for dating and analysing metals, plants and foodstuffs and for investigating livestock and its heredity, as well as epidemiology and the study of natural disasters, which is bound up with climatology. In African traditions, famines are as much historical landmarks as wars. Technology is naturally connected with the role of violence in history. In Africa, too, although perhaps on a smaller scale, technological leads have played a decisive role to the advantage, for example, of the Assyrians in Egypt, the early kings of ancient Ghana and King Shaka of the Zulu. Wherever possible, statistics can also help to pinpoint a situation and assess its relative significance. A population of 10 000 people will not have the same type of structure as one of, say, 10 million. Similarly, when we speak of invasions by fourteenth-century African or other armies, it is important not to visualize them in terms of the mass mobilizations of the twentieth century.

The *study of African warfare* is useful only if it is linked to knowledge of the societies involved. Wars were as much a religious contest as a technical confrontation. Sundiata and Sumaoro Kante used magic against one another before they actually came to blows.

Warriors would cover their battle-dress with amulets, and this custom was kept up by African soldiers even in the First and Second World Wars.

In spite of the havoc caused in scientific circles by the 'Hamitic' myth, *physical anthropology* can still be of service, provided it is purged of its racist connotations and takes sociological findings into account. Certain types of skeletal deformation, such as the lengthening of the skull practised by the Mangbetu, are related to culture and life-style. On the other hand, haematological analyses have shown that even blood-groups are capable of adapting to the environment, thus illustrating the remarkable impact which habitat can have on 'race'. Like everything coming within the scope of history, race has to be regarded as being a composite of nature and culture, of environment and the passage of time.

Method

How can so many disciplines be harnessed to the common task of reviving the past? The first method consists of creating a very loose association in which the efforts of all concerned are pooled. At the outset, a number of common objectives are laid down and then each member of the group focuses on the problem area of his own discipline. After exchanging information from time to time, the group eventually comes together to collate its findings. This approach is not very satisfactory, since it perpetuates almost all the drawbacks inherent in the individual disciplines without making the most of the specifically beneficial effect generated by their close association.

A more rewarding approach involves the interdisciplinary method whereby the different disciplines are dovetailed together rather than left to work alongside one another. Both the overall research strategy and the detailed technical stages have to be worked out jointly. After the fundamental issues have been identified, the work entailed is broken down into specific tasks. Findings are reviewed or collated at regular intervals or at the request of one of the parties involved, so that the problem can be restated in fresh terms, in the light of the progress made. If necessary, any obstacles identified can be handled by means of crash programmes on which all efforts are concentrated. This type of continuous teamwork may have either a single director or several directors in turn, depending on whether the stage reached calls for a linguist, a sociologist, or another type of specialist. Research conducted along these lines may well enhance the scope of each discipline, remedy its shortcomings and pave the way for original insights and time-saving short-cuts. However, African research centres will have to gear their structural organization to this type of approach and researchers themselves will have to adjust their outlook accordingly.

What is the purpose of all this? The idea is to recreate the image of social life, if not in all its physical details, then at least without disfiguring it through oversimplification. Social life is not one-dimensional. People do not have one life catering primarily for their bodily needs, with another separate life for engaging in social relations, and yet another embracing art, philosophy, education, and so on. All these different strands are woven together to form a single whole. Novels like Steinbeck's *The Grapes of Wrath*, Malraux's *La Condition humaine* and Thomas Mofolo's *Shaka* are a faithful portrayal of this intense blending of all life's facets. The historian has to embark on this 'resurrection

of the past' by collaborating with other research scientists. Truth is indeed often stranger than fiction, and historical reality, if properly reconstituted so as to avoid an incomplete and one-sided view of things, is more exciting than any novel. It is, of course, possible to concentrate on one specific feature, and to illuminate it in close-up in a specialized paper, for example, but only on condition that that feature is then fitted into the broader pattern, which in turn has to be blended into the overall picture. Major historical occurrences are the outcome of a combination of factors and forces whose deep-seated workings have to be brought out into the open. In the case of the expansion of the Mande or the Hausa in West Africa, for instance, allowance has to be made for such factors as technology, material facilities, the predilection for trade and the profit generated by it, language advantages, the relevance of political or clan-type organization, religious fervour, and so on. Attempts to give prominence to a single prime cause are often liable to result in the erection of a neat theoretical construct rather than a resuscitation of the past.

This all-inclusive approach is particularly necessary in Africa since, until the twentieth century, life was more closely knit than elsewhere and less riddled by class conflicts. Dividing the people involved into state or stateless societies, in which the latter term is defined in the light of European experience, will result in a real loss of the stuff of which history is made. In Africa, even in an empire like that of Mali, the absence of wheeled transport and of a bureaucratic administration, and the leaders' deliberate policy of leaving the mass of the population to manage its own affairs, meant that everyday life in the villages largely went on outside the state. To ignore that fact is to confine oneself to learning mere lists of rulers, some of whom may be known only for one or two outstanding events in a reign lasting some fifteen to twenty years, and setting them up as pointers to the way in which people lived their lives. Even societies where traditional religion was the motive force were no less integrated than those drawing their inspiration from Islam. In many respects, they were not secular societies, and it would be missing the point to regard them as such.

It is true that centralization also existed in such societies, but it was not of the type to be found in the 'modern' state, where it could almost be said to be the price paid – and the antidote administered – for pushing the division of labour to extremes. For example, among the Senufo – with their secret society, the Poro – as well as among the Lobi (the Dyoro) and the Dyula of Senegal, initiation often played a key role, in that the whole of social life was centred around it. Again, whole federations of villages were organized around a common altar or cult, as in the Samo area of Burkina Faso and in the Ibo country in Nigeria.

These societies, for all their purportedly archaic technologies, displayed a tremendous range of folk art, which was to be found on the most commonly used tools and utensils. Even the hollow or raised patterns of body scarification fulfilled the twofold function of signalling ethnic identity and satisfying an aesthetic urge. The same is true of the iron coins, or *guinze*, formerly used by many peoples in Guinea, Sierra Leone and Liberia, which served, at one and the same time, as currency, as protectors of houses and land, and as resting-places for the spirits of the departed and the ancestors. To really do them justice, such all-embracing societies call for an all-embracing history.

16 *Chronological framework: African pluvial and glacial epochs*

PART I

This chapter gives a general account of some of the changes that took place in the physical aspects of the African continent during the Pleistocene and early Holocene or recent epoch. During this approximately 3 million years the climates and environments of the world fluctuated considerably. The series of momentous climatic events that occurred during this epoch subjected the northern latitudes of the globe on four successive occasions to the advances and retreats of ice sheets; river valleys and terraces were formed; the present coastlines were established; and great changes were induced in the fauna and flora of the globe. The earliest proto-human forms had diverged from the ancestral primate stock by the end of the Pliocene and the beginning of the Pleistocene, and the oldest recognizable tools are found in horizons of early Pleistocene age. In large measure, the development of culture since man's appearance as a tool-using mammal seems to have been profoundly influenced by the environmental factors that characterized the successive stages of the Pleistocene epoch.

The idea that during several episodes of the Pleistocene epoch the glaciers in Europe were far more extensive than at present is well established, and it is now obvious that these European episodes of climatic deterioration were of more than local character. Work in Africa, for example, has shown that the continent during the Pleistocene underwent climatic changes of far-reaching dimensions, and although these have not yet been correlated conclusively with the events occurring in the northern part of the globe, they are, to a large measure, tied to these events in a manner that has yet to be deciphered.

The prospects for the establishment of a time-scale for the late Conozoic and Pleistocene have greatly improved during the last decade. Deep sea drilling programmes have given extremely valuable information on a more or less continuous sedimentary record of the events of the latter part of the earth's history. The detailed and multidisciplinary studies carried out on the cores raised from these programmes, the advances in geophysical and particularly palaeomagnetic studies, and the perfection of the techniques of radiometric measurements have all contributed to a reasonably well established time-scale for this latter part of the earth's history. The geomagnetic time-scale of the

last 5 million years shows that the earth's magnetic field has been alternately changing from normal to reversed. These episodes are interrupted by shorter intervals in which a reversal of the general pattern of that particular episode takes place. The episodes are, from the youngest to the oldest: Brunhes (700 000 years to the present); Matuyama (2.43 million to 700 000 years); Gauss (3.32 to 2.43 million years); and Gilbert (5.4 to 3.32 million years). The Gilbert–Gauss magnetic interval is characterized by great deterioration of the climate noticeable in many areas of the world. This cool episode corresponds with the base of the oldest glaciation in the North American continent, the onset of ice-drifted detritus in the northern Atlantic, and the appearance of cold continental fauna in Europe. According to several authors who would determine the Pliocene/Pleistocene boundary at the first onset of climatic deterioration, this episode marks the advent of the Pleistocene.

As stated earlier, this chapter attempts to review the most salient physical changes that set over the African continent in response to the climatic changes of the Pleistocene. A continent of the size of Africa includes a number of distinct environments, none of which responded in similar fashion or degree to the great palaeoclimatic changes of the Pleistocene. The approach, therefore, is to review these changes within the framework of the present-day major climatic regions of the continent. These regions may be classified under two headings: equatorial and sub-equatorial belts, and tropical and subtropical belts.

Equatorial and sub-equatorial belts

The equatorial belt today covers the hot and humid Zaire basin of western Africa characterized by slight fluctuating winds, slight seasonal fluctuations of temperature and humidity, and frequent cloudbursts and thunderstorms. This belt is covered by typical rain forests. The sub-equatorial belt covers most of the middle parts of Africa. It is characterized by the prevalence of equatorial air masses in summer, and tropical air masses in winter. Winter is dry and only slightly cooler than summer. Most of this belt includes areas with abundant moisture to support a tropical savannah vegetation. The northern and eastern fringes, however, support a tropical steppe vegetation.

As a result of the climatic changes of the Pleistocene rainfall over these belts fluctuated dramatically, and the epoch may be subdivided on the basis of a succession of pluvial (rainy) and interpluvial (dry) stages. The effect of the pluvials can be seen in the expansion of the boundaries of the rain forest, in the bigger wādī alluviation and in the higher lake sediments and shorelines left behind in several closed basins as a result of the expansion of the existing lakes. The interpluvial stages were characterized by the expansion of wind activity when wind-borne sands were deposited or redistributed well to the south of the present-day southern limit of mobile dunes and when radical changes in vegetation took place. Pleistocene climatic changes also brought about fluctuations in the temperatures over these belts. As a result of these fluctuations several mountain peaks show glacial features at lower elevations than the present snow-line.

The famous archaeological site of Olduvai Gorge in northern Tanzania, which includes some of the oldest hominid remains, shows several episodes of markedly high

rainfall alternating with drier intervals during the past 3 million years. In this particular locality a stratigraphical succession is known which carries the most complete evolutionary series for the handaxe, from the earliest primitive forms to the specialized variants of this tool-type of the early Palaeolithic as known in Europe and western Asia.

Evidence of past climatic fluctuations in East Africa is primarily based on the presence of high strandlines and fossil lacustrine deposits along the peripheries of many lakes of this area. Lake Tana, the source of the Blue Nile, has five major shorelines, the highest occurring at 125 metres above the present lake level. The four lakes of the Rift Valley (Zwai, Abyata, Longana and Shala) were so high in the past that they must have overflowed their barriers constituting one sheet of water.

Lake Victoria seems to have been low and without an outlet for a period of undetermined length prior to – 14 500 years B.P., at which time open savannah vegetation prevailed. The lake began to rise at – 12 000 years B.P., at which time forest vegetation first appeared around the northern lake margins. For a short time around + 10 000 years B.P. the level of the lake may have fallen to 12 metres below the present level. Lake Victoria was full between – 9500 and – 6500 years B.P., with an evergreen forest near its shores. The outlet of Lake Victoria into the Nile seems to have started only at – 12 000 years B.P. and has been in effect since that time except for a short period around – 10 000 years B.P.

The Pleistocene histories of Lakes Turkana (Rudolf), Nakuru, Naivasha and Magadi coincide to a large extent. Lake Turkana, with a contemporary surface area of 7500 square kilometres, is the largest non-outlet lake in East Africa. Situated in a downwarped zone adjacent to the East African Rift, the lake is fed primarily by the Omo river, which takes its source from the western Ethiopian highlands. Old littoral, deltaic and fluvial beds of this lake occur 60 metres higher than the present level and date about 130 000 years B.P. Between this latter time and 9500 years B.P., the lake became smaller than at present and the climate more arid. From 9500 years B.P., the lake rose again and fluctuated between 60 and 80 metres above the present level until 7500 years B.P., when Lake Turkana shrank to smaller dimensions. This was followed by further higher levels at 6000 years B.P. Starting from about 3000 years B.P. the lake fell to its present dimensions.

In the sub-equatorial belt there is ample indication that the savannah vegetation rampant during the pluvial episodes changed into steppe vegetation during the interpluvials. The Chad Basin offers a well-studied example of the physical changes that overtook this belt. The present-day lake is a relic of an old inland sea which, at about 130 000 years B.P., was sixteen times greater than the present lake; its water level stood 40–50 metres above the present level. Savannah vegetation was abundant around the lake. A dry episode followed this early phase with extensive dunes developing on the uncovered shores of the shrinking lake. This episode extended to 12 000 years B.P., when the lake began to expand again until it reached a level 12 metres higher than the present level. The lake started to shrink to its present dimensions at about 4000 years B.P.

Changes in the climate during the Pleistocene also involved temperature fluctuations causing several mountains to be glaciated or their snow-lines to be considerably lowered. With one exception, the Atlas mountains, all known glaciated highlands lie in East Africa within a few degrees of the equator. Mount Kenya (altitude 5199 metres) has at present a snow-line at 4600 metres, but the maximal Pleistocene line is estimated

at 900 metres. Mount Kilimanjaro (altitude 5895 metres) and Mount Elgon (altitude 4321 metres) lie above the climatic snow-line, but during the Pleistocene both had a snow-line at approximately 1300 metres. Mount Ruwenzori (altitude 5109 metres) has a modern snow-line at 4750 metres on the western (Zaire) side and 4575 metres on the eastern (Uganda) side. Pleistocene glaciers extended down to 2900 metres on the western side and to about 2000 metres on the eastern side.

The evidence is convincing that the equatorial and sub-equatorial belts of Africa were subjected to cooler episodes at least twice during the Pleistocene and that the temperature was considerably cooler in the last episode corresponding to the last glacial in Europe and North America.

Tropical and subtropical zones

The modern tropical zone of Africa has easterly prevailing winds and noticeable seasonal fluctuations of air temperature. The western part of this belt, which lies on the Atlantic coast, has stable trade winds, relatively cool temperature, high air humidity and is almost rainless. The remainder of this belt covers the great deserts of the north and south of the continent. These are hot arid regions with a great daily range of temperature and absolute maximum air temperature. The subtropical zone covers the northern and southern fringes of the continent and is characterized by having tropical air masses prevailing in summer and moderate type of air masses prevailing in winter. The seasonal temperature and rainfall differ considerably. Those regions with Mediterranean climate possess clear calm weather in summer and are rainy in winter.

The Sahara represents perhaps the most salient fact of this zone. Stretching for more than 5500 kilometres from the Red Sea to the Atlantic Ocean, and having an average width from north to south of more than 1700 kilometres, it covers almost one quarter of the area of the entire African continent. Across the whole of this area, the rainfall, though very unevenly distributed, is in places over 100 mm per annum, and on average very much less. As a result no perennial streams are known in the Sahara with the exception of the Nile, which derives its waters from sources far beyond the desert. Such ephemeral and permanent pools as do result from surface drainage are of no more consequence to present-day human life than are the wells and springs deriving their water from subterranean sources.

Extensive work has been carried out by geologists and archaeologists on the climato-stratigraphic divisions of the Sahara, especially in Algeria, Tibesti, and Egypt. The consensus is that the Sahara became arid with the advent of the Pleistocene and that since then it has witnessed several pluvial episodes. During these episodes valley alluviation became dominant, and man and Central African and Ethiopian megafauna made their grand appearance in areas that are now utterly desolate and uninhabitable. It seems possible to relate these Pleistocene climatic changes to the general climatic set-up of more recent times. It can be assumed that a northward shift of the present-day climatic belts about 15° of the latitude they occupy today would bring an increase in precipitation in most of the desert areas and would set a climate similar to that which must have prevailed during the Pleistocene pluvials. At least five pluvials have been recognized in the Sahara. These are listed below, from the oldest to the most recent.

1. *Early early Pleistocene pluvial*: depositing gravel, sand and conglomerates with red-pink colour and resting upon older rocks. This pluvial punctuated an extremely arid episode during which the Sahara became a veritable desert and the Nile dried up or became very low.
2. *Late early Pleistocene pluvial*: producing intense chemical weathering and depositing sands and gravels. This is probably the most extensive pluvial in the Sahara. No archaeological materials are associated with it.
3. *Middle Pleistocene pluvial*: occurring during Acheulian time and depositing gravels, sands and clays. Springs were active in many parts and numerous inland lakes developed. Man and Central African and Ethiopian megafauna roamed the Sahara in abundance. Savannah vegetation covered many parts. Duration of this episode is uncertain, but probably extended for 200 000 years.
4. *Late Pleistocene pluvial*: with two maxima and occurring during Mousterian and Aterian time. Sheet floods were common and were responsible for the modern landscape. Springs were active and man made a grand appearance in the desert. The duration of this episode is uncertain, but it probably extended for 50 000 years.
5. *Holocene pluvial*: occurring during the late Palaeolithic and Neolithic times and producing slope erosion and ephemeral lakes. The duration of this episode is uncertain, but probably continued for 7000 years and ended with the beginning of the Pharaonic civilization.

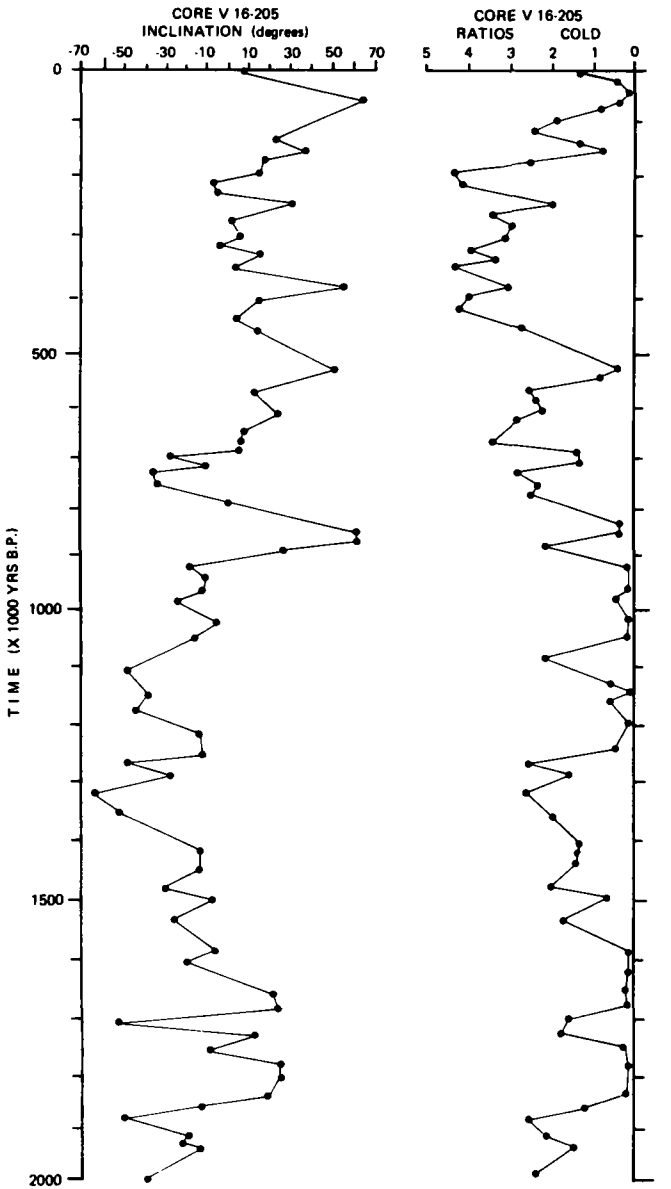
PART II

The last few million years of our globe's history have been marked by a pattern of intense climatic fluctuations. The most significant phenomenon in this context, and one that has been studied in detail for more than a century, is the extraordinary expansion and contraction of the glaciers at high latitudes and altitudes. These movements were the result of the glaciations that had a considerable effect on the environment and life of hominids. In Africa, the most spectacular aspect of the Quaternary climatic variations was the extension of lake basins over areas that are now arid, and the development of great stretches of dunes in regions that now have a more humid climate.

During the past twenty years considerable progress has been made in the dating of climatic events that occurred during the last thirty millennia, as a result of the systematic use of carbon-14. For much earlier periods the dating of magnetic reversals, based on radiometric measurements by the potassium-argon method, makes it possible to establish correlations with other distant regions where such methods are also used – particularly ocean regions – over several million years.

Before these methods of chronological correlation came into use, Quaternary stratigraphy was based mainly on the succession of climatic events, regarded as a chronological framework. Correlations from one region to another were established on the basis of successive epochs with similar climates. For instance, a correspondence was suggested, rather arbitrarily, between the European glacial periods and the African pluvial phases. This suggestion was, however, contested by several authors.

The whole problem of correlation has proved to be much more complex than was first thought, and we are only beginning to discern a solution now that the mechanisms



16.1 *Graphs showing analogies between temperatures indicated by the microfauna and the magnetic inclination for the last two million years (after Wollin et al., 1974, 'Geomagnetic variations and climatic changes 2,000,000 BC–1970 AD', Colloques internationaux du Centre National de la Recherche Scientifique, Paris)*

of global climatology are better known and a detailed climatic time-scale has been established for the last few thousand years. In addition, certain features of the magnetic field such as slope and intensity seem to be very closely related to climatic features.

Quaternary glaciations and dating

It is likely that at least twelve periods of marked cooling have been recorded in the continuous deposits accumulated at the bottom of the oceans during the Quaternary (see 16.1). Only about eight have been recognized in the continental deposits of northern Europe. The fluvial terraces and glacial deposits of the Alpine region are related to four (or six) generally accepted glaciations: Günz, Mindel, Riss, Würm (and Donau, Biber), each of which may comprise a number of stages.

The discontinuous nature of the continental evidence makes it difficult, and often deceptive, to correlate glacial periods in distant regions when they are not firmly situated on a magnetochronological or radiometric scale. In point of fact, the accepted chronology for the Alpine glaciations is vague, and the terms Günz, Mindel, Riss, Würm and Biber have been used in various regions to denote formations that are not synchronous. These divergences make it dangerous to attempt to correlate evidence of Alpine glaciations with the successive cold changes measured in ocean cores.

Each glaciation brought about a glacio-eustatic regression of the sea of up to a hundred metres or so. The subsequent marine transgressions brought about by the melting of the ice make it possible to link climatostratigraphic chronology with the chronology of marine cycles in coastal areas. Within the margin of physical error of the various radiometric dating methods, it is observed that these high sea levels correspond fairly well with the higher temperature phases indicated by the marine microfauna, pollens and oxygen isotopes (200 000; 124 000; 105 000; 85 000 years B.P. approximately).

Mechanisms of global climatology

A knowledge of the complex mechanisms of atmospheric and oceanic circulation and their links with climatic factors make it clear that climate is not a simple means of establishing chronological correlations. Furthermore, the variations of certain climatic factors over the past 25 000 years or so, which have been accurately dated, show the extreme rapidity of the major changes that occurred, even on this time-scale.

The climatic system, as defined by the National Academy of Sciences, Washington (1975), is made up of the properties and processes that are responsible for the climate and its variations: thermal properties such as the temperature of air, water, ice and soils; the kinematic properties of winds, ocean currents, ice movements, etc.; aqueous properties such as the humidity of the air, clouds, surface water, groundwater and ice; static properties such as pressure and density of the atmosphere and the oceans, salinity, etc.; and also the geometric limits and constants of the system. Climatic variations are all the more complex in that there may be considerable interaction between the elements of the

climatic system. Oceans, too, play a considerable part through the processes at the air–water interface that govern exchanges of heat, humidity and energy.

Climatostratigraphy of the Quaternary has therefore been a necessary approximation, but is gradually being superseded by an attempt to understand the mechanisms involved in particular situations over different periods of time.

Climatology in Africa today and in the recent past

In Africa, the annual rhythm of alternation of a dry season and a rainy season in the intertropical zone is bound up with the displacement of the intertropical convergence zone (ITCZ). As summed up recently by J. Maley (1973) and L. Dorize (1974), the ITCZ represents the place where the monsoon (humid air coming from the equatorial regions, or the maritime trade wind from the southern hemisphere) and the harmattan (dry air from the Sahara) meet. The ITCZ lies approximately west–east and moves from south to north during the spring and the first two months of summer, then from north to south. This seasonal oscillation occurs between 4° N and 20–23° N. The surface of discontinuity between the humid air and the dry air slowly rises from north to south. The humid monsoon layer is only a very thin cold corner towards the north in summer and produces little precipitation; its thickness has to reach 1200 or even 1500 metres for precipitations of any importance to occur. In addition, the position of the ITCZ varies considerably, not only from one season to another, but also from day to day, as a function of the field of pressure of the whole of Africa and the Atlantic Ocean. The climatic crisis in the Sahel zone in the 1980s is due to the fact that the ITCZ has remained from 3° to 4° farther south than its average position. On the other hand, during the wet decade of 1950–9, the Sahara shrank.

As the polar air becomes colder, the polar fronts become stronger and extend towards the equator. In this connection, Maley (1973) distinguished two mechanisms, one applicable to the glacial periods and one that appears to be valid for the present day. During the glacial periods, the area of the ice sheets in the northern hemisphere increased considerably, while the Antarctic ice sheet would appear to have varied very little. The north polar front then had a preponderant influence, driving the monsoon far south in summer. Aridification and glacial expansion went hand in hand. With the warmer temperatures of the Holocene period before 5000 or 4000 years B.P., the centre of polar action weakened. During the northern summer the regression of the north polar front favoured the extension of the monsoon north of the equator, while the south polar front drove the subtropical anticyclones towards the equator. During the northern winter the polar front could again extend its action over the Sahara and bring rain. The occurrence of rain in both summer and winter would explain the humid climate that prevailed in the southern Sahara and the receding of the desert during the first half of the Holocene.

Over the past 5000 years the regression of the Arctic ice sheet has reduced the strength of the north polar front, while the centre of action in the Antarctic has also become weaker. The diminishing thrust of the monsoon and simultaneous decrease in the effect of the northern polar air on the Sahara would thus explain the gradual aridification of the Sahara.

These meteorological mechanisms may help us to understand the climatic changes that occurred in Africa during the Quaternary.

Dating and climates over the past 25 000 years

The last 25 000 years of the Quaternary (end of the Pleistocene and Holocene) afford a recent example of a vast glacial advance and of the ensuing recession up to the present interglacial. During the same period, the intertropical regions suffered extreme aridity, followed by a humid phase, then aridification again. This is the only climatic fluctuation that can be studied over a period of several centuries or several millennia and that makes it possible to compare the elements of the climatic system and its variations in many regions of the globe situated at nearly all latitudes. For this period too, the indications provided by pollens, diatoms and fauna identical with modern species enable us to quantify the magnitude of the variations of the geographical environment with precision.

25 000 to 18 000 years B.P.

High latitudes

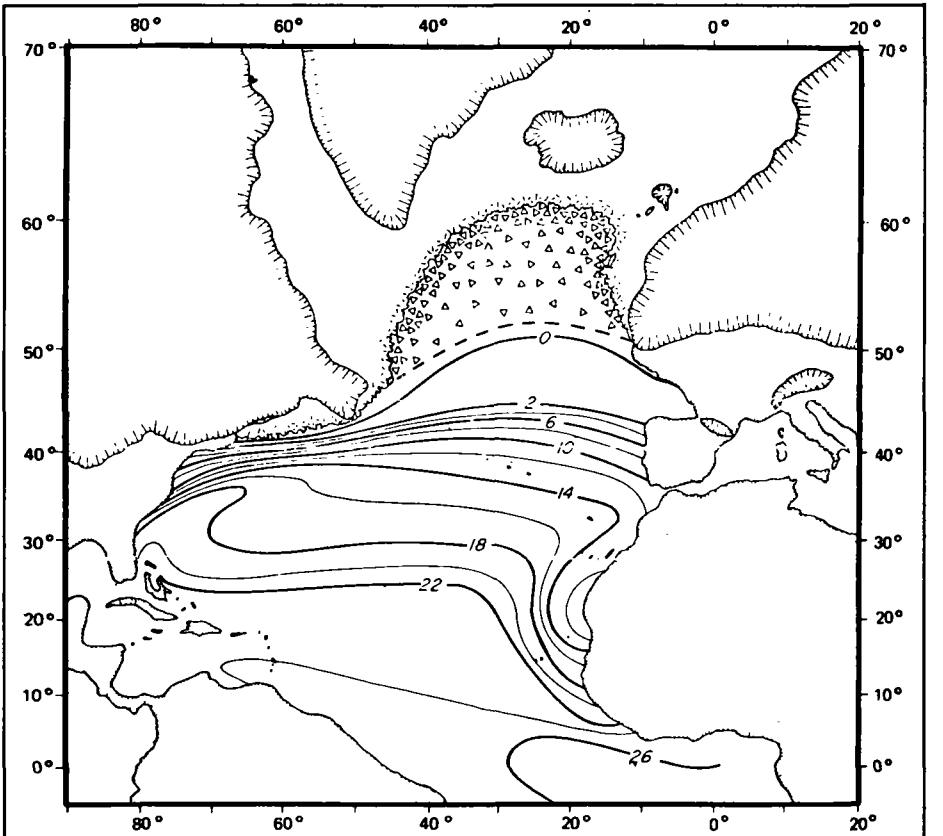
The period of time between 25 000 and 18 000 years B.P. corresponds to the end of the maximum extension of the ice sheets in the northern hemisphere. During this last extension of the Würm glaciation (Wisconsin–Weichselien–Valdaï) ice spread over an area representing from 90 to 95 per cent of that covered during all the previous Quaternary glaciations (Flint, 1971). It is thus a very representative model of a glaciation.

Oceans

Together, the reduction of the free surface due to sea ice and the lowering of mean sea level from about – 50 to about – 100 metres reduced the area of the oceans by a further 10 per cent or so. At the end of this period, nearly all the continental shelves had emerged (see 16.2).

In both hemispheres, the migration of polar waters was the dominant factor in this glacial epoch. In the North Atlantic, the polar waters came down as far as the 42nd parallel (from a position near the present one, about 60° N), giving rise to a sharp temperature gradient south of the 42nd parallel, which was therefore the probable axis of the westerlies in the glacial epoch. South of this line the pattern was much the same as it is now, but the isotherms curving towards the coast of Africa reveal the existence there of relatively cool waters due to an increased upwelling, particularly in winter (Gardner and Hays, 1975).

The polar fronts and the axis of the westerlies moved more than 2000 kilometres towards the equator in the North Atlantic and only 600 kilometres in the South Atlantic. In the Pacific Ocean the polar fronts seem to have moved very little in glacial periods. This would explain the decreasing penetration of the monsoon over the Sahara and the arid state of the Sahel zone at the end of the glacial period.



16.2 *Surface water isotherm map of the Atlantic Ocean for February, 18 000 b.p. The dashed isotherms are interpretative. The major continental ice-masses are delineated by hatched borders, the permanent pack-ice by granulate borders. The glacial shoreline is drawn to a sea-level of − 85m from today (after McIntyre et al., 'Thermal and oceanic structures of the Atlantic through a glacial-interglacial cycle',* Proceedings of the WMO/IAMAP Symposium on long-term climatic fluctuations, *Norwich, no. 421, pp. 75–80, 1975)*

Africa

In the southern Sahara and the Sahel regions the general evolution of the climate over the past 25 000 years shows a fairly similar trend from the Atlantic coast to the Red Sea. This period of time comprises the end of a humid epoch of the Upper Pleistocene (which lasted from about 30 000 to 20 000 years B.P.) and the beginning of an arid epoch, which ended around 12 000 years B.P.

The study of lacustrine deposits in the Chad Basin has shown that the relationship between precipitation and evaporation (P/E) was sufficient to enable quite extensive lakes to remain in existence from 40 000 to about 20 000 years B.P. During the ensuing eight millennia, the arid zone extended to over 400 kilometres beyond its present southern limits.

This transition from a lacustrine episode to a very arid epoch is also observable in the deposits of the Afar lakes, where F. Gasse showed the existence of three lacustrine epochs in the Upper Pleistocene. Between 20 000 and 17 000 years B.P. the lacustrine environment deteriorated and the dried-up bed of Lake Abay was occupied by *gramineae*.

18 000 to 12 000 years B.P.

High latitudes

In regions at high latitudes this period corresponds to the end of the glacial maximum and to the beginning of deglaciation. The ice caps that covered eastern North America and Scandinavia were at their maximum between 22 000 and 18 000 years B.P., and began to melt immediately after that. However, the North American Cordillera ice cap reached its maximum at only 14 000 and disappeared around 10 000 years B.P. The general deglaciation began, therefore, around 14 000 years B.P. In the southern hemisphere, on the other hand, the continental ice cap in the eastern Antarctic seems to have varied little, whereas the one in the western Antarctic, with its base below sea level, seems to have dwindled quite considerably.

Oceans

The huge surfaces covered with sea ice certainly disappeared with the very rapid rise of the sea level following deglaciation. The average rate of this rise was 1.5 metres per century between 15 000 and 12 000 years B.P, by which time half, if not two-thirds, of the rise had occurred. At the same time, the polar waters of the Atlantic returned to more northerly latitudes.

Africa

The best-documented phenomenon is the great aridity of the period between 18 000 and 12 000 years B.P., which affected a large part of Africa, as is made clear by the graphs showing the changes in lake levels in Niger, Chad, Afar, Sudan, and so on. The disappearance of vegetation enabled the winds to drive the dunes forward from 400 to 800 kilometres in the direction of the equator and on the emerged continental shelves. There is no doubt that over several millennia the Sahara, thus extended, constituted a

more formidable barrier for man than it does today. This aridification seems to have been extremely general and there are many indications that the intertropical zones as a whole dried up to some extent in Africa, in Asia – particularly in India – and in the southern hemisphere.

Mediterranean Basin
Although the evolution of the climate during the last glaciation (some 100 000 years ago) seems fairly complicated in the Mediterranean Basin (see p. 162 below), palynological and pedological findings indicate that at the glacial maximum the climate was dry and cool. The Mediterranean zone was occupied by a very dry steppe between 16 000 and 13 000 years B.P., and calcareous crusts developed on the soils.

12 000 years B.P. to the present

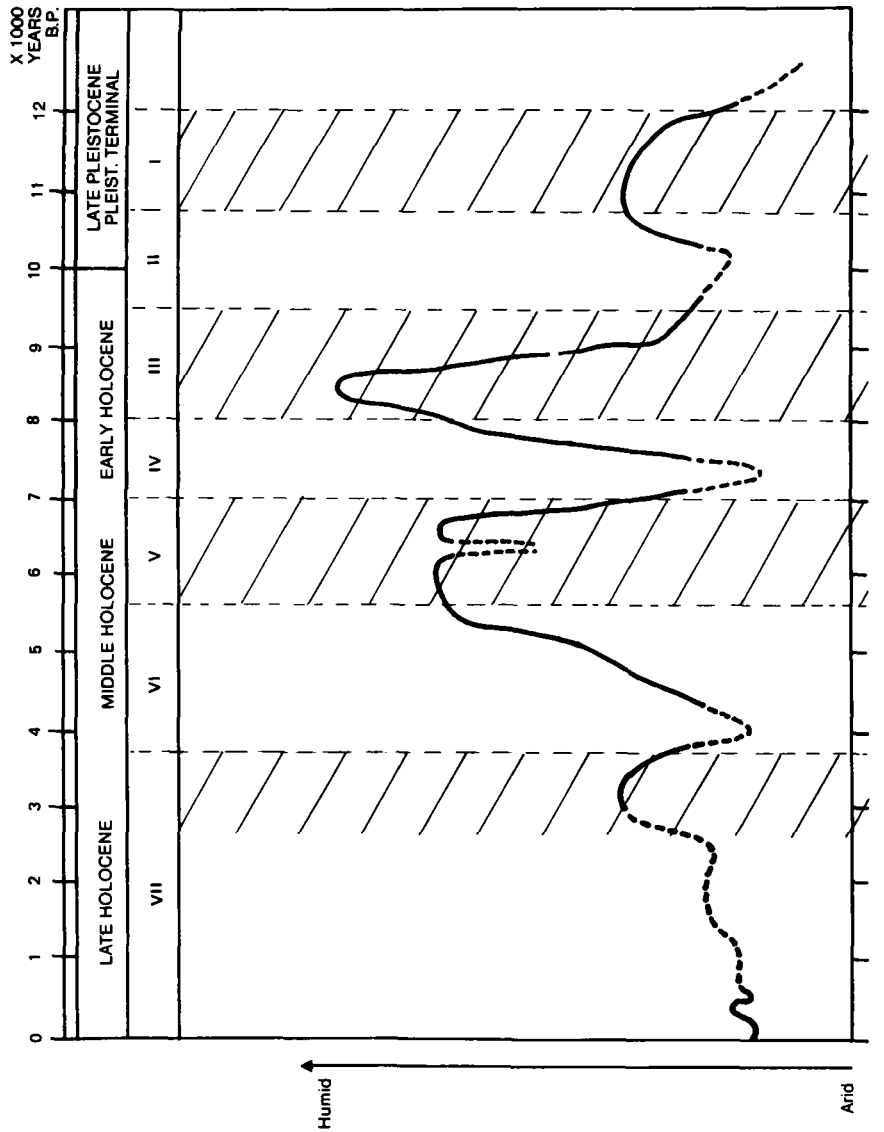
High latitudes
This period is characterized by the end of glaciation and a distinct rise in temperatures culminating between 7500 and 4500 years B.P. (the climatic optimum, which is still referred to in Europe as the Atlantic period). The ice cap on the Cordillera melted very rapidly and disappeared around 10 000 years B.P. The one in Scandinavia disappeared shortly afterwards (9000 years B.P.). Distinct rapid fluctuations at intervals of about 2500 years have been noted, as in the cooling of the new Dryas between 10 800 and 10 100 years B.P.

The glaciation situation began to be comparable with that of the present time at around 8500 years B.P. in northern Europe and around 7000 years B.P. in North America. At that time, too, the ice sheet in the west of the Antarctic receded.

Oceans
The rise in sea level, which reflects the melting of glaciers all over the world, was still very rapid between 12 000 and 7000 years B.P. (more than one metre per century on average, but with a considerable deceleration or retreat around 11 000 years B.P.). The oceans seem to have reached a level very close to the present one after 6000 years B.P. and to have oscillated only a few metres above and below it ever since. In addition to this general trend, however, there were sea-level fluctuations that can be studied on the relevant graphs; these were brought about by general climatic variations.

Africa
From 12 000 years B.P. onwards, after the extreme aridity of the period between 16 000 years B.P. and 14 000 years B.P., the lakes in the Saharan regions expanded in a remarkable fashion from the Atlantic coast to the Red Sea. Lacustrine deposits, often consisting of diatoms, are to be observed in nearly all the low-lying regions.

In Niger and Chad, M. Servant (1973) worked out a continuous curve of the P/E ratio (see 16.3) on the basis of a study of various types of lake, taking into account their sources of supply and their hydrogeological and geomorphological situations. This



16.3 *Relative evolution of rainfall evaporation ratio in the Chad Basin 13–18°N over the last 12 000 years. This evolution has been determined from a study comparing variations in levels of various lakes supplied mainly by underground water-tables, streams and rivers (after M. Servant, 'Séquences continentales et variations climatiques: évolution du bassin du Tchad au Cénozoïque supérieur',* Cahiers de l'Office de la Recherche Scientifique et Technique d'Outre-Mer, *1973, Série sciences humaines, Paris, pp. 40–52)*

climatic curve illustrates the major oscillations that seem to have a general application: great expansion of the lakes around 8500 B.P., a shrinking around 4000 years B.P., and minor fluctuations after 3000 years B.P. These major oscillations affected the various lakes in Afar, too, though with some minor differences stemming from their sources of supply (see 16.4). A definite analogy can be traced between the Chad curve and the humidity curve for the Siberian continental zone.

A study of the other African lakes shows a fairly comparable pattern of evolution. Livingstone and Van Zinderen Bakker consider that there is a fairly close parallel between the climatic evolution of East Africa and that of Europe.

The expansion of the Saharan lakes up to 8000 years B.P. seems to be connected with better distribution of rainfall throughout the year and a cloud cover thick enough to reduce evaporation. M. Servant (1973) suggests that atmospheric circulation was different then, and the presence of several levels of cold climate diatoms leads him to postulate possible intrusions of polar air over the Sahara. The present climatic mechanism would appear to have become established only after 7000 years B.P.

Southern hemisphere

In the north of Australia and in New Guinea the glaciers disappeared around 8000 years B.P. (Mount Wilhelm), while rainfall increased, with minor fluctuations, according to Bowler and others (1975). Between 8000 B.P. and 5000 years B.P. the average temperature seems to have been 1° or 2° higher than at present. The climatic optimum (Hypsithermal) would appear to have been a global phenomenon, while between 7000 and 3000 years B.P. the rain forest enjoyed the most favourable conditions for its development since the preceding glacial prior to 60 000 years B.P. Similarly, the lakes in the south of Australia, which had dried up by 15 000 B.P., began to fill again around 11 000 years B.P. and attained high levels around 8000 and 3000 years B.P.

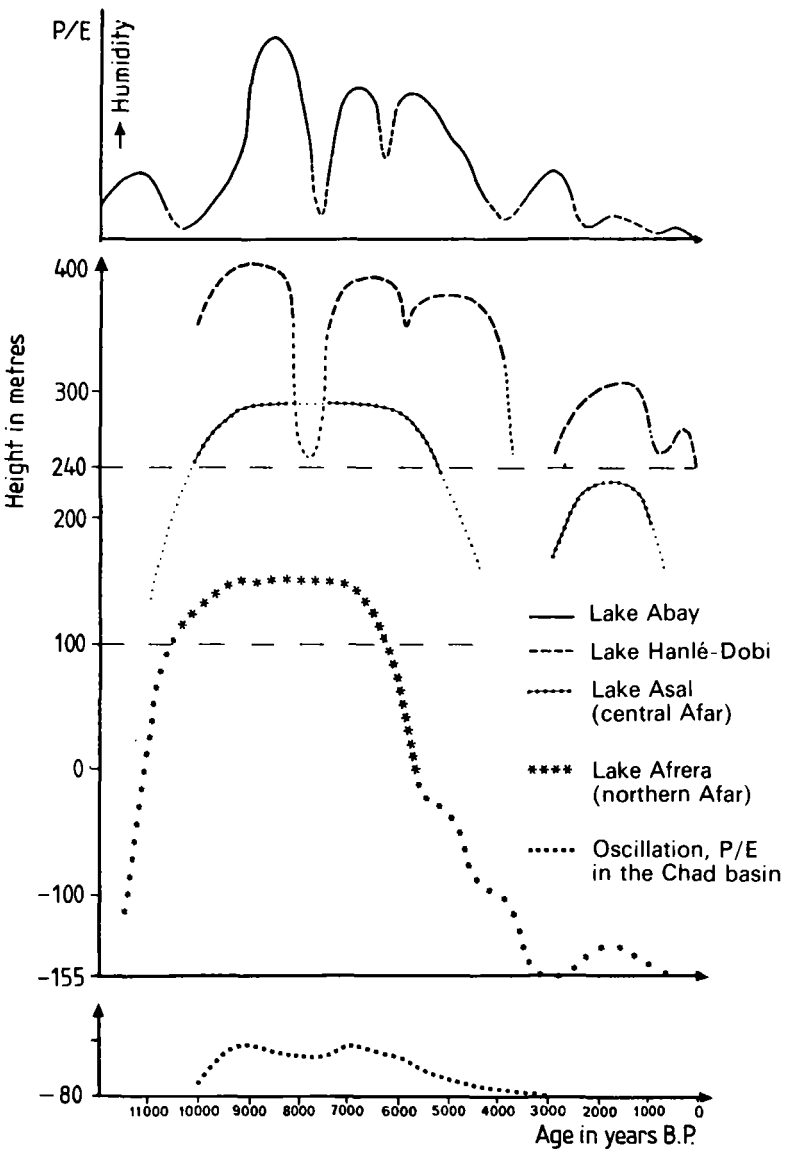
It seems likely that temperatures rose and humidity increased throughout low-latitude zones during the first half of the last 12 000 years, leading to conditions characteristic of the present interglacial.

Conclusion with regard to the climatic chronology of the past 25 000 years

This period gives us a picture of climatic developments during a glacial maximum (at the end of a glacial period) and during a deglaciation leading to an interglacial (the present). This model of half a deglaciation cycle comprises generalized aridity, characteristic of the end of a glaciation and lasting about 5000 years in Africa, followed by a fluctuating humid epoch of comparable duration gradually reverting to an arid stage.

These climatic pulsations can be explained on a time-scale of 20 000 years by the displacement of the polar fronts and their effects on the intertropical front, and by the two extreme types of circulation: rapid and slow.

It is also likely that this model is representative of other comparable situations on the same scale as the Quaternary – similar, that is, in duration and amplitude. However, there is no justification for extrapolating to the whole of a glacial period lasting 100 000 years, and still less to all the Quaternary glaciations covering a period of several million years. For this reason, the chronology of a glacial period will now be examined as a whole.



16.4 *Variations in lake level in the Afar Basins. The curves for Lake Abay, Lake Hanlé-Dobi and Lake Asal, situated in central Afar, are represented on the top part of the graph. The curve for Lake Afrera is separate. Comparison could be made with the curve in variation of the P/E in the Chad Basin (after F. Gasse, 1975, 'L'évolution des lacs de l'Afar Central (Ethiopie et TFAI) du Plio-Pleistocène à l'Actuel', thesis, 3 vols, Paris, University of Paris)*

Dating and climates over the past 130 000 years

The past 130 000 years (Upper Pleistocene) afford an opportunity of studying a climatostratigraphic model on the scale of a complete glacial/interglacial period. The chronology of this period far exceeds the reach of radio-carbon dating, which has enabled us to establish a fairly accurate succession (to within a century or at least a millennium) for the last 25 000 years. However, this interval of time, corresponding to the last major interglacial (Eemian) before the present one and the last major glaciation (Würm, Wisconsin, Weichselien, Valdaï), is fairly well known, the risk of error in dating being of the order of 10 per cent, or 20 per cent in the case of the remotest period. Consequently, it is mainly general trends over average periods (10 000 years) that have been best identified and can be compared from one region to another.

High latitudes

The vegetation of the Eemian interglacial indicates that during the warmest epochs of that interglacial (between about 125 000 and 80 000 years B.P.) the temperature in Eurasia and North America was quite comparable with that of the Atlantic period (between 7000 and 5000 years B.P.), and not much different from what it is now. Both these interglacials occurred suddenly, after a sharp drop in temperatures (the last very cold stage of the Riss was 135 000 B.P., and the last very cold stage of the Würm was 20 000 years B.P.).

Oceans

Variations in the level of the oceans reflect the two glacial maxima fairly well, dropping considerably (− 110 metres and ± 20 metres for the second maximum around 20 000 to 18 000 years B.P.). The highest levels reached during the Eemian interglacial and the present one are comparable (to within 5 per cent). Rises in sea level during the interim stages (45 000 and 30 000 years B.P.) may have attained from 60 to 80 per cent of the maximum rise (the Inchirian in Mauritania, for instance). They confirm that an equivalent mass of ice melted during the interim stage.

Africa

As in the case of the oceans, the effects of glacial phenomena on the landmasses were probably less marked towards the intertropical latitudes. The differences between the temperatures of a glacial stage and those of an interglacial stage could range from 5° to 10° at average latitudes, but may have been only from 2° to 3° between the tropics. In Africa, the effects on the distribution and quantity of rainfall constitute the most readily observable phenomenon.

Few regions in Africa possess a well-established radiometric chronology for the past 130 000 years. However, by sounding Lake Abay, F. Gasse (1975) was able to find evidence of three lacustrine stages in the Upper Pleistocene, before the aridification from 20 000 to 14 000 years B.P. These lacustrine stages were as follows: the period from 30 000 years B.P. to 20 000 years B.P. (humid climate, cooler than at present), separated from the previous humid stage by a partial regression around 30 000 years B.P., marked by temperate climate diatom flora; the second humid stage, which began around 40 000

years B.P., like the earliest, which occurred prior to 60 000 years B.P., is characterized by warm climate diatoms.

Further evidence concerning a climatic variation of uncertain date during the Upper Pleistocene was yielded by a study of pollens in the upper valley of the Awash (Afar), where R. Bonnefille (1972, 1974) found traces of high tableland steppe vegetation, indicating a climate distinctly more humid than that of present times and perhaps colder.

Mediterranean Basin

Situated between the two geographical zones considered above, the Mediterranean Basin is an important climatic field, the evolution of which seems complex. In particular, the glaciations can no longer be considered as the only factors resulting in the establishment of a humid climate.

Analysis of the palynological, micropalaeontological and isotopic findings made in the eastern Mediterranean, in Greece and Israel, leads to the conclusion that the drop in temperature during the last glaciation might have been 4° in the case of air temperatures and from 5° to 10° in the case of sea temperatures. Aridity was more marked in Greece during the glacial period, whereas the reverse was true on the coasts of Israel.

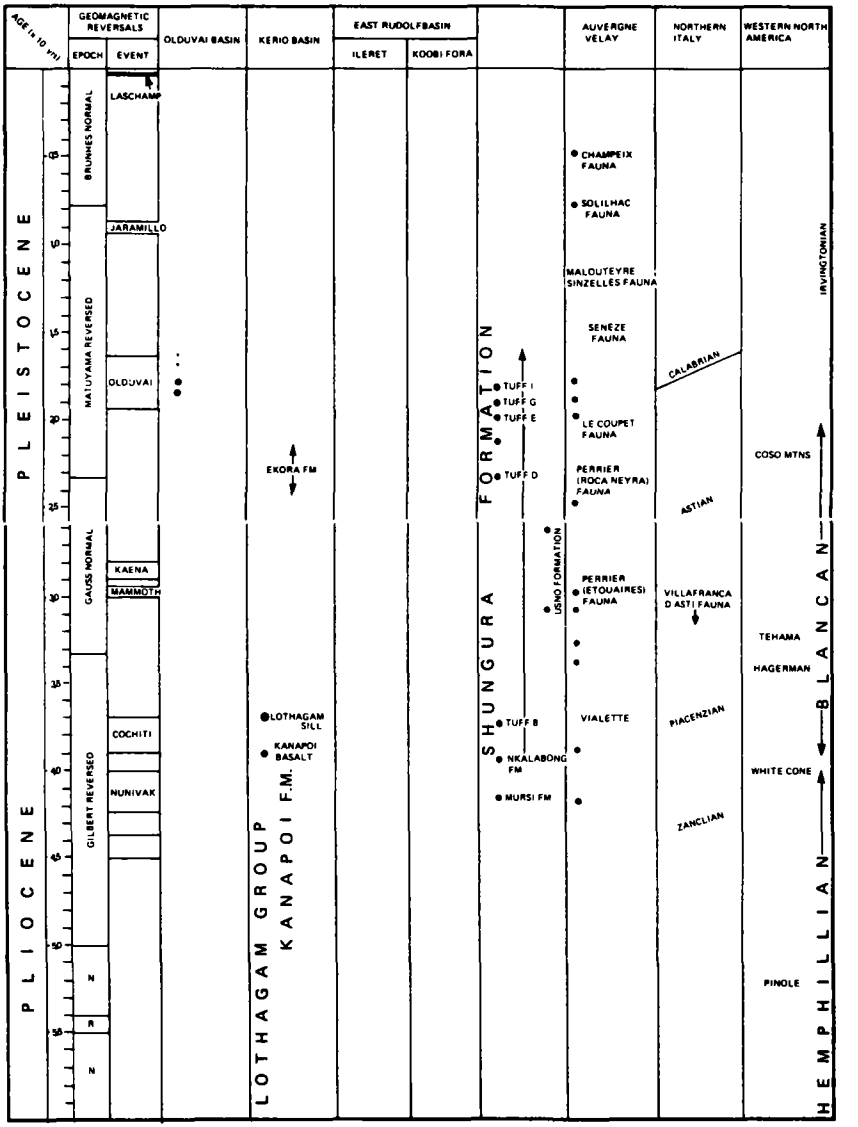
On the other hand, the study of fragmentary traces of mammals (rodents) seems to indicate a gradual change from humid conditions to arid conditions over the past 80 000 years. Around – 18 000, the level of Lake Lisan, in Israel, dropped by 190 metres in a thousand years as a result of drier conditions (combined with a tectonic movement in the Dead Sea rift) and, as we have seen, at the end of the maximum extension of the Würm glaciation cold and arid conditions prevailed throughout the Mediterranean Basin.

As with Africa, the complexity of the geoclimatic situation in the Mediterranean Basin is such that further very detailed research will have to be conducted before we can form a clear idea of climatic developments in the Würm period.

Conclusion with regard to dating and climates over the past 130 000 years

The last glacial period gives us a model of a complete climatic cycle on the scale of 100 000 or so years (interglacial – glacial – interglacial) with its fluctuations during and between those stages lasting something like 10 000 years. In Africa, this period is characterized by stages of lake expansion of comparable duration, separated by stages of desiccation.

Given our present state of knowledge, dating is not accurate enough to allow any definite correlation of cold or warm periods with humid or dry periods in Africa. It is to be hoped that the work under way, supported by sections and samplings yielding a continuous succession of events, will enable us to draw more valid conclusions at some future date.



16.5 *Radiometric and palaeomagnetic aspects of the Pliocene/Pleistocene time range in eastern Africa, south-western Europe and western North America. The very important successions afforded by exposures in the Ileret and Koobi Fora areas, East Rudolf Basin, are still under investigation and, as the results are incomplete, their respective columns have been left blank (after F. Clark Howell, 1972, 'Pliocene/Pleistocene Hominidae in Eastern Africa: absolute and relative ages', in W.W. Bishop and J.A. Miller (eds),* Calibration of hominid evolution. pp. 331–68*)*

Dating and climates over the past 3 500 000 years

The slow trend towards lower temperatures, which is a feature of the Quaternary, began nearly 55 million years ago (Cenozoic climatic decline, National Academy of Sciences, Washington, 1975). The Antarctic ice sheet, which had already formed about 25 million years ago, expanded considerably about 10 million years ago, then again about 5 or 4 million years ago, when it nearly reached its present volume. The Arctic ice sheet over the continents neighbouring the North Atlantic appeared about 3 million years ago. The first big general drop in the temperatures of the oceans began about 1 800 000 years ago (Bandy, in Bishop and Miller, 1972), shortly before the lowest level of the Calabrian marine stage, around the same time as the occurrence of the Gilsa (1 790 000 years ago).

Several regions in Africa, for example, Chad and East Africa, have yielded a wealth of vertebrate fauna, first ascribed to the Villafrancian (between 300 000 and 1 700 000 or 1 million years ago). Some associations of mammals presuppose much more humid conditions than those that are a feature of the present environment of the deposits. They have therefore been regarded as marking 'pluvial periods' in Africa.

The most detailed stratigraphies, based on potassium-argon and palaeomagnetic dating, are those of the East African Rift deposits. In this type of sedimentary filling, the effect of the climate is more difficult to discern than in the case of tectonic and volcanic activity and the topographical changes they produce, with the result that attempts to establish a detailed climatic succession have now been abandoned. On the other hand, the chronostratigraphy is well established and constitutes a world reference.

In the various deposits of vertebrates and hominids in East Africa, dated sedimentary successions are as listed below.

Omo, Ethiopia

The study of pollens in the Shungura formation has revealed a considerable climatic change in the direction of drier conditions nearly 2 million years ago, and the development of a grassy savannah with *gramineae*.

Olduvai, Tanzania

The succession of the recognized formations and their chronology is as shown below:

The succession of recognized formations and their chronology

Ndutu	Beds		32 000 years ago
			400 000
Masen	Beds		600 000
	Bed IV		800 000
(Early Kanjeran)	Bed III		1 150 000
	Bed II		1 700 000
(Early Kamasian)	Bed I		2 100 000

East Turkana (Rudolf), Kenya

The stratigraphy concerns 325 metres of deposits spread over a period extending from about 3 500 000 to 1 500 000 years.

Hadar (Central Afar), Ethiopia

Finally, the formations at Hadar in Central Afar, which contain hominids and a wealth of fossils and which have been studied by the International Afar Research Expedition (IARE), are probably about 3 million years old.

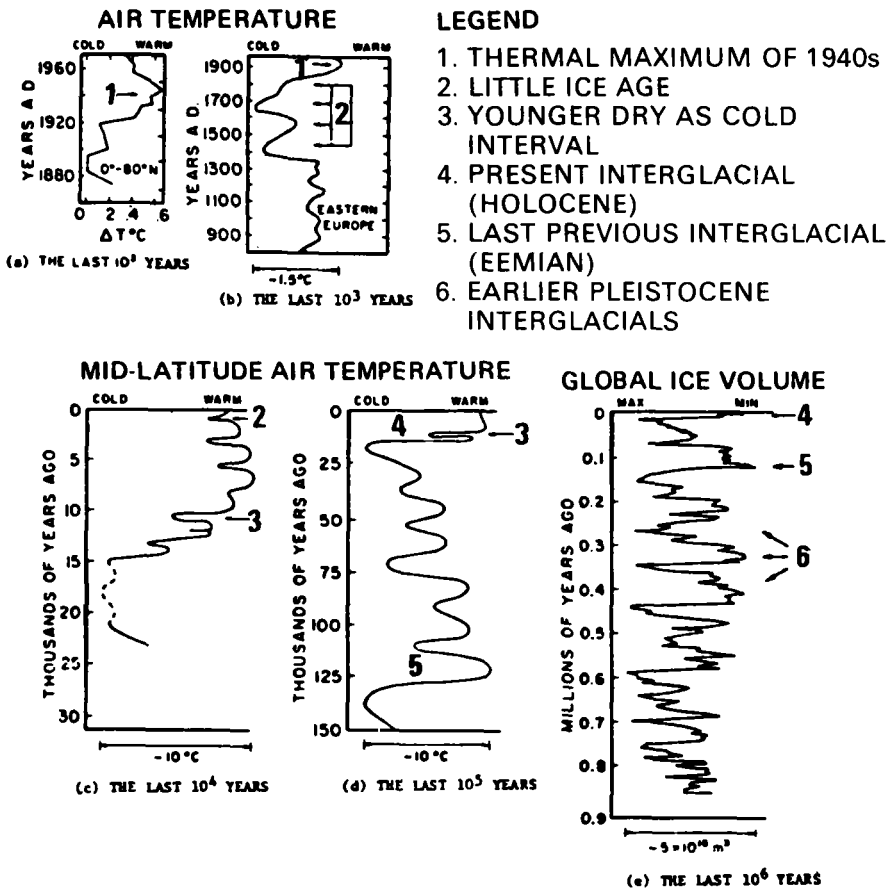
In a few years' time the work actively pursued in these parts of East Africa will make it possible to put forward a theory of climatic evolution based on sedimentology and plant and animal ecology, and taking into account the intervention of tectonic and volcanic factors.

Intensive studies have been made of other parts of Africa such as the Saoura, the Nile valley, Chad and North Africa. The climatic variations proposed are based on the succession of sedimentations and bed lowerings of rivers or the successions of mammal fauna. In the absence of radiometric or magnetostratigraphic dating, it is not yet possible to correlate these variations with the European glacial fluctuations.

Conclusion

A feature of the Upper Cenozoic over the past 5 million years is the accentuation of the thermal gradients of the globe, combined with considerable climatic changes over the course of time. This accentuation has led to substantial variations in temperature at high latitudes and hence to glacial and interglacial periods. At intertropical latitudes, thermal fluctuations were somewhat attenuated, but atmospheric circulations – disturbed by the strengthening or weakening of the polar fronts – brought about considerable variations in the distribution and quantity of rainfall, and such variations had a marked effect on the different climatic zones, periodically modifying the geographical and plant environments in which the fauna lived and in which hominids developed. Consequently, these climatic variations punctuate the history of the evolution of Africa, but in a more discrete manner than do the glaciations as far as Europe's development is concerned.

This brief survey of the state of our knowledge concerning climatic variations and dating in Africa should have made clear the need for more observations and measurements before any attempt is made to fit our heterogeneous facts into the rigid framework of a theory. The importance of the time-scales of the various manifestations of climatic change should also be noted. Care should be taken to place each observation and each phenomenon within the correct time-scale. This is illustrated, by way of conclusion, in 16.6, taken from the volume of the National Academy of Sciences (1975), in which five examples of climatic variations are given for time-scales ranging from a century to a million years.



16.6 *Generalized trends in global climate for the past million years. (a) Changes in five-year average surface temperatures over the region 0–80° N during the last 100 years (Mitchell, 1963). (b) Winter severity index for eastern Europe during the last 1000 years (Lamb, 1969). (c) Generalized mid-latitude northern hemisphere air-temperature trends during the last 15 000 years, based on changes in tree lines (LaMarche, 1974), marginal fluctuations in alpine and continental glaciers (Denton and Karlen, 1973) and shifts in vegetation patterns recorded in pollen spectra (Van der Hammen et al., 1971). (d) Generalized northern hemisphere air-temperature trends during the last 100 000 years, based on mid-latitude sea-surface temperature and pollen records and on worldwide sea-level records. (e) Variations in global ice-volume during the last 1 000 000 years as recorded by changes in isotopic composition of fossil plankton in deep-sea core V28–238 (Shackleton and Opdyke, 1973); Drawn from the volume of the National Academy of Sciences, 1975.)*

17 *Hominization: general problems*

PART I: The palaeontological data

The history of mankind is not only the history of its actions and cultural advances. It is also, and primarily, the history of an evolving animal species which slowly became differentiated from the ancestral genus and took on the clearly defined characteristics by which it is now recognized. This is why present-day Man cannot be understood unless we go back in time some tens of millions of years to the origins of the Primate order.

Palaeontological criteria

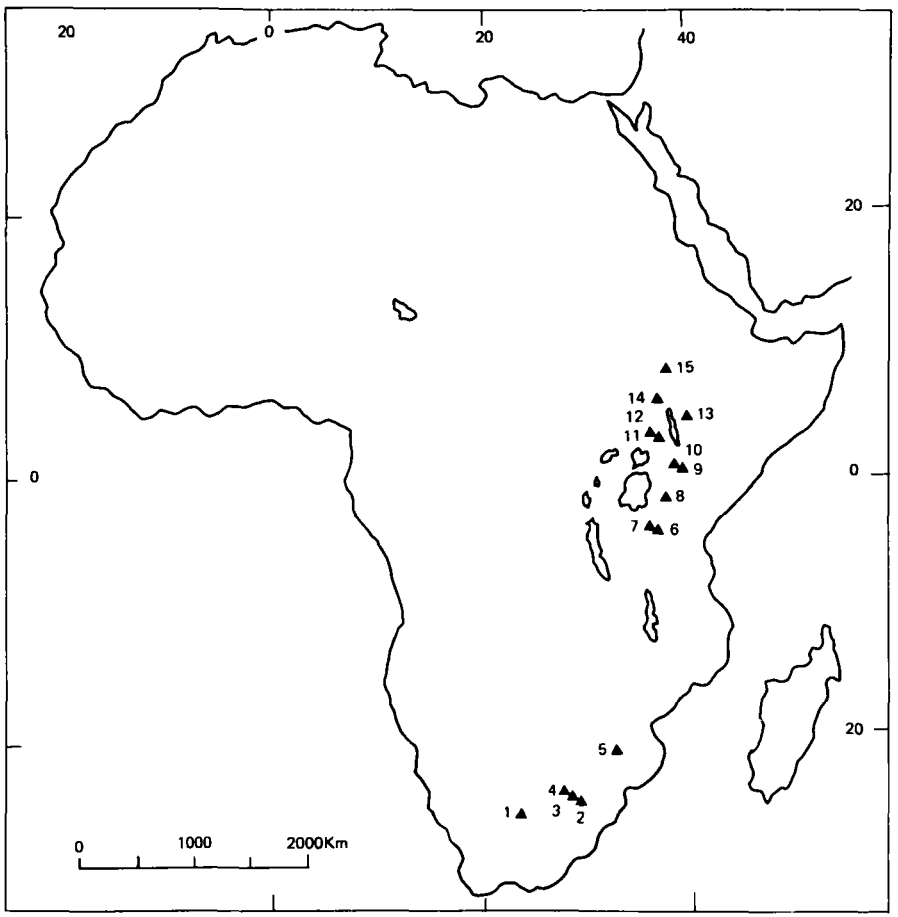
The Primates are Mammals, the highest of the five classes of the *Vertebrata*. More precisely, they are placental Mammals, in that they possess a new organ, the placenta, for protecting and nourishing the foetus. In addition, the body temperature is regulated internally and reproduction is viviparous, in other words, the offspring are already active at birth.

However, the Primates differ from other Mammals in their precocious brain development, improved stereoscopic vision and reduced face size, flat nails in place of claws, and opposability of the thumb to the other fingers. These features are more clearly marked among the higher Primates, the Simians (monkeys), to which Man belongs, than among the more primitive Prosimians. In addition, the Simians are characterized by increased stature, more pronounced brain development, and a change in the position of the eye-sockets from the sides of the head to the front.

From a fairly early stage, the Simians themselves were to be divided into two groups: the New World monkeys or *Platyrrhina*,[1] which preserved a broad nasal septum and a dental structure with 36 teeth, and the monkeys of Asia and Africa, or *Catarrhina*, which developed a narrow nasal septum and, like Man, kept only 32 teeth.

A large number of different families were to emerge from the *Catarrhina*, whose present-day descendants are well known and include the *Cercopithecidae* (guenons,

1. The Glossary, pages 182–8, gives the meaning of the different scientific terms used.



KEY

1 Taung site, South Africa
2 Sterkfontein site, South Africa
3 Swartkrans site, South Africa
4 Kromadraai site, South Africa
5 Makapansgat site, South Africa
6 Garusi-Laetoli site, Tanzania
7 Olduvai site, Tanzania
8 Natron-Peninj site, Tanzania
9 Chermeron site, Kenya
10 Chesowanja site, Kenya
11 Kanapoi site, Kenya
12 Lothagam site, Kenya
13 East Lake Turkana (Lake Rudolf), Kenya
14 Omo site, Ethiopia
15 Afar site, Ethiopia

17.1 *Palaeontological data (Y. Coppens)*

baboons and macaques), the *Hylobatidae* (gibbons), the *Pongidae* (gorillas, chimpanzees and orang-utan) and the *Hominidae* (Man). Among these families, the *Hominidae* display features that are quite unlike those of the others, in that they are the only Primate family to move about permanently on their hind limbs. The fact that they are bipeds has given rise to a significant reorganization of the entire skeleton, ranging from changes in the feet, legs and pelvis and the curvature of the spinal column, to the transformation of the skull, with a reduction of the face and the size of the canine teeth (the protruding fangs having disappeared), rounding of the dental arch and development of the brain.

The oldest *Hominidae*, who are known as the *Australopitheci*, already possessed most of these features. Members of the more recent genus *Homo*, to which we belong, differ from the Australopithecines by their increased stature, improved upright stance and biped locomotion, and enhanced brain capacity. At the same time, their dentition has changed, as a result of the change in diet. From being vegetarian, our ancestor became omnivorous and there was marked growth of the front teeth compared with the side teeth.

The palaeontologist's task is to identify the progressive emergence of these increasingly evolved forms as closely as possible, to discover their evolutionary pattern and to pinpoint the conditions in which it took place. Hence, the approach he takes is based on a study of anatomy that is both comparative and dynamic. In the knowledge that evolution moves from the simplest to the most complicated, palaeontologists seek Man's ancestors in forms that are increasingly remote from ourselves as they go back in time towards our ever more distant origins.

20 to 70 million years ago

The oldest Primates are therefore the Prosimians, which emerged almost 70 million years ago. Nowadays, they are represented only by the lemurs of Madagascar, the tarsiers of the Philippines and Indonesia, and a small galago in East Africa. They are timid tree-dwelling creatures that usually emerge only at night. The ancient Prosimians continued to evolve and gave rise about 40 million years ago to a new branch, the Simians: from the Eocene onwards (35 million years ago),[2] the Simians in turn divided into the Catarrhines and Platyrrhines, which have already been mentioned.

Lack of evidence makes it difficult to see what was going on between 20 and 40 million years ago, and the remains dating from that period are exceedingly limited, but a rich site at Fayum, near Cairo, in Egypt, which has been investigated by numerous expeditions, has yielded up an incredible variety of Primates, including *Parapithecus, Apidium, Oligopithecus, Propliopithecus, Aeolopithecus* and *Aegyptopithecus*. Among these, the first two have 36 teeth, like the Prosimians and the New World monkeys, but many other features relate these Primates to the Catarrhines, with their 32 teeth. Indeed, they may be the ancestors of the Catarrhines. The last four varieties mentioned are Catarrhines with 32 teeth, four of which are premolars, as in modern Man. The *Oligopithecus* is the forerunner of the *Cercopithecidae*, while the *Aeolopithecus* may be an

2. We recall that geological time is divided into the Primary, Secondary, Tertiary and Quaternary eras. The Primates, which emerged at the end of the Secondary era some 70 million years ago, developed during the Tertiary and Quaternary eras. The Tertiary is divided into five main stages: the Palaeocene, the Eocene, the Oligocene, the Miocene and the Pliocene. The Quaternary has only two stages, the Pleistocene and the Holocene.

ancestor of the gibbons and the *Aegyptopithecus* the precursor of the chimpanzees.

Whatever the pattern of relationships, this period is interesting as proof that, in north-eastern Africa, some 30 million years ago, there was a large variety of small Primates foreshadowing the present-day Primates (*Cercopitheci, Pongidae, Hyloleatidae* and *Hominidae*). The basic guidelines had been laid down.

10 to 20 million years ago

Leaving aside these early Primates, let us take a look at the other Simians originating in Africa. Between 20 and 10 million years ago, under the influence of declining humidity, savannah formations spread more widely in the tropical regions and attracted a number of monkey varieties to new food sources. Occasional bipedalism[3] was to foster development of the brain and reduction of the face and made it possible for the forelimbs to be left free to perform other functions. The first species to venture into this new environment were *Kenyapithecus, Ramapithecus, Gigantopithecus* and *Oligopithecus*.

Fossils of *Kenyapithecus africanus* and *Kenyapithecus wickeri*, dated as having existed 20 and 14 millions years ago respectively, were discovered in Kenya and Uganda by Dr L. S. B. Leakey. Their masticatory organ is very broad, with a protruding jaw-bone. Some experts classify this Primate as still being one of the *Pongidae*. However, at the Pan-African Conference held in Dakar in 1967, Leakey showed fragments of basalt whose natural cutting edges bore traces of use. At Addis Ababa in 1971 he affirmed that most of the animal bones discovered in association with *Kenyapithecus wickeri* had been broken artificially. This is one possible hypothesis, although it is difficult to produce archaeological evidence for it.

Anatomical remains of *Ramapithecus*, a small Primate weighing from 18 to 36 kilograms and dating from 8 to 14 million years ago, has been found over a wide geographical area, ranging from India and Pakistan to Turkey and Hungary. These remains are confined to a few squat-faced massive jaw fragments and to teeth, so that the scope for interpretation is limited. However, they do point to the existence of a new food regime consisting of tough plant species, and this view is borne out by the fossils of flora and fauna existing alongside them.

An enormous Primate, *Gigantopithecus*, lived in China and India several million years ago. It is called *Gigantopithecus blacki* in China and *Gigantopithecus bilaspurensis* in India. Its name is evocative of its considerable size. Its dental and anatomical features suggest that it lived on the ground in sparsely wooded regions. Nowadays, however, most scholars reject it as a possible ancestor of Man.

Finally, 12 million years ago, another Primate, *Oreopithecus*, used to swing among the branches in the forests of Tuscany, in Italy, as well as perhaps in those of Kenya. *Oreopithecus bambolii*, which was discovered in Tuscany in 1870, is a brachial Primate, adapted to forest life.[4] It occasionally moved about on its hind legs, as can be gauged from the length of its forelimbs, the features of its pelvis in the lumbar region, and the

3. Bipedalism is a mode of locomotion on land, which involves moving in an erect posture on the two hind limbs.
4. Brachial: cf. brachiation, a mode of locomotion in forest environments, which involves moving from branch to branch suspended by the forelimbs.

way in which it held its head. In addition to these anatomical innovations, its brain capacity had increased to 400 cm^3 and it had small teeth.

At this stage, of the four lines of descent described above, the important thing is not to know which was whose ancestor. What matters more is that new life-styles were to evolve from this emergence from the forest environment. At the same time there was a reduction in the size of the fore teeth and the face, and an increase in the size of the premolar, which was no longer hampered by the canine. All this heralded the take-over of the savannah environment and, at the same time, the bipedalism typical of man.

10 to 1 million years ago

From the Pliocene to the Pleistocene epochs, between 10 and 1 million years ago, we find ourselves in the presence of the Australopithecines, a group at once very varied in form and very localized in space.

From 1924 to the present day, there have been an increasing number of discoveries of Australopithecines in East and Southern Africa. They appear to have emerged in those regions between 6 and 7 million years ago: in Kenya in the deposits of the Baringo and Turkana lake basins; in Tanzania at Laetolil; in Ethiopia in the Omo river valley and in the Afar region; and in South Africa in four caves – Sterkfontein, Makapansgat, Swartkrans and Kromdraai – in the Transvaal. They apparently became extinct about one million years ago.

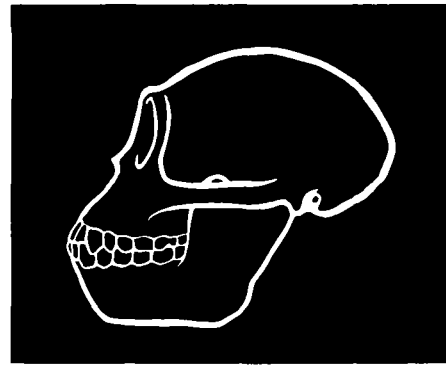
These different sites have produced several types of hominid, some of them contemporary with one another: *Australopithecus robustus, Australopithecus gracilis, Homo habilis* and *Homo erectus*.

The Hominidae

Australopithecus robustus

Fossils from 2 to 2.5 million years old of this hominid form have been found in caves in South Africa, and others dating back about 1 800 000 years in the Omo valley in Ethiopia and at Olduvai Gorge in Tanzania. The shape of the skull corresponds to a powerful masticatory system, and the molars and premolars are very large indeed. It has a strong lower jaw, well-set muscles for chewing purposes and a marked sagittal ridge.[5] The face is flat and the fore teeth small to foster sideways movement in chewing food. Its body is stronger than that of the other *Australopithecus* species. It was about 1.5 metres tall, with an estimated weight of 35–65 kilograms. It was not perfectly adapted to walking on two feet, since the apophysis of the femur was small and its neck long. Its brain capacity has been estimated at 530 cm^3 at both Swartkrans and Olduvai. The development of the cerebellum is interesting, since it may point to enhanced control of hand and leg movements compared with the earlier Simians.

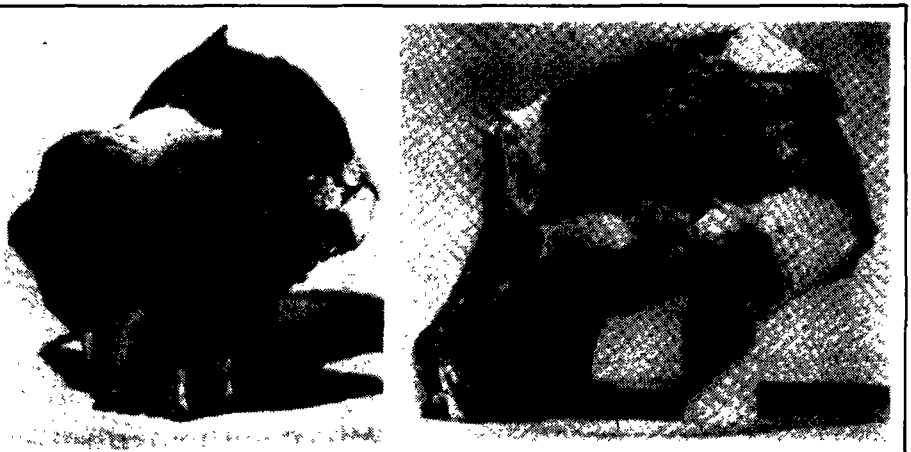
5. The sagittal ridge is a bone growth on the top of the skull similar in shape to the crest of a helmet.



17.2▲ *Reconstruction of skull of Ramapithecus (J. Oster, Musée de l'Homme Coll.)*

17.3◀ *Skeleton of Oreopithecus bambolii, 12 000 000 years old, found on the Grossetto site, Tuscany, by Johannes Hürzler in 1958 (J. Oster, Musée de l'Homme Coll.)*

17.4▼ *Skull of Australopithecus africanus – young person on the right (Taung, Botswana), adult on the left (Sterkfontein, Transvaal) (Y. Coppens, Musée de l'Homme Coll.)*

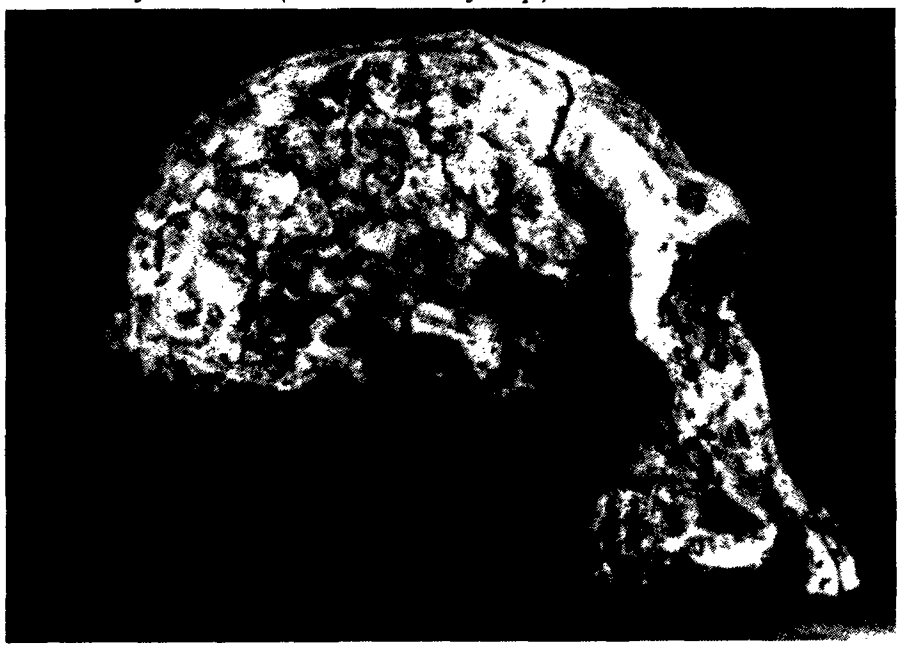


17.5 *Skull of Australopithecus boisei, Omo site, Ethiopia, excavations led by Y. Coppens, 1976 (J. Oster, Musée de l'Homme Coll.)*

17.6 *An excavation site at Olduvai (J. Chavaillon, Musée de l'Homme Coll.)*

17.7 *Skulls of Australopithecus robustus (on the right); Australopithecus gracilis (on the left); (J. Robinson, Musée de l'Homme Coll.)*

17.8 *Skull of Homo habilis (National Museum of Kenya)*



17.9 *One of the oldest stone artefacts in the world, found on the Omo site, Ethiopia: excavation led by J. Chavaillon (Musée de l'Homme Coll.)*

Australopithecus gracilis

This type comes from Makapansgat and Sterkfontein in South Africa, and it is also thought to have been found at Omo in Ethiopia, Laetolil in Tanzania, in the Afar region, and at Lothagam in Kenya. It is estimated to have been 1.2 metres tall and to have weighed from 18 to 31 kilograms. The face is more prominent than in the case of *Australopithecus robustus*, and the eyebrow ridges are fairly developed and support a comparatively developed forehead. Although this species may have had a more varied diet than *Australopithecus robustus*, it must still have been basically vegetarian. The thickness of the lower jaw and that of the enamel, which was worn down to the gums, the shortness of the face and the large size of the premolars and molars are all evidence of a powerful masticatory system. The teeth were late in cutting and this, together with the thickness of the enamel, is indicative of slower growth. The average brain size for the South African variety was 444 cm^3. Its long bones, especially the humerus and the scapula, are reminiscent of its ancestors, which swung from branch to branch on their forelimbs. Even so, this *Australopithecus* was a permanent biped.

Homo habilis

This form was described at Olduvai in Tanzania in 1964 and may have been encountered again at Omo in Ethiopia, on the eastern side of Lake Turkana and at Kanapoi in Kenya. Its teeth were adapted to a more variegated diet than that of the *Australopitheci*. The canines and incisors were longer and gave a rounded shape to the jaw, while the premolars and molars were smaller. *Homo habilis* is estimated as having had a brain capacity of 680 cm^3, although one skull from east of Lake Turkana has a capacity of almost 800 cm^3. The evolutionary pattern of its teeth and brain situates it as being closer to present-day Man than the *Australopithecus*. Even so, the rest of the skeleton is reminiscent of the *Australopithecus gracilis* and the clavicle in particular suggests ancestors that swung from branch to branch, as already mentioned in connection with the latter. *Homo habilis* is estimated to have been between 1.2 and 1.4 metres in height.

Homo erectus

Lastly, at Olduvai in Tanzania and on the eastern shore of Lake Turkana, both dating back 1.5 million years, and at Melka Konture, at Bodo, in the Omo river valley in Ethiopia, dating from between 500 000 and 1.5 million years ago, excavators have discovered what is now known as *Homo erectus*, that is, *Hominidae* that are more advanced on the evolutionary scale than any of their forerunners. Similar forms have also been found in Indonesia and China. The anatomy of *Homo erectus* is characterized by a thick receding skull, sharply compressed at the back (the occipital torus) and a prominent eyebrow ridge. The brain capacity is estimated to be 1000 cm^3. The status of the two specimens discovered at Olduvai is unclear, although Leakey and P. V. Tobias have related them to *Homo erectus*. East of Lake Turkana, the recent crop of three skulls from different dates is a very fine illustration of evolutionary tendencies in this species.

Comparisons have been made of original remains from Java and those from Tanzania; these have made it possible to conclude that the oldest *Homo habilis* is morphologically identical with the species found in China and Java, which were formerly attributed to *Homo erectus*.

Industries

For the first time in the history of the Primates, anatomical remains were found in association with artefacts. At the sites of Omo in Ethiopia and of the Pleistocene basin of Lake Turkana, the age of the first manufactured tools has been pushed back to more than 2.5 million, perhaps even 3 million, years ago. The first manufactured objects consisted of a large number of rock fragments deliberately shaped by a series of blows to form a cutting edge, of large pebbles on which a sharp point or blade was formed by progressively removing flakes of material, and of bones and teeth which were either prepared or else used directly, if their shape suited the purpose, as in the case of the canine teeth of the hippopotamus or *Suidae*, for example. These tools may be divided into a number of types, each represented by several specimens, suggesting that their shape had already been consciously worked out and was the outcome of transmitted experience.

The abundant fossil remains of fauna and flora existing side-by-side with those of *Hominidae* at the Omo valley sites make it possible to reconstitute the landscape as it was 3 million years ago: a savannah environment where several species now living in wetter regions existed together, peacefully or otherwise.

At Makapansgat in South Africa, an industry of tools made of bone, horn and teeth has been brought to light and has been named 'Osteodontokeratic'. This industry appears to be older than the pebble or flake industries, if attempts to correlate the findings in the South African caves with the East African sites prove to be conclusive.

At Hadar, in Ethiopia, H. Roche recently discovered a pebble tool industry similar to that at Olduvai, at a level which can be dated back some 2.5 million years.

From the oldest Olduvai layers (1 800 000 years) upwards, the same tools are to be found in profusion. The relative abundance of tools made of stones has caused this industry to be named 'Pebble Culture' or Oldowan. At the oldest level, Dr Leakey noticed a large circle made of heaps of basalt pebbles, and advanced the hypothesis that they had been used to wedge posts in the ground, suggesting the deliberate construction of a shelter.

At Melka Konture, near Addis Ababa, J. Chavaillon has recently unearthed a rather similar structure in the oldest Oldowan layer (1.5 million years). This is also circular in shape and stands about 30 cm above the ground surface, with a gutter some 2 metres long surrounding it. A few piles of stone again suggest the past existence of uprights. The tools associated with this site belong to the Acheulian type and include pebbles, but primarily consist of handaxes (bifaces) and cleavers.

Despite this apparent welter of facts and findings, one very clear thesis emerges, namely that it was in the midst of the Australopithecine 'layer', which was first confined to East and South Africa, and subsequently extended to Asia (with *Australopithecus* in a similar or more advanced form) that the genus *Homo* and manufactured tools first made their appearance. It is as though some 6–7 million years ago, in the south-eastern quadrant of the African continent, a group of *Hominidae*, known as Australopithecines, came into being, and as though 2 million years ago, a creature capable of carving stone, of building shelters and of living in small societies, *Australopithecus proper* – or perhaps even Man – emerged from this group and, through its manifestations, came to represent the origins of *Homo faber*, the tool-maker.

The last million years

The last million years saw the birth of *Homo sapiens* followed, in the past few hundreds of years, by his lightning proliferation. It took 115 years for the world's population to rise from 1 to 2 thousand million, and a further 35 years for it to increase again to 3 thousand million. Over the past 15 years, it has risen yet again to 4 thousand million, and the rate of increase still remains unabated . . .

PART II: The archaeological data

The prehistorian approaches the problem of hominization in Africa from a standpoint that is somewhat different from that of the palaeontologist. For the prehistorian, hominization is the progressive development of the brain, or cerebralization, that enables Man, through the use of increasingly sophisticated techniques, to devise and manufacture tools so diverse and so effective that, with the passage of time, they enable him to exert a cumulative impact on his natural environment. The palaeontological evolution leading up to Man is not the only means of defining a threshold or starting-point for hominization; a chipped stone tool shows that the threshold has been crossed.

Whereas, in the palaeontologist's view, the threshold of hominization is a brain capacity of 800 cm^3, the prehistorian thinks in terms of a degree of technical skills which, once mastered, pave the way for progress right down to the present day. However, the further back one goes into the evolution of the *Hominidae*, the more complicated it becomes to determine whether a particular stone or bone tool, resulting from such skills, was manufactured by a particular species.

The main problem, then, facing the prehistorian is that of determining how to draw the dividing-line between Man and the apes, and where to set it. The first task is to rule out all natural causes that could enter into the making of a tool and to identify features due to the hand of Man alone. The second is to establish a chronological framework making it possible to date the most remote evidence of human industry to within an acceptable degree of approximation. Only Africa has so far furnished any evidence in this regard.

The prehistorian of Africa must accordingly begin by answering the following three questions.

1. Are tools the definitive criterion of hominization?
2. Do they enable us to situate the beginnings of hominization?
3. In so far as they have been preserved at all, can they be identified with certainty?

Are tools the definitive criterion of hominization?

A number of authors have rightly pointed out that the use of tools other than parts of the body ('natural tools') is not peculiar to Man, or even to the Primates generally. The chimpanzee is the Primate closest to Man. Chimpanzees live in groups of more than thirty individuals and are capable of selecting twigs for digging purposes, using sticks for breaking nests or reaching honey, folding leaves to scoop up water, and fitting branches together so as to pull down bananas. They also use stones to crack open fruit

shells and as weapons that they throw to ward off rival predators. Chimpanzees also communicate with one another by means of audible signals. Similar observations have been made in the case of gorillas in Rwanda.

Thus, if tools are to be regarded as a criterion of hominization, the concept of the *use* of something other than the body's 'natural tools' is not enough. The concept of the *deliberate transformation* of the object used, so as to turn it into a tool, has to be brought into play.

Do tools enable us to situate the beginnings of hominization?

Tools alone do not enable us to situate the beginnings of hominization, since the first such objects – pebbles that had merely been broken – have generally come to be regarded with some scepticism. It is true that a pebble picked up and thrown by a human hand retains no discernible trace of its having been used for that purpose, but a split pebble may just as easily be the work of nature. Waterfalls and wave action produce stones that are indistinguishable from those split open by Man.

It was as a result of an error of interpretation that the use of fire was mistakenly attributed to *Australopithecus Prometheus*; in fact, there is no reliable evidence of the use of fire prior to *Homo erectus*, and the Pithecanthropines – certainly not in Africa. On the other hand, the 'stone implements' found at Olduvai certainly do not represent the initial stages of a process: the variety of forms, the large number of specimens and the deliberate manner in which they were shaped all suggest that they were a culminating rather than a starting-point. They were produced by enquiring minds and by the handing down of techniques. However, the frontiers of the pebble tool industry have now been rolled back to more than 2.5 million years ago as a result of the recent discoveries made by the prehistorians of Africa in the Omo valley in Ethiopia and at Koobi Fora in Kenya.

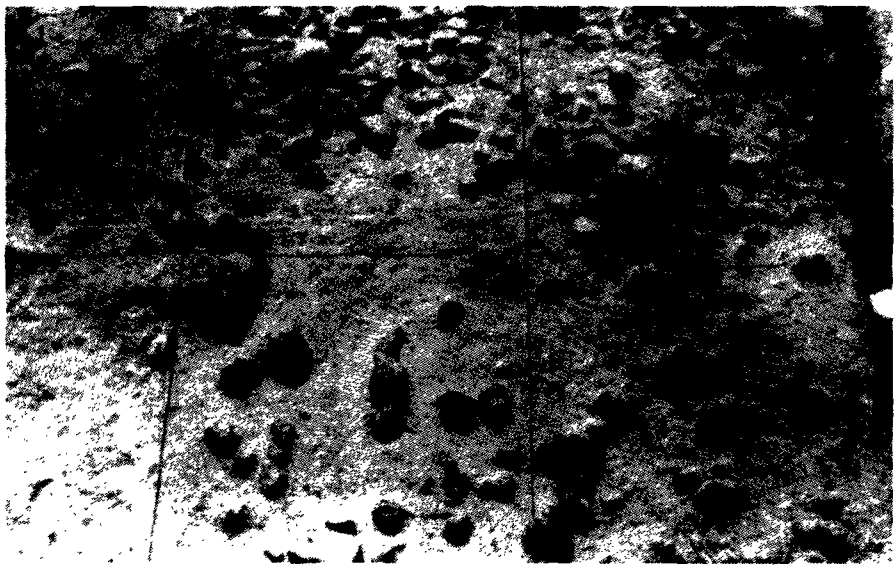
Are man-made tools identifiable?

The third question to be answered is whether it can be proved that deliberate human intent was involved in the production of the most rudimentary tools. Only Africa can provide enough material for research on this point. The two main areas of enquiry concern two materials: bone and stone.

The Osteodontokeratic industry

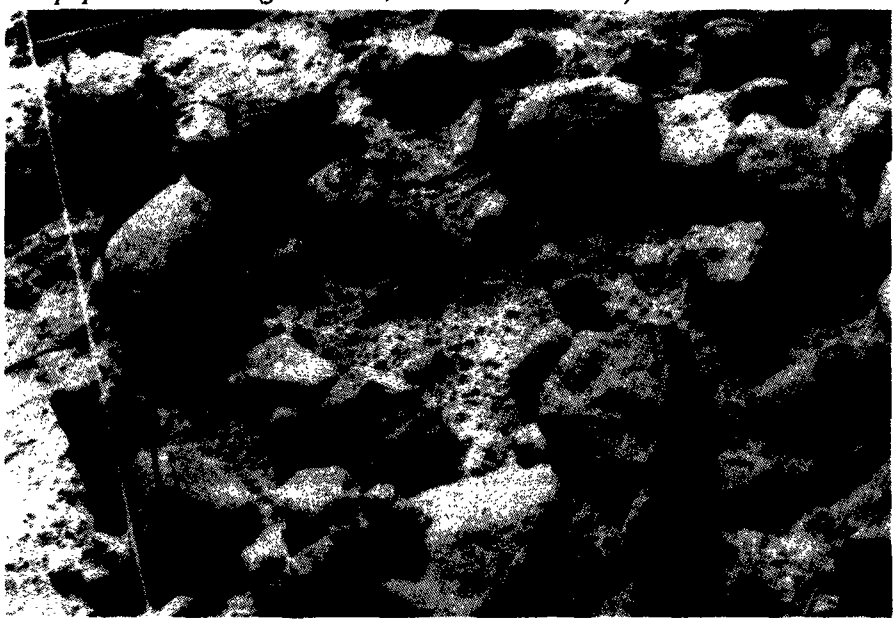
The existence of such an industry was put forward as a hypothesis by Dart in 1949 and was taken up again by D. F. Wolberg in 1970. It would imply that bone tools existed before their stone counterparts, the basis for this argument being the discoveries made in the Makapansgat cave in the Transvaal, in South Africa. No absolute dating exists for this site, but a rough estimate of between 2 and 2.5 million years has been made.

In the piles of animal bones found in association with the fossils of *Australopithecus gracilis*, Dart identified the kitchen debris or meal remains of hunters whom he thought used weapons and tools made of bone, horn and ivory, whence the term 'osteodontokeratic'. Their ability to use these tools was enhanced by the fact that they stood upright



17.10 *Detail of the surface of the soil at the Olduvai excavations (J. Chavaillon, Musée de l'Homme Coll.)*

17.11 *Close-up of the surface of the soil at Olduvai excavations: the bone of a hippopotamus and some polyhedrons are visible (J. Chavaillon, Musée de l'Homme Coll.)*



on two feet, so that their hands were left free. Similarly, from his examination of the skulls of baboons and Australopithecines, Dart was able to assert that they had been subject to frontal blows delivered by clubs that were made of bones, preferably the humerus, or thigh-bone, of a hoofed animal. In addition, the animal bones found in the cave bore traces of use and of spiral fractures through having been twisted. These facts would imply the agency of the human hand.

Hence there can be said to have been an osteodontokeratic stage leading to the chipped stones of the Pebble Culture and the ensuing biface industries. This clearly represents the beginning of the deliberate processing of tools. Even so, Dart's hypothesis gave rise to heated debate as to whether *Australopithecus* was really the instigator of the industry and the hunter or, on the contrary, the prey being hunted. Some experts held the view that all the bones, including those of the Australopithecines, had been taken into the cave by hyenas, although this would have been counter to that animal's habits. In point of fact, there were too few hyena bones at the Makapansgat site for it to have served as their lair.

When, however, traces of stone and bone industries were found side by side in the Sterkfontein cave, likewise in South Africa, the validity of the osteodontokeratic culture hypothesis was borne out.

Lastly, Mary Leakey discovered bone and hippopotamus ivory tools associated with pebble implements in the oldest layer at Olduvai, which dates back 1.8 million years. These had been split in two and could have been used at either end. They represent the first incontrovertible evidence of the existence of an osteodontokeratic industry and, although the existence of a stage prior to the stone tool industry has not been conclusively proved, there is certainly no earlier evidence of such an industry elsewhere than in Africa.

The stone industry

The chipped pebbles of what has long been known as the Pebble Culture represent the oldest acknowledged stone tool industry. The terms Pebble Culture – a technical and cultural stage consisting of four phases – and Kafuan culture – from the Kafu river in Uganda – were first coined in 1920.

However, it was from H. Movius, in connection with Asia, that the first real definition of essential forms came in 1944, with the introduction of the terms chopper, chopping tool and handaxe. Various morphological classifications based on the techniques used to produce the tools were put forward by such experts as L. Ramendo, P. Biberson and H. Roche. Two findings were quick to emerge: in the first place, the variety, consistency and regularity of forms showed that the Pebble Culture had already reached too complex a stage to represent the genuine beginning of stone tool industries. Secondly, the Pebble Culture was already a clear precursor of all the handaxe and cleaver industries that were to appear during the Lower Palaeolithic era in Africa.

The Pebble Culture is of such complexity that it has prompted prehistorians of Africa to look forward to the possibility of extending the chronological sequence beyond the 1-million year mark. The Oldowan, with its dating of between 1.85 and 1.1 million years, is a sequel to the Omo chopping-tool deposits, which are dated between 2.5 and

2.1 million years ago, and to those of Lake Turkana, dated to 2.6 million years ago. However, the last two sites have produced a larger number of flakes than chipped pebbles, and it could be argued that the shaping of pebbles to form tools may have been preceded by the use of splinters struck off lumps of rock.

This assumption might be corroborated by Leakey's claim that *Kenyapithecus wickeri*, a pre-hominid Primate dating from 14 million years ago, was responsible for the existence of 'bashed' basalt fragments. Here again, however, the marks of chipping and use are too unclear and too infrequent for it to be acknowledged that such flakes were actually worked. Even so, they do exist and the fact that they may have been used by *Kenyapithecus wickeri* cannot be entirely ruled out.

The question is where to draw the dividing-line between ape and Man. At this point, the problem of the origins of the bone and stone industries is one and the same. No further technological or morphological proof is possible. The farther back we go in time, the more difficult it becomes to be sure that certain marks were made by the working of stones or the trimming of the edges of tools for practical purposes. For the moment, therefore, a genuine starting-point cannot be pinpointed.

For the prehistorian of Africa, bone and stone tools bear witness to a cerebral process of hominization that was already under way 2.5 million years ago. But that was not when it all began.

Glossary

Abbevillian Industrial complex defined by H. Breuil at Abbeville, in the Somme valley, northern France. It is characterized by the existence of bifacial tools which have been chipped with a hard hammer-stone to remove large flakes. This complex was defined in Europe, where it corresponds to the beginning of the Lower Palaeolithic. See also Chellean.

Acheulian From Saint-Acheul, in the Somme valley, northern France. This is the main cultural complex of the Lower Palaeolithic, and it lasted from the Mindel glaciation to the end of the Riss–Würm interglacial stage. The most typical feature is a bifacial tool that is more regular than the Abbevillian and is chipped with a soft hammer made of wood or antler.

Aeneolithic (From the Latin *aeneus*: bronze, and the Greek *lithos*: stone.) Prehistoric period in which copper was first used.

Amazonite A green-coloured variety of microline.

Amirian Moroccan continental cycle contemporary with the Mindel stage in Europe.

Anfatian From Anfa, in Morocco. The third Quaternary marine transgression in Morocco.

Aterian From Bir el Ater, in eastern Algeria. North African Palaeolithic industry between the Mousterian and the Capsian. It consists of tanged points and scrapers and a few foliate points. The Aterian developed throughout part of the Würm period and is probably partly contemporary with the Upper Palaeolithic in Europe.

Atlanthropus Fossil of the Archanthropus group defined by C. Arambourg at the Ternifine site in Algeria. The remains are dated to the end of the Lower Pleistocene.

Augite Natural silicate of calcium, magnesium and iron entering into the composition of basalt.

Aurignacian From Aurignac, on the upper Garonne, France. Prehistoric industry dating from the beginning of the Lower Palaeolithic. This name, which was coined by H. Breuil and E. Cartailhac in 1906, is used to designate industries that are situated chronologically between the Mousterian and the Perigordian. It is characterized by reindeer-antler spear-heads, thick scrapers, long blades with continuous flat and flaky retouching, and some burin-chisels. It witnessed the emergence of the first works of art, consisting of rudimentary animal figurines and summarily engraved signs on limestone blocks. It is dated to some 30 000 years ago.

Australopithecus (From the Latin *australis*: southern, and the Greek *pithêkos*: monkey.) Genus name coined by Dart in 1924 to designate several fossils from South Africa displaying Simian characteristics, but heralding some human features. Similar discoveries were subsequently made in Eastern and Southern Africa.

Basalt A volcanic rock.

Biface A stone tool chipped away on both faces to produce an almond shape. They were first called 'choppers' and then 'handaxes', and seem to have been used for cutting purposes and, to a lesser extent, for scraping. They are the typical tools of the Lower Palaeolithic.

Breccia Rock of regular stones cemented together by lime, etc.

Calabrian From Calabria, southern Italy. The oldest stage of the marine Quaternary identified by M. Gignoux in 1910.

Calcite A crystallized natural carbonate of calcium found in chalk, white marble, limestone, alabaster, etc.

Capsian From Capsa, the Latin name for Gafsa, in southern Tunisia. Late Palaeolithic African industry identified by J. de Morgan. Upper Palaeolithic tools are found in association with a large number of microliths and small thick borers, which were probably used for drilling holes in ostrich eggshell fragments to make necklaces. It is dated to about 11 000 years ago.

Carnelian Red chalcedony.

Catarrhines Old World monkeys, with 32 teeth and a narrow septum.

Cenozoic Synonym for Tertiary and Quaternary, starting with the Eocene 65 million years ago and followed by the Oligocene (40 million years ago), the Miocene (25 million years ago), the Pliocene (11 million years ago), the Pleistocene, and the recent period.

Cercopithecus (From the Greek *kerkos*: tail, and *pithêkos*: monkey.) An African long-tailed monkey.

Chadanthropus (Chad man.) Hominid fossil situated anatomically between the *Australopithecus* and *Pithecanthropus* stages.

Chalcedony A fibrous variety of silica composed of quartz and opal.

Chellean From Chelles, France. Industrial complex of the Lower Palaeolithic described by G. de Mortillet. Former name of the Abbevillian.

Clactonian From Clacton-on-Sea, Great Britain. Lower Palaeolithic industry described by H. Breuil in 1932 and characterized by flint flakes with a smooth and broad striking surface. The Clactonian appears to be contemporary with the Acheulian.

Cleaver Massive flake tool with a sharp cutting edge produced by striking two surfaces against each other. It is typical of the African Acheulian, but is also found in Early and Middle Palaeolithic industries at several sites in southern France and Spain.

Diabase Rock of the gabbro and diorite family, often green.
Diorite Coarse-grained rock.
Discoid Late Acheulian disc-shaped stone tool chipped on both edges.
Dolerite Rock of the gabbro family with the constituent minerals visible to the naked eye.
Eocene First period of the Tertiary era, dating to 65 to 45 million years ago.
Epidote Natural hydrated silicate of aluminium, calcium and iron.
Fauresmith Place-name in the Orange Free State, South Africa. Lithic industry comprising scrapers and points with single-edge trimming, bifaces and small axes, and corresponding to the Middle Palaeolithic in Europe.
Galena Natural sulphide of lead.
Gamblian Fourth African fluvial defined around lakes Nakuru, Naivasha and Elmenteita in Kenya. Contemporary with the Würmian period, but the term is no longer used.
Günz From the name of a river in Germany. The earliest Quaternary Alpine glaciation.
Haematite Natural ferric oxide.
Handaxe An almond-shaped stone tool trimmed on both edges, used for digging and skinning purposes. A synonym is *biface*.
Harounian The fourth Quaternary marine transgression in Atlantic Morocco.
Holocene The most recent period of the Quaternary beginning 10 000 years ago.
Hominid Zoological family of the Higher Primates represented by fossil and present-day Man.
Homo Genus name in the zoological classification given to fossil and present-day Man.
Homo faber 'Tool-making Man'.
Homo habilis Name coined by Leakey, Tobias and Napier to designate fossils whose degree of anatomical evolution stands midway between that of the Australopithecines and the Pithecanthropines.
Homo sapiens Term coined by C. Linnaeus in 1735 and now used to designate the modern or neanthropic forms of Man who, through intelligence, has reached a state of adaptation to the environment which enables him to think and introspect freely.
Ibero-Maurusian Cultural complex of the Late Palaeolithic and epi-Palaeolithic in the Maghrib, the development of which was marked by the greatly increased number of microliths and which lasted from 12 000 to 7000 years ago.
Jadeite Natural alumino-silicate of sodium, with small quantities of calcium, magnesium and iron.
Jasper Impure chalcedony with generally red-coloured veins or patches.
Kafuan From the Kafu river in Uganda. Industrial complex from the beginning of the Lower Palaeolithic in East Africa, characterized by flat pebbles which have been summarily chipped, but not trimmed. There is some controversy as to whether it is of human origin.
Kageran From the Kagera river in Tanzania. First African pluvial, identified by E. J. Wayland in 1934. Contemporary with the Günz Alpine glaciation. The term is no longer used.
Kamasian From Kamasia in Kenya. Second African pluvial, commonly known as

Kamasian I. Contemporary with the Mindel glaciation in Europe, but seldom used.
Kanjeran From Kanjera in Kenya. Third African pluvial defined by L. S. B. Leakey. Commonly known as Kamasian II. This corresponds to the period of the Riss glaciation in the Alps, but the term is no longer used.
Lapis Lazuli Azure-blue stone used in mosaics, the powdered form being used for ultramarine pigment.
Laterite (From the Latin *later*: brick.) Bright red or reddish brown soil rich in iron oxide and alumina, formed by leaching in hot climates.
Levallois (technique) From Levallois-Perret, France. Stone-making technique enabling large flakes of predetermined shape to be obtained from a prepared core.
Levalloisian Industrial complex defined by H. Breuil in 1931, characterized by flakes struck from Levallois-type cores, with little or no subsequent trimming. It is no longer acknowledged as being a genuine industry.
Lupemban From Lupemba, Kasai, Zaire. Industrial complex of the Late Palaeolithic, characterized by the combined presence of massive chipped stone tools (picks and chisels) and leaf points trimmed on both edges, dating from about 8000 years before the Christian era.
Lydianite Hardened shale.
Maarifian From the Maarif, Morocco. Second Quaternary marine transgression of Atlantic Morocco.
Magosian From Magosi, in Uganda. Stone industry discovered by Wayland in 1926, situated between the Gamblian and the Makalian, and combining objects of Mousterian appearance such as cores, discoidals and points, foliate pieces trimmed on both edges, and geometrical microliths.
Makalian From the Makalia river in Kenya. Wet stage of the Quaternary in Southern Africa, contemporary with the post-glacial period in Europe. No longer used.
Malachite Green-coloured natural base carbonate of copper.
Mazzerian First Saharan pluvial, equivalent to the Kageran.
Mesolithic (From the Greek *mesos*: in the middle of, and *lithos*: stone.) This word was long used to designate all the cultural complexes which it was possible to situate between the Palaeolithic and the Neolithic. These are now more commonly related to an epi-Palaeolithic stage.
Micoque A prehistoric site situated to the north of Les Eyzies, 25 kilometres to the north-west of Sarlat, in central France, which produced the Micoquian industry, a very evolved form of the Acheulian contemporary with the Würm glaciation.
Mindel Name of a river in Bavaria. Second Quaternary Alpine glaciation which appears to have been situated between 300 000 and 400 000 years ago.
Miocene (From the Greek *meiôn*: less, and *kainos*: recent.) In other words, it contains fewer recent forms than the system following it. It is a period of the Tertiary era between 25 and 10 million years ago.
Moulouyan From the Moulouya valley, Morocco. Term used by Biberson. The Middle Villafrancian of Morocco.
Mousterian From Moustier, Dordogne, France. Prehistoric industry of the Middle Palaeolithic, which was widespread in the second half of the last interglacial period. It was identified by E. Lartet in 1865 and is characterized by the very large number of

points and scrapers obtained by trimming flakes from only one of their faces.
Nakuran Wet stage defined by the deposits in the shoreline sediment below the 102-metre level, at Lake Nakuru, Kenya. These layers have revealed Neolithic-style industries dating back some 3000 years.
Neanderthal From the name of the valley in the Düssel Basin in Germany where the first specimen was discovered by Dr Fuhlrott in 1856. Representative of a particular group of the genus *Homo* which lived in Western Europe in the Upper Pleistocene and died out suddenly without leaving any descendants.
Neolithic (From the Greek *neos*: new, and *lithos*: stone.) Stone Age with food production (agriculture, stock-raising). Term coined in 1865 by J. Lubbock.
Obsidian Compact vitrous volcanic rock resembling dark-coloured glass.
Oldowan From the Olduvai Gorge in northern Tanzania. Ancient lithic tool complex (Pebble-tools) discovered by Katwinkel in 1911. Complex in which Leakey identified eleven levels of Oldowan I, corresponding to the Old Chellean, and Oldowan XI corresponding to Acheulian VI, with Levalloisian tools.
Oligocene Second period of the Tertiary, from 45 to 25 million years ago.
Osteodontokeratic Prehistoric industry based on bones (Greek *osteon*), teeth (Greek *odous, odontos*) and antlers (Greek *keras, keratos*), discovered at Makapansgat in South Africa by R. A. Dart.
Ougartian I Second Saharan pluvial, equivalent to the Kamasan.
Ougartian II Third Saharan pluvial, equivalent to the Kanjeran.
Palaeolithic (From the Greek *paleos*: old, and *lithos*: stone.) Term used to designate the Stone Age with no food production. Term coined by J. Lubbock in 1865.
Palaeozoic A synonym for Primary.
Paranthropus Robust *Australopithecus* discovered in 1948 in the Plio-Pleistocene deposits at Kromdraai in the Transvaal = *Zinjanthropus* = *Paraustralopithecus*. This ancient type displays many simian characteristics, but possesses, particularly in its dental structure, features which situate it closer to Man than to the anthropoids.
Pebble Culture The oldest known stone tool-making industry, composed essentially of pebbles on which a cutting edge was created by striking off one or more flakes.
Pithecanthropus (Monkey-man.) Fossil displaying features close enough to present-day Man to belong to the genus *Homo*, and other somewhat different characteristics representative of another species. The first specimen was discovered by E. Dubois in Java in 1889. Belongs to the species *Homo erectus*.
Platyrrhines New World monkeys with 36 teeth and a broad septum.
Pleistocene (From the Greek *pleistos*: much, and *kainos*: recent.) A geological subdivision of the Quaternary period comprising the beginning and the greater part of that period. This term, which was coined by C. Lyell in 1839, corresponds to the periods of the great Quaternary glaciations and preceded the Holocene period, which started 10 000 years before the present.
Pliocene Terminal period of the Tertiary era, beginning 5.5 million years ago and ending 1.8 million years ago.
Pongid Family of anthropoid monkeys typified by the orang-utan and also comprising the gorilla, the gibbon and the chimpanzee.
Pre-Cambrian The oldest geological configuration. It lasted from the formation of the

Earth (estimated to date to 4000 million years ago) until the Primary era (500 million years ago).

Pre-Soltanian Moroccan continental period corresponding to the end of the Riss stage and coming prior to the Soltanian (from Dar es Soltan).

Ramapithecus: Ramapithecus wickeri Omnivorous Primate of the Miocene which may be the ancestor of the hominids, dating to 12–14 million years ago. Discovered in the Siwaliks range in northern India. Other specimens have been found in China, Turkey, Africa (Fort Ternan) and Europe (Austria, France, Germany, Greece, Hungary and Spain).

Riss Name of a river in Bavaria. Penultimate Quaternary Alpine glaciation, situated between 200 000 and 120 000 years ago.

Sangoan Eponymous site at Sango Bay on Lake Victoria in Uganda. It is a stone-tool complex discovered by Wayland in 1920 and is characterized by the existence of flaked objects produced by the Levallois technique, massive points, bifacial tools and crude core axe forms. The site belongs to the period between the Kamasian and the Gamblian.

Saourian From Saoura, a wadi in the Algerian Sahara. Fourth Saharan pluvial, equivalent to the Gamblian.

Serpentine Hydrated silicate of magnesium.

Shale Foliated silico-aluminous sedimentary rock breaking down easily into thin flakes.

Sinanthropus (From the Latin *sinensis*: Chinese, and the Greek *anthrôpos*: man.) Fossil displaying features close enough to present-day Man to belong to the genus *Homo*, and other somewhat different characteristics representative of another species. The Choukoutien site, south-west of Peking, was worked from 1921 to 1939 by Dr Pei, M. Black, Father Teilhard de Chardin and F. Weidenreich. Belongs to the species *Homo erectus*.

Solutrian From Solutré, Saône et Loire, France. Prehistoric industry of the Upper Palaeolithic, characterized by very thin flint blades. The typical tools owe their appearance to the fact that they were shaped by a process of flat parallel retouching which cut into the two faces of the piece.

Stillbay From Still Bay, Cape Province, South Africa. Stone industry rich in foliate pieces trimmed on both edges reminiscent of the laurel leaves of the French Solutrian. Contemporary with the Gamblian.

Tektite Natural glass rich in silica and alumina, most probably of meteoritic origin.

Telanthropus Generic term given by Broom and Robinson to two jaw fragments found in 1949 in the Swartkrans deposit in South Africa, with a morphology reminiscent of certain Archanthropines.

Tensiftian From Wadi Tensift, in western Morocco. Moroccan continental stage corresponding to the first part of the Riss glaciation.

Tschitolian Term coined to denote a stone-tool complex discovered at Tschitolo, Kasai, Zaire. Epi-Palaeolithic industrial complex characterized by the continued existence of massive tools, although smaller in size than the Lupemban, and by the large number of arrow-heads trimmed on both faces.

Tuff Lightweight and soft porous volcanic rock.

Villafrancian From Villafranca d'Asti, Piedmont, Italy. Sedimentary formation

corresponding to the transition between the Tertiary and Quaternary eras.

Wilton From the Wilton site, in western Cape Province, South Africa. Stone industry dating to some 15 000 years ago, consisting of small groin-shaped scrapers, 'lunate' and trapezoidal microliths, borers and pieces with denticulated edges. This was a late culture which persisted until the introduction of iron.

Würm From the name of a lake and river in Bavaria. The most recent of the Quaternary Alpine glaciations, beginning 75 000 years ago and ending 10 000 years before the Christian era.

18

African fossil man

Animals, humans and plants are classified by species and, in turn, the various species are grouped together in genera. The palaeontologist's task is to identify past genera and species from the fossil record, in a bid to recognize and consider their evolution over the course of time.

Charles Darwin was the first scientist to publish a modern theory of evolution and the origins of Man. It was Darwin who first pointed to Africa as the home of Man and research over the past hundred years has shown how correct he was. Many aspects of Darwin's pioneering work have been substantiated, and to consider evolution merely as a theory is no longer realistic.

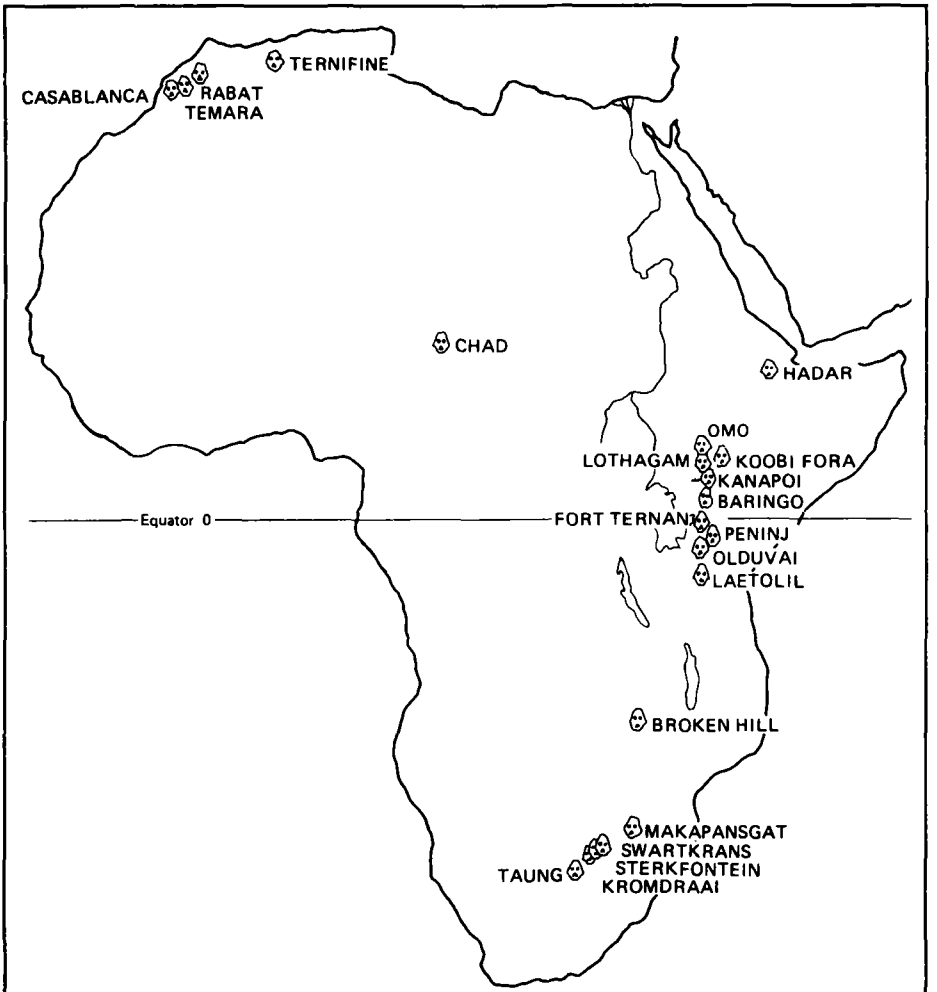
In the light of the recent discoveries made in Africa, two genera, *Australopithecus* and *Homo*, have been identified within the *Hominidae* in the fossil record of the past 3 million years. The first of these became extinct 1 million years ago, but the second is represented by the species *Homo sapiens*, to which present-day Man belongs.

Was *Australopithecus* the ancestor of *Homo*? This question used to be answered in the affirmative; however, it is impossible to be certain and some researchers (including the author) tend towards a view in which both forms have a common ancestor distinct from both. Other authors consider that the genus *Homo* evolved from an earlier *Australopithecus*, and yet others group all these hominids under the same genus displaying significant morphological variability.

In order to defend the hypothesis whereby there were two distinct genera with the same ancestor, it is necessary to examine each genus in terms of its own specific adaptation and life-style, by starting with their most recent representatives and working backwards towards their origins. First, however, the place occupied by Africa in that long story must be outlined.

Africa, the cradle of mankind

The evidence for Man's development in Africa is incomplete, but over the past decade, material has been gathered suggesting that Africa was the continent on which the hominids first made their appearance. However, not all the stages in their evolution are represented in the fossil specimens discovered. Indeed, the preservation of such specimens depends on the existence of special conditions where the chemical composition of



18.1 *Africa: important hominid sites (R. Leakey)*

the soils caused the bones to be consolidated before they could become decomposed. However, the fossils formed in this manner may lie buried indefinitely in the sediments that have accumulated with the passage of time, unless erosion and movements of the earth's crust uncover them and make it possible to identify them.

The reasons why large parts of Africa will never yield human fossil remains, while others are extremely rich in them are closely bound up with the climatic and geological conditions which such regions have known at various times. In the first place, the very scale of Africa accounts for the wide variety of climates. Even in the equatorial regions, the relief features are instrumental in creating great diversity. Regardless of the changes in climate, Africa always offered a suitable habitat for Man, who could move about along both latitudes and longitudes.

Moreover, in prehistoric times, Africa experienced significant variations in rainfall patterns and these governed the level of freshwater springs, lakes, rivers and subterranean water tables. Every year, African lakes, which were once small and shallow, received sediment deposits on their flat shores and around the mouths of inflowing rivers. The ebb and flow pattern lasted for many years and fostered the fossilization and conservation of animal remains, which were buried in the mud and sand deposited on the banks at flood time.

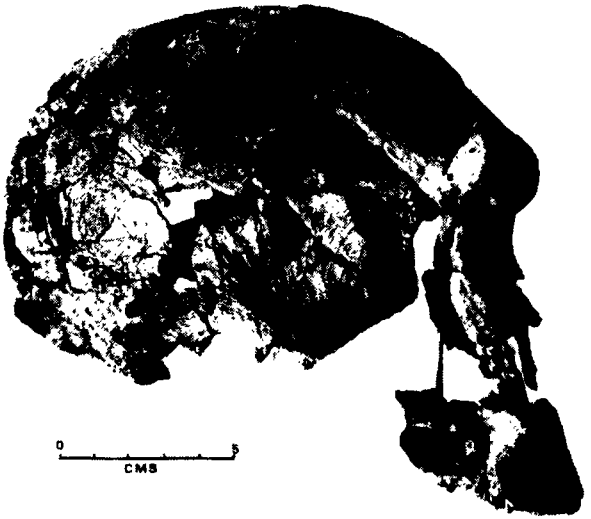
Then, in East Africa in particular, there was another factor that contributed to the discovery of prehistoric fossils: the movements of the earth's crust, or tectonic movements. During the *Pleistocene*, and especially during the latter part of that period, the great fracture belt known as the Rift Valley, stretching right through East Africa from north to south, was subjected to the uplifting and subsidence of the sediment blocks, in a movement that was associated with weaknesses in the earth's crust, or faulting. Ancient and deeply embedded fossil-bearing sediment formations thus became exposed. In addition, the action of wind and water eroded the topsoil and made it easier to discover the fossils of *Hominidae*. This is the case in the Omo valley in Ethiopia, where sedimentary beds 1000 metres thick can be observed on the hill slopes and can be dated from the bottom upwards to a period ranging from 4.5 to 1 million years ago.

Lastly, in Southern Africa, hominid fossils have been found in caves, in some instances under a profusion of cave-fill resulting from roof falls. The question as to whether these remains were brought into the caves by predatory animals or scavengers such as hyenas, or else by early hominids, has still to be answered. Moreover, the lack of remains located at identifiable stratigraphic levels makes it difficult to determine their relative age.

This is why the search for fossil remains in Africa has usually been concentrated in ancient lake basins, where the sediments have been faulted and uplifted and are exposed as badlands. This is the domain of geologists and palaeontologists. Archaeologists are subsequently involved when evidence is discovered of the life-style of hominids, in the shape of tools, weapons, camp sites, and so on.

The genus Homo: Homo sapiens

The wide variety of life-styles displayed by present-day Man, who belongs to the *Homo sapiens* species, has been facilitated by technological developments. But that variety could already be seen throughout the evolution of primitive *Homo sapiens*.



18.2 *Homo habilis: lateral view of skull from Koobi Fora, Kenya (KNM-ER 1470) (National Museum of Kenya)*

18.3 *Homo erectus: lateral view of skull from Koobi Fora, Kenya (KNM-ER 3733) (National Museum of Kenya)*

18.4 *Australopithecus boisei: lateral view of skull from Olduvai Gorge, Tanzania (OH5) (National Museum of Kenya)*

18.5 *Australopithecus africanus: lateral view of skull from Koobi Fora, Kenya (KNM-ER 1813) (National Museum of Kenya)*

In Africa, there have been several important discoveries that illustrate the presence of primitive *Homo sapiens* on the continent for more than 100 000 years. Rhodesian Man, discovered in 1920 at Broken Hill, in what was then Northern Rhodesia, has been regarded as the oldest *Homo sapiens* found in Africa and has been dated to about 35 000 years ago. The specimen has been compared with the Neanderthal man from Europe.

On the other hand, the Kanjera site, in western Kenya, has yielded two human skulls associated with fossil fauna dating back to the Pleistocene. The site has not been accurately dated, but the two fossils have been related to *Homo sapiens*, to which they are anatomically very similar. They may date back almost 200 000 years. Skull fragments dating from 100 000 years ago have also been found in the Omo valley in south-western Ethiopia.

Thus, while *Homo sapiens* is poorly represented in terms of the number of fossils discovered, it seems reasonable to assume that the species was widely scattered both in Africa and in the rest of the world.

The genus Homo (pre-*sapiens*): *Homo erectus*

The best-known pre-*sapiens* form of *Homo* is that which has been attributed to a wide-ranging, diverse morphospecies known as *Homo erectus*. This species was first identified in the Far East and China, but the same form has been collected in recent years in North and East Africa and perhaps in Southern Africa. These fossils have been dated as being between 1 500 000 and 500 000 years old.

From the anatomical standpoint, *Homo erectus* was a permanent biped, with a modern-shaped foot where the big toe was aligned on the other toes. Its brain capacity ranged between 750 and 1000 cm^3, compared with 1400 cm^3 for *Homo sapiens*. The skull had two ridges: one above the eyes, forming protruding and unbroken eyebrows, and the other above the nape of the neck, denoting the point of attachment of a powerful muscular system.

The consensus of professional opinion links the handaxe or Acheulian industry to *Homo erectus*. This distinctive type of stone tool industry is represented by sites in Africa, in Europe and, to a lesser extent, in Asia. Whether *Homo erectus* was the final stage of development leading to *Homo sapiens* remains uncertain, and it is probably wise to leave the matter open pending further information on this species.

The genus Homo (pre-*sapiens*): *Homo habilis*

Remains attributed to the *Homo* lineage, but occurring earlier than those of *Homo erectus* are currently confined to East Africa. The definition of the *Homo habilis* species is based on specimens discovered at Olduvai and, more recently, at Koobi Fora on the eastern shore of Lake Turkana. It is perhaps also present at Laetolil in Tanzania and at Hadar in the Ethiopian Afar region, where more complete specimens have been found. It lived in the grasslands of those regions at least 1.7 million years ago.

The principal characteristics of *Homo habilis* could be said to be the relatively large brain for so remote a period, with a cranial capacity of more than 750 cm^3, and a thin-boned skull, which is high-vaulted compared with other contemporaneous Pri-

mates. The incisors are quite large, although the molars and premolars are smaller. The mandible shows external buttressing. The whole jaw system is rounded and is more human than ape-like.

Homo habilis, which lived in an African savannah environment, was also a hunter. Prehistorians consider that it made the pebble tools found at several sites in those regions.

The genus Australopithecus

At the same time as *Homo habilis*, and sometimes at the same locations, there lived a second hominid biped genus known as *Australopithecus*. The problem of species definition with *Australopithecus* is far from settled, but the author's opinion is that evidence for two species of this genus can be established at the different sites. The most obvious, *Australopithecus boisei* (or *Australopithecus robustus*), is characterized by hyper-robust mandibles, large molars and premolars relative to the incisors and canines, a cranial capacity of less than 550 cm^3, and developed sagittal and nuchal crests to which the food-chewing muscles are attached. This species covered a wide area in Southern and East Africa.

Australopithecus africanus is primarily known from South African sites and from a number of related fossils in East Africa, the best specimen being KNM–ER 181 from Koobi Fora in Kenya. The most distinctive features are its light-weight mandibles with small premolars and molars, a cranial capacity of 600 cm^3 or less and the virtual absence of sagittal crests. The skeleton appears to be similar to that of *Australopithecus boisei*, although on a smaller and less robust scale. One of the characteristic features of both species is the upper end of the femur: the long femoral neck is compressed from front to back and the head is small and subspherical, implying almost permanent bipedalism. The gracile form found in East Africa is similar to the South African *Australopithecus africanus* and may represent a more northerly variety of the species.

It is clear that extraordinary advances have been made in recent years in establishing the fossil record in respect of the early hominids. The presence of at least three contemporaneous species in East Africa in the Plio–Pleistocene can be determined on the basis of both anatomical remains and cultural and technological evidence. This has been interpreted as being the outcome of a Pliocene differentiation with different evolutionary trends persisting into the early Pleistocene. Indeed, East Africa has also yielded the world's most ancient chipped tools and traces of habitation sites. The constant advances made from the pebble tools of *Australopithecus* and *Homo habilis* to the biface handaxes of *Homo erectus* can be perfectly identified in that region.

The whole complex exercise is the subject of pluridisciplinary investigations and studies, in which geologists, palaeontologists and prehistorians are all called upon to wield their skills.

19 *The prehistory of East Africa*

Man's evolution as a ground-living animal able to sit, stand and move on two feet – unlike the apes, monkeys and other quadruped or quadrumanous mammals – facilitated the use and manufacture of tools by freeing the arms and hands for holding, carrying, gripping and manipulation.

Chronology and classification

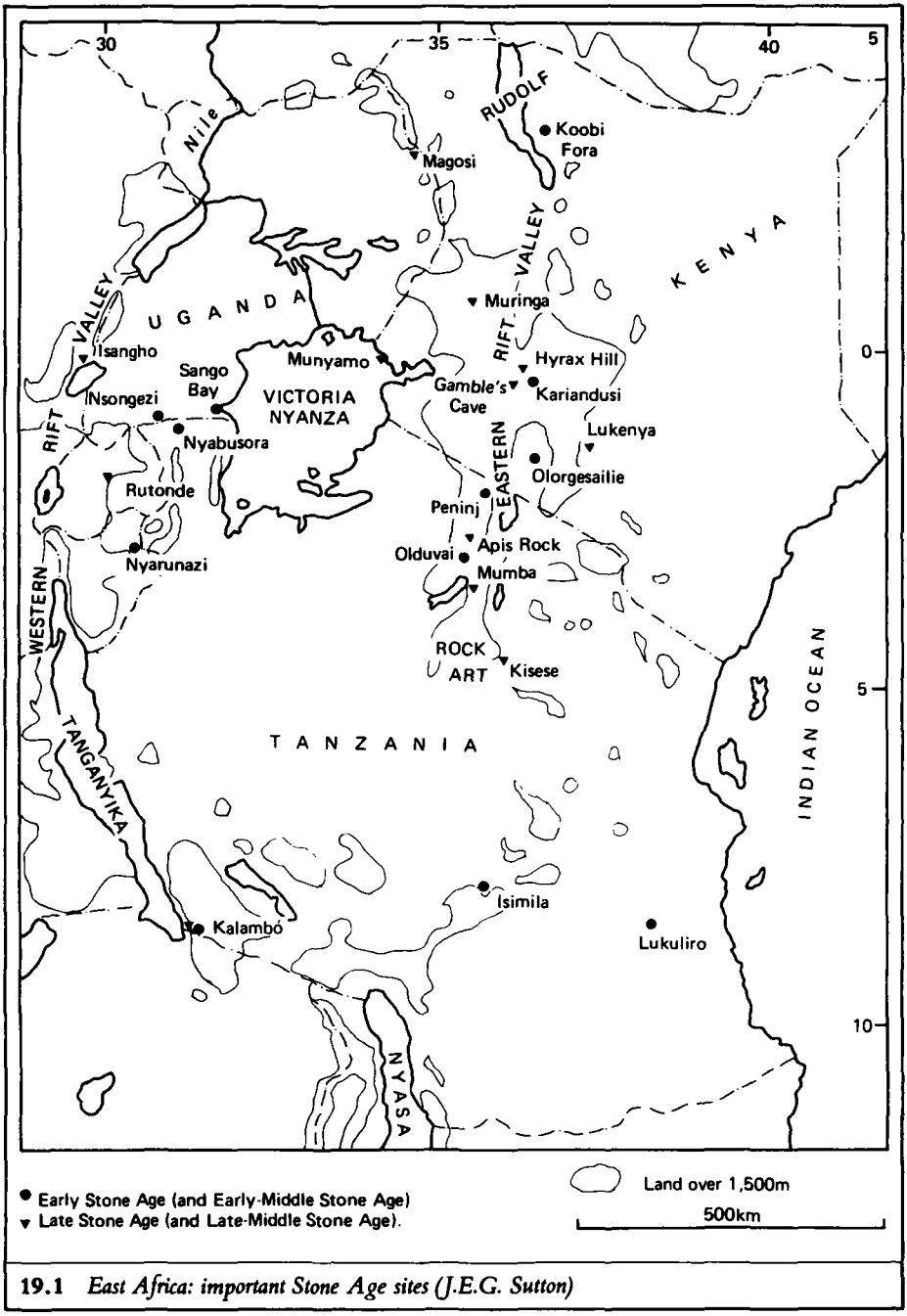
Whereas in most of Asia, Europe and North Africa the Stone Age is divided conventionally into Palaeolithic, Mesolithic and Neolithic, in Africa south of the Sahara this system has been abandoned by most modern writers. Here the Stone Age is usually viewed and studied from the very earliest times in three broad periods – Early, Middle and Late – distinguished largely by important and recognizable changes in technology, quite apart from the broader cultural and economic implications. These differences in classification do not represent two ways of saying the same thing: conceptually and chronologically, the criteria of classification are completely different.

The three African periods are dated very approximately as follows:

Early Stone Age (or Old Stone Age), from 3 million to about 100 000 years ago;
Middle Stone Age, from around 100 000 to 15 000 years ago;
Late Stone Age, from about 15 000 years ago until the beginning of the Iron Age, some 2000 years ago.

It should be stressed that these dates are very approximate and are the subject of some controversy. In fact, generally later dates have been suggested for the transition from the Middle to the Late Stone Age and especially for that from the Early to the Middle Stone Age. Thus the datings suggested here for the division of the Stone Age into periods are rather earlier than those usually advanced.

Furthermore, it is important not to look upon these time-sequences as being static periods within which no changes or variations occurred; nor were the changes from one period to the next necessarily sudden. Developments took place within each of the three periods as well as from one to another. In addition, the notion of a transition between two periods is a complex one. This is why some authors have put forward the idea of 'intermediate periods', but there is now a tendency to drop this term on account of its



19.1 *East Africa: important Stone Age sites (J.E.G. Sutton)*

19.2 *Periods and industries in African prehistory: table of equivalents (H. J. Hugot)*

	Maghrib	*East Africa*	*Western Sahara*	*Southern Sahara*	*Industries*	*English archaeological equivalents for corresponding levels*	*Europe*
Holocene	Rharbian	Makalian Pluvial	Present	Present	Age of Metals	Late Stone Age	Present
			Guirian	Desertification	Neolithic		Post-glacial
				Pluvial Recurrence	Epi-Palaeolithic	Second Intermediate	Würm
Upper Pleistocene	Soltanian	Arid post-Gamblian	Soltanian	Arid			
		Gamblian Pluvial		Last great lakes	Aterian Mousterian	Middle Stone Age	
Middle Pleistocene	Tensiftian	Arid post-Kanjerian	Ougartian	Arid		First Intermediate	Riss-Würm
		Kanjerian Pluvial		Sahara of the great lakes	Lower Palaeolithic with bifacial tools		Riss
		Arid post-Kamasian				Early Stone Age	Mindel-Riss
	Amirian	Kamasian					Mindel
	Saletian	Arid post-Kageran	Taourirtian				Gunz-Mindel
Lower Pleistocene	Moulouyan	Kageran	Moulouyan		Archaic Lower Palaeolithic with Pebble Culture	(Earlier Stone Age)	Gunz
							Donau-Gunz
							Donau

imprecise definition. At all epochs of the Stone Age, variant technologies may have been practised contemporaneously, even within restricted regions. These variants can be explained by differences in the environment, where food resources and methods of obtaining them dictated different cultural adjustments and technologies. This is a controversial subject, but the most recent discoveries in East Africa show that what were once regarded as two distinct subperiods of the Early Stone Age – the Pebble-tool (or Oldowan) Culture succeeded by, or evolving into, the handaxe culture – overlapped for half a million years. What is more, a mixture of innovatory and conservative features may be a sign of gradual change, but signs of transition may not always be grasped.

In 19.2, a more detailed scale is presented to illustrate how the various Stone Age cultures and lithic industries recognized by archaeologists in East Africa can be fitted into this division into three periods. It makes no pretence at being a correct interpretation or one that will survive the results of further research or revaluations of older work.

Early Stone Age

First phase

The earliest known humanly fashioned tools date from a period ranging between 3 and 1 million years ago and were found by the edges of former lakes and marshes close to the Rift Valley in northern Tanzania, Kenya and Ethiopia. They may be the very small quartz fragments showing signs of cutting and wear that have been found at several sites on Lake Turkana and in the Omo valley in Ethiopia, but it is difficult to tell for what purpose they were used. The contemporaneous or slightly later pebble-tools are better known. These were hand-sized pebbles from which a few flakes were struck off, with another stone, to produce crude, but usable cutting implements. Heavy work such as cutting through an animal's skin or breaking or crushing tough vegetable material would normally have required the use of the main tool held in the fist. Many thinner, and hence sharper, flakes would have been suitable for lighter work. Recent intensive studies of these pebble tools have revealed a greater degree of technological sophistication than had hitherto been assumed.

The makers of these tools were hunters and gatherers. The refuse that has survived often includes animal bones, mixed up with a variety of tools, constituting evidence of what may have been a place of habitation at this earliest stage of humanity. Moreover, study of the scatter patterns of the refuse suggests that, at both Olduvai and Melka Konture, wind-breaks may have been erected as a form of protection for a living shelter.

In view of the dating of these tools, and more significantly their occasional discovery in East Africa together with actual human bones, they can be attributed to the earliest hominids, the Australopithecines – or, as some would now argue strongly, to their successor, *Homo habilis*.

Second phase

The Acheulian or handaxe culture is as widespread in Africa as the Oldowan and the sites identified are, in fact, much more numerous. This may be due to larger

19.3 *Prehistory in eastern Africa (J.E.G. Sutton)*

Years ago (approx.)	*Divisions*		*Diagnostic technological features*	*Main lithic industries*		*Rough equivalents in Mediterranean and Eurasian regions*	*Geological periods (approx. correlations)*
3 million	EARLY STONE AGE (ESA)	FIRST PHASE	chopper-tools and flakes	Oldowan (pebble-tool industry)		Lower Palaeolithic	Lower Pleistocene
1 million		SECOND PHASE	bifacially flaked tools, cleavers, etc.	Acheulian (biface industry)			Middle Pleistocene
100 000	MIDDLE STONE AGE (MSA)	FIRST PHASE	flaked tools made from prepared cores	Sangoan	Fauresmith	Middle Palaeolithic	Upper Pleistocene
40 000		SECOND PHASE	hafting; smaller, finished tools	Lupemban	Stillbay		
15 000	LATE STONE AGE (LSA)		blades and microliths with retouch; composite tools	Tschitolian	(Magosian) Wilton	Upper Palaeolithic	Holocene
				Kenya Capsian 'stone bowl' cultures ('terminal LSA')	Kenya highlands	epi-Palaeolithic or Mesolithic Neolithic (in some parts)	
of our era	IRON AGE						

forests / savannahs — watersides / highlands

populations, but it may also be due to the manufacture of large recognizable tool forms, such as the handaxe and cleaver. Unlike the Oldowan, the Acheulian extends beyond Africa into Asia and also into Europe. Its beginnings in Africa date from more than a million years ago. This type of technology continued for over a million years until relatively recent times, probably not more than 100 000 years ago.

Africa was one of the places where the maker of these tools, *Homo erectus*, emerged. However, older cultural traditions – and perhaps the earlier physical types – may have persisted for some time alongside the new. This point is best illustrated in the successive layers of ancient lake-beds at Olduvai where, for several hundreds of thousands of years either side of a point 1 million years ago, quite distinct Oldowan and Acheulian tool-kits were being made and used.

In East Africa, the Acheulian sites, apart from Olduvai, were situated at Olorgesailie and Kariandusi in the Rift Valley, to the east of Lake Turkana, at Nsongezi and neighbouring sites on the border of Tanzania and Uganda, at Isimila and Lukuliro in southern Tanzania, and at Melka Konture in Ethiopia.

The names 'handaxe' and 'cleaver' for the two most typical types of Acheulian tools are, of course, archaeological terms of convenience. Acheulian techniques consisted of more precise, more regular and more persistent flaking on both faces than had been observed up to that time.

Throughout the Early Stone Age the populations consisted of hunter–gatherer bands that moved about seasonally in the savannahs and light woodlands following the fluctuating animal and vegetable food resources. It has indeed been suggested that the enormous concentrations of fine Acheulian tools at such places as Isimila and Olorgesailie could represent such annual and seasonal jamborees.

It is in archaeological sites containing evolved Acheulian tool-kits that the first evidence of fire in East Africa, dating from some 50 000 years ago, has been discovered. However, this date is certainly too cautious and there exist indisputable traces of fire and cooking by *Homo erectus* in Asia and Europe half a million years ago.

Middle Stone Age

The populations of the Middle Stone Age belonged to the species *Homo sapiens*, although at first perhaps to a subspecies of *Homo sapiens* somewhat different from modern Man. By the end of the Middle Stone Age, however, not only would modern

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Notes to 19.3

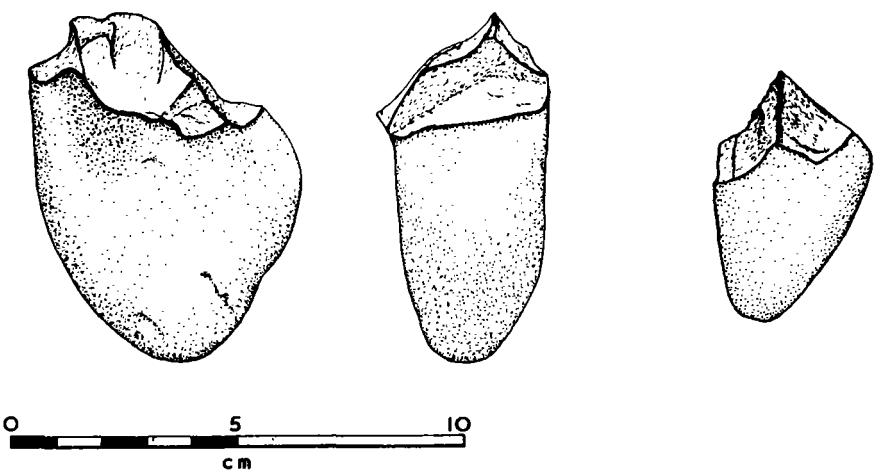
The two right-hand columns, showing rough correlations with geological periods and with the chronology of the Mediterranean and Eurasian Palaeolithic period, are included merely for reference.

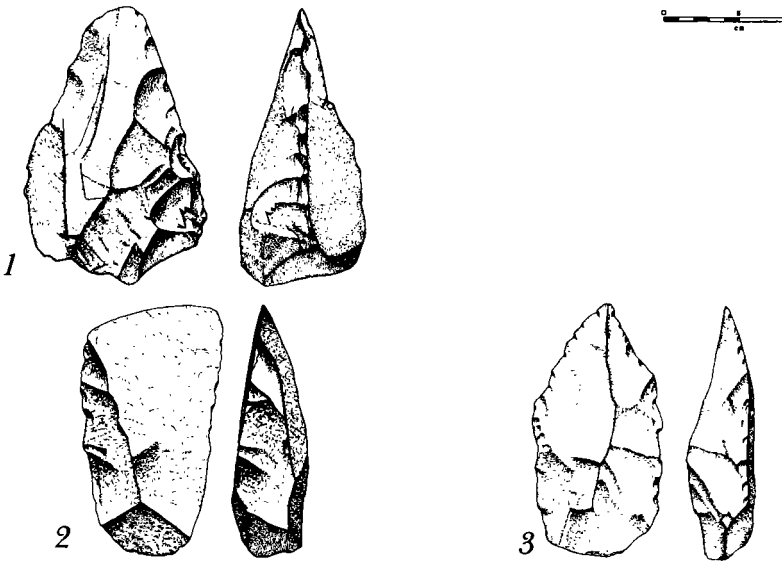
The terms Lower, Middle and Upper, in which Lower is the earliest, follow normal geological practice based on stratigraphic sequences.

As the table shows, the term Palaeolithic (or Old Stone Age) is *not* the equivalent of the African Early Stone Age. In the terminology current in Europe, 'Palaeolithic' means Stone Age without food production, in contrast to the 'Neolithic' (or New Stone Age) meaning Stone Age with food production by means of agriculture and pastoralism, associated with evidence of a more advanced material culture, such as pottery and ground stone objects.

19.4 *Olduvai Gorge, northern Tanzania. The gorge, cut more than a hundred metres through the plain, reveals a succession of layers (mostly old lake-beds). The lowest layers, which are about 2 million years old, contain the remains of some of the earliest inhabitants, their tools (Oldowan type) and food waste. The upper layers contain hand-axes and other implements of the Acheulian tradition (J. E. G. Sutton)*

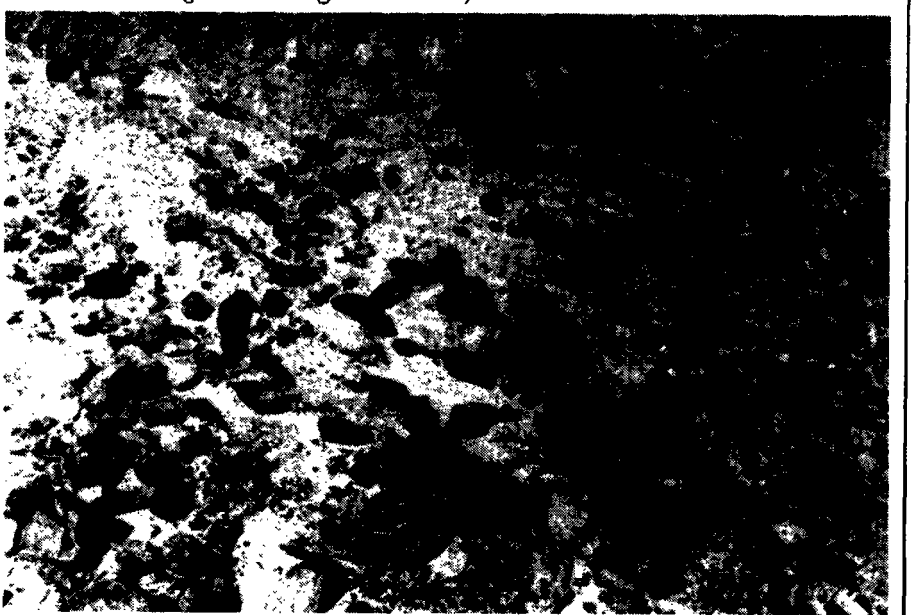
19.5 *Early Stone Age, first phase. Typical Oldowan ('pebble') tools (J.E.G. Sutton)*

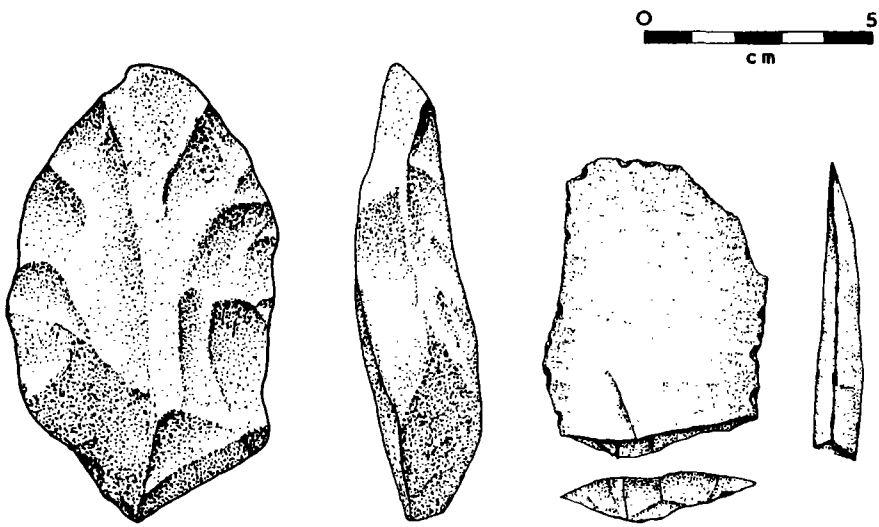




19.6 *Early Stone Age, second phase. Typical Acheulian hand-axe, front and side views: 1) pick; 2) cleaver; 3) hand-axe (J.E.G. Sutton)*

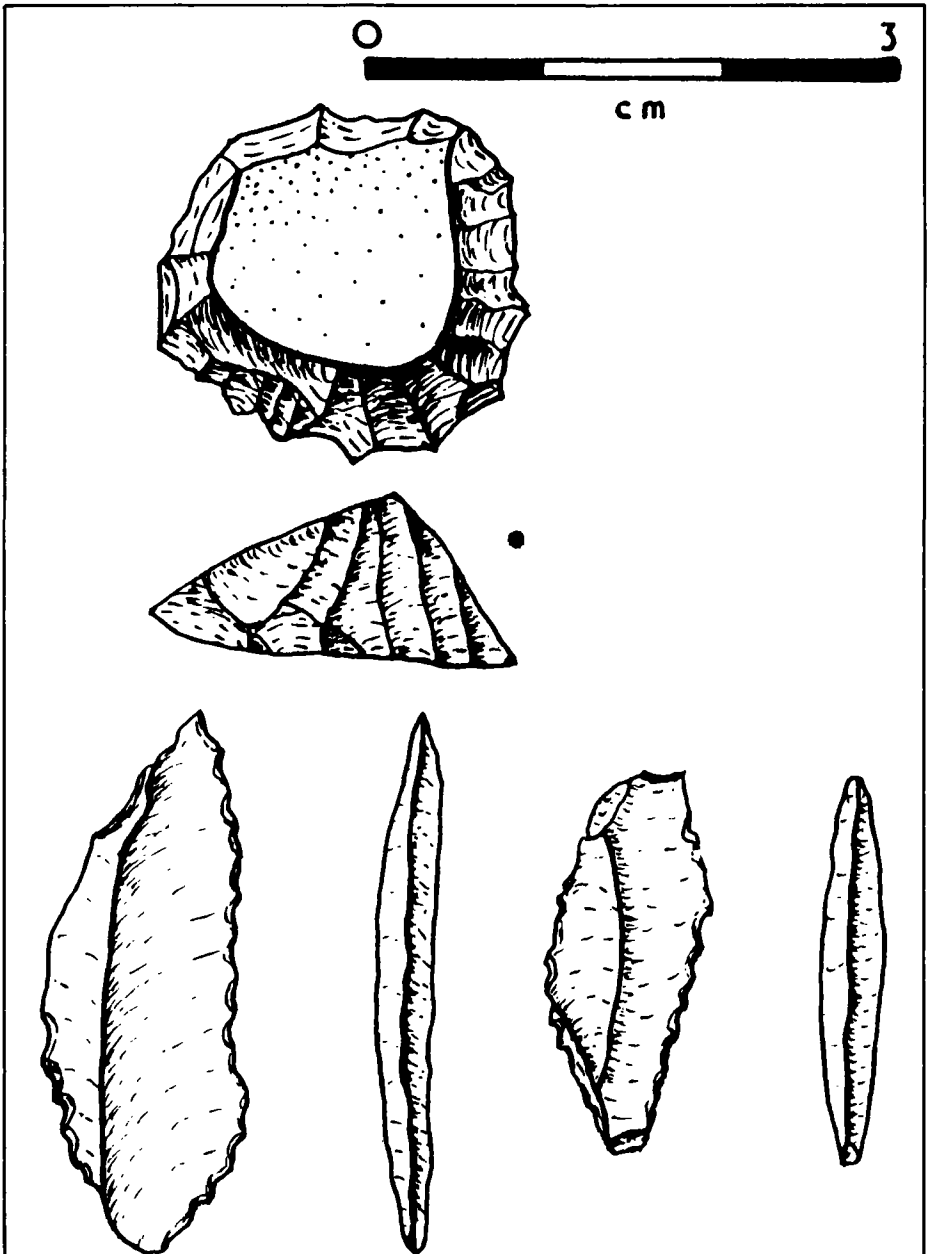
19.7 *Isimila. A concentration of Acheulian hand-axes, cleavers and other tools. The small trowel in the centre gives the scale (J. E. G. Sutton)*





19.8 *Middle Stone Age and transitional tools: the right-hand example is a fine point suitable for hafting, perhaps as a spear-head (J.E.G. Sutton)*

19.9 *Olorgesailie in the Kenya Rift Valley. Excavations in progress on an Acheulian site (J. E. G. Sutton)*



19.10 *Late Stone Age: 'Thumbnail' scraper (top); backed blade (left) and crescent (right) made from obsidian in the Kenya Rift Valley (J.E.G. Sutton)*

Man (*Homo sapiens sapiens*) have emerged, but the distinctive physical characteristics of the races as they now exist would also have been fairly well developed in Africa and elsewhere.

In technology, the Middle Stone Age saw significant advances. Basic stone tool-making, which consisted of knocking off flakes from rock fragments, was being increasingly superseded by the more complex technique of preparing the core by precise flaking to a required shape and size, and then finally striking off the finished tool. At the same time, the technique was perfected of breaking off random flakes, which were subsequently shaped by retouching, thus making it possible to produce smaller tools. It was in the second phase of the Middle Stone Age, however, that there came an innovation that was to have far-reaching consequences: the fitting of worked stone pieces into a haft of wood or other material. This was probably the case with Stillbay tools, which were inserted into a slit in a wooden haft. All these shaping and retouching techniques were made easier by prior tempering in fire.

Keeping pace with these technological developments of the Middle Stone Age were economic or at least environmental adjustments. It was here that climatic changes had an impact on the food supply. It may be conjectured, although not demonstrated, that population pressures made it necessary to seek more efficient and varied ways of exploiting the environment. Such ways were certainly found in the Middle Stone Age.

The outcome of this situation was regional specialization. In Africa, there emerged a clear-cut cultural division between the peoples of the more lightly wooded savannahs and those of the wetter and more thickly forested regions. In the former, big game hunting with spears was developed, whereas, in the latter, the collection of vegetables and fruit, fishing and waterside fish trapping were emphasized.

In the first phase of the Middle Stone Age, in the Kenya highlands close to the forest edge, tools known as Fauresmith have been collected. The Gondar and Graba III industries at Melka Konture are related to them. In many respects, the Fauresmith is a refined Acheulian technique, with identical, but rather smaller and more carefully made tools.

In contrast to this are the more widespread Sangoan industries, the best East African examples of which occur around Lake Victoria and the western Rift Valley, in southern Uganda, Rwanda and western Tanzania. These industries are also a mixture of some Acheulian types of tool and new techniques, but the emphasis is different from the Fauresmith type. The Sangoan tools seem crude, but this is probably not so much the sign of a cultural retrogression as of a specific type of activity. They may, for instance, have been specially designed for working wood.

The Sangoan industries are first encountered in East Africa in a developed form and this suggests their possible introduction into the western parts of East Africa during a wet period when the equatorial forest exceeded its bounds. However, in the second phase of the Middle Stone Age, the makers of the Lupemban industries, which were essentially evolved and refined forms of the Sangoan and were celebrated for their exquisitely fashioned stone lance-heads, belonged more decidedly to the forest environment.

Lupemban tools are also found around Lake Victoria and other westerly parts of East Africa, as well as in the Zaire Basin. They differ from the Stillbay tools, which have leaf-shaped spear-points, and which are to be found in the high grasslands bordering the Rift

Valley in Kenya and near Lake Tana (the Gargora shelter), and at Diredawa (the Porcupine cave), in Ethiopia. In other regions, notably in south-eastern Tanzania, various types of Middle Stone Age industries predominate, and some of these may represent an intermediate stage, the Sangoan–Lupemban.

Late Stone Age

Instead of the Middle Stone Age emphasis on producing flakes from prepared cores, the main concentration in the Late Stone Age was on blades, by striking or indirectly punching long, delicate, parallel-sided pieces from a suitable stone. Such blades could then be trimmed or retouched for a variety of shapes and purposes. The trimmed pieces were usually very small – what are known as 'microliths' – sometimes less than a centimetre in length. A common form is one known as the crescent or lunate, which was designed not so much to be held in the hand and used as a complete implement as to be slotted, frequently in sequence, into a wooden handle so as to form a kind of knife or saw-blade.

On the basis of these technological innovations, a number of cultural and economic developments can be recognized or inferred. It was probably at this period that the bow and arrow began to be used in hunting. Bone was doubtless put to widespread use, and the discovery of awls made from both bone and stone is an indication that skins were sewn together for the purpose of making garments or shelters. Beads made of seeds, bone, ostrich eggshell or stones may have been threaded together to make necklaces. The grindstones occurring in some Late Stone Age series were used for crushing red ochre or plant materials.

Some Late Stone Age camps were located in open country by streams or lakes. Also common at this time was the occupation of rock shelters (sometimes described as caves), which were in some instances usefully sited for hunting or for ensuring the protection of the group. In one region of north central Tanzania, the rock walls of many of these shelters are decorated with paintings of animals, hunting scenes and other motifs. It is likely that most of this cave art belongs to more recent millennia, towards the end of the Late Stone Age, and some of it may have overlapped with the period when the Iron Age communities were spreading. Even so, the origins of this hunter art must be much more ancient.

This likelihood of a long tradition for the savannah cultures of the Late Stone Age may account for some of the regional variations coming under the general category of Wilton industries. In addition, in the westerly parts of East Africa, one might expect to find a distinct tradition connected with the Zaire Basin, where Tschitolian industries flourished, derived from the Sangoan–Lupemban woodland and forest culture of the Middle Stone Age. However, such a link is not evident, except in Rwanda.

The Kenya highlands and Rift Valley display features that stand in marked contrast to tools of the types we have described so far. It is true that some Late Stone Age industries with Wilton affinities are encountered, but there are others in which long-bladed tools, rather than microliths, predominate. These date from between 10 000 and 5000 years before the Christian era and are known as Kenya Capsian. It is important to note that this industry and the people engaged in it represent the south-western

extremity of the Negro civilization based on the exploitation of water resources, which extended right across Africa south of the Sahara. This civilization emerged during a temporary wet period when lake levels were high and rivers were swollen. It reached its peak in about the seventh millennium before the Christian era. The riparian peoples caught fish and aquatic animals with typical bone spears and harpoons. They have been found at Lake Edward in the western Rift Valley, on Lake Turkana, and on the former shoreline of Lake Nakuru. They were familiar with basket-weaving and pottery-making, and the main settlements were situated at the water's edge.

The Neolithic

In East Africa, it is still a matter of speculation whether the fisherman groups, which became partly sedentary beside the great lakes and rivers from the seventh and sixth millennia onwards, were at the origin of pastoralism and perhaps also of agriculture, partly as a result of the pressures exerted by the environment – the increasing pace of desiccation of the Sahara – and partly because of their advanced technology. However, it is thought that these people were receptive to the notion of collective food production, and especially of plant and animal domestication, which was to spread throughout the region from the third millennium onwards.

The best-known site from this period is Esh Shaheinab, in Sudan, which is situated on an ancient terrace slightly to the north of the confluence of the Blue and White Niles. A stone tool industry, consisting of geometrical microliths, harpoons perforated at the base and fish-hooks made of shells all testify to the existence of fishing as a permanent activity. The remains also include polished stone axes and adzes, as well as pottery. The bone remains include a number of wild species, many of them fish, but also goats and occasionally sheep. Dated to the fourth millennium, the Esh Shaheinab site shows that animal husbandry was already predominant.

At Agordat in the Eritrea province of Ethiopia, the presence of grinding-stones, mortars and a stone figurine representing a cattle species similar to that raised by the C-Group populations centred on Nubia suggests that an agricultural and pastoral economy might have existed, although the evidence is not conclusive.

In Kenya, although evidence of the existence of agriculture is still lacking, there are ample traces of pastoralism throughout the Rift Valley as far down as Tanzania, as well as in the highlands. Remains have been found in burial places such as the cremation sites at the Njoro River Cave near Nakuru and the Keringet Cave near Molo. There are also settlement sites, such as those on Crescent Island near Lake Naivasha and at Narosura in southern Kenya. Evidence of pastoralism can be seen from the overwhelming number of goat and cattle remains. Here again, the presence of grinding-stones and pounders offers only indirect evidence of the existence of some form of agriculture.

The introduction of pastoralism and agriculture, which were very frequently linked in a mixed economy, has often been presented, in the case of East Africa, as the outcome of two influences, one coming from what is now the southern Sahara towards the Sudanese region, and the other from Egypt towards Nubia. Hunting and fishing went on as in the past, and there was no break in continuity with the material culture of the small groups of fishermen or hunter–gatherers who had become more or less sedentary

by the third millennium. There is little evidence of agriculture, but cattle-raising seems to have developed from that period onwards. When the Iron Age began, these East African peoples had probably already advanced beyond the pre-agricultural stage.

The aquatic tradition of middle and eastern Africa

Some 8000–10 000 years ago the climate of Africa was very wet and this dictated a life-style that was closely bound up with water over a vast area ranging from a much shrunken Sahara to a much enlarged equatorial forest.

Along the East African lake-shore sites, as well as along the Middle Nile and in the Sahara, the development of these fisherman civilizations has been dated to between 8000 and 5000 years before the Christian era. The bone harpoons and pottery discovered suggest that the population engaged in fishing, but still had to supplement their resources by hunting and gathering. There is nothing to suggest that they practised any form of agriculture, whether in East Africa or in any other part of the vast area they covered.

From about 5000 years before the Christian era, the effects of the widespread drying out of the climate began to be felt. Lake-levels fell and the economy, based on harvesting aquatic resources, went into decline, although it continued for some time in the Rift Valley in Kenya.

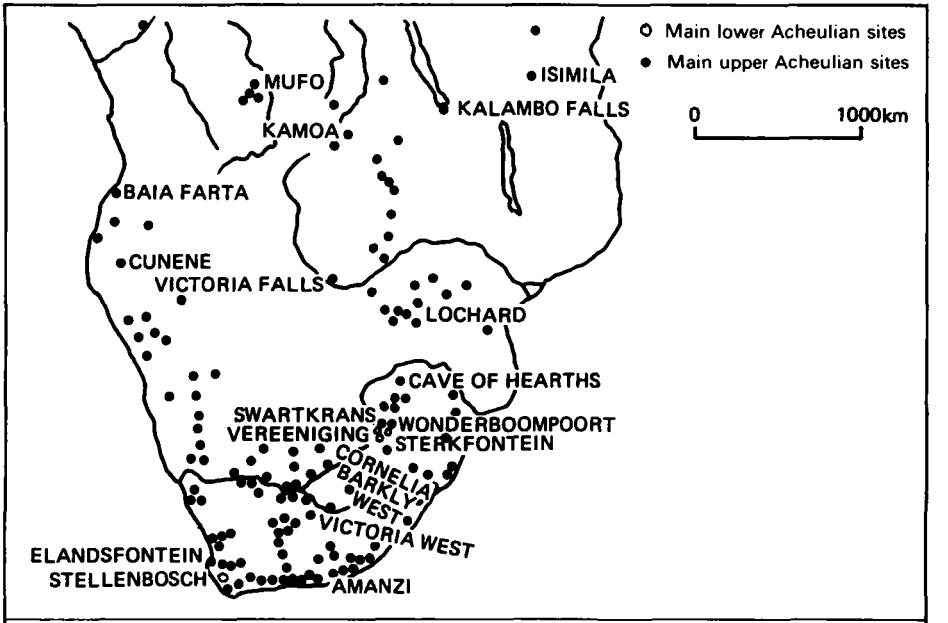
Over a period from 2000 to 1000 years before the Christian era, new populations arrived in the region from Ethiopia bringing cattle and perhaps some agricultural practices with them.

20 *The prehistory of Southern Africa*

The earliest hominids

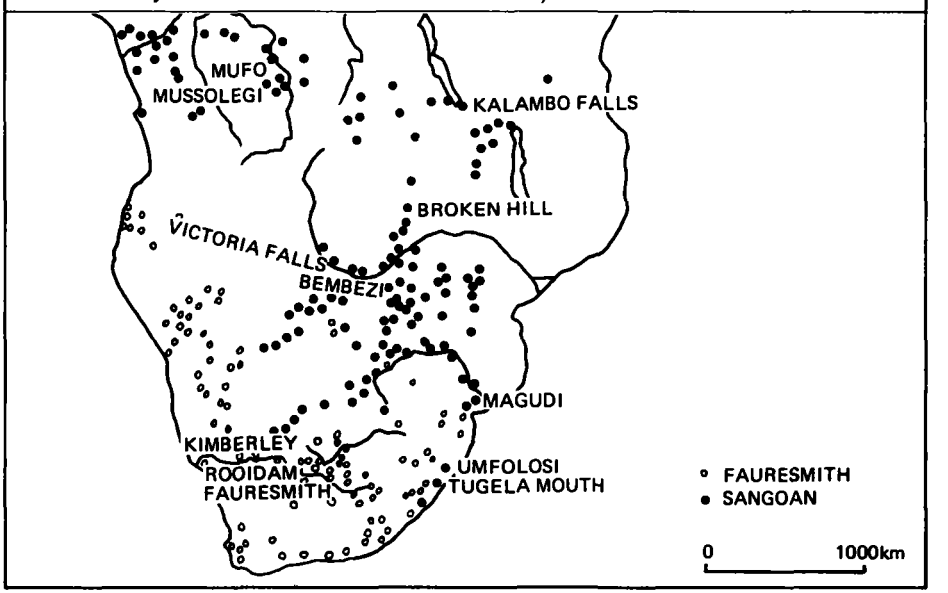
The first Australopithecine fossil, a juvenile, was found in 1924 in a lime-cemented breccia at Taung in the north of the Cape Province of South Africa. The first adult individual was discovered in 1936, again in old cave deposits, this time in the Krugersdorp region of the Transvaal. Since then a large number of Australopithecines and other hominid fossils have been recovered in Southern and East Africa. Apart from these regions, the only other fossil ascribed to the Australopithecines comes from Korotoro in the Lake Chad Basin. However, this specimen is now considered to be more recent. In fact, most of the Australopithecines found so far have been from the South African caves and the Rift Valley sites, on account of the favourable conditions existing there for the preservation of fossil bones. A large number of radiometric datings have been obtained in East Africa as a result of the existence of volcanic sediments, but the fossils of Southern Africa can be dated only relatively by palaeontological and geomorphological comparisons. Latest assessments based on the studies of pigs, elephants and hyenas suggest that the earliest Transvaal fossils associated with them are about 2.5 million years old at least. The cave breccias, at the Makapan limeworks and the Sterkfontein type site, contain a few mammalian forms in common with those of the dated East African assemblages.

The earliest South African Australopithecines were mostly of gracile build, with a cranial capacity of 450–500 cm^3. In the later cave sites at Swartkrans and Kromdraai, the predominant form is much more robust (*Australopithecus robustus*). It was generally thought that the earlier forms were all *gracile* and the later ones all *robustus*, but recent anthropometric studies show that the two forms may have been contemporaneous and have existed side by side in the same geographical areas, as in the case of the Makapan site in South Africa. According to some authors, the differentiation of the two species from a common ancestor may have taken place as early as 5 million years ago. It is most probable that an early *Homo* form, such as that of the East African *Homo habilis*, existed in Southern Africa sometime between 1.7 and 2 million years ago, although its fossil remains have yet to be found.



20.1 *The distribution of Acheulian sites in southern Africa (J .D. Clark, 1970,* The Prehistory of Africa, *London, Thames and Hudson)*

20.2 *The distribution of Fauresmith and Sangoan sites in southern Africa (J. D. Clark, 1970,* The Prehistory of Africa, *London, Thames and Hudson)*



Early hominid way of life

Although a large number of Australopithecine hominid fossils have been found in the South African caves, it seems unlikely that the contexts in which they occur represent the place where they actually lived. Careful study of the Swartkrans site has shown, in fact, that the accumulation of bone remains there might have resulted from several different causes, the most significant probably being hunting by large carnivores using the cave as their den. There is no consensus on this point, however. Moreover, no tools have been found in the cave breccia at the Makapan and Sterkfontein sites at which these fossils were discovered.

If the hominid living-site hypothesis is rejected in favour of that whereby the caves are presumed to have served as larders for some other large carnivores, to which the hominids themselves sometimes fell victim, it seems likely that the Australopithecines lived not too far away, for stone tools dating to about 1.5 million years ago have been found in the Sterkfontein group of caves (Swartkrans, Sterkfontein extension site and Kromdraai). However, bone fragments of a more recent hominid species, *Homo sapiens*, have been found in the same Swartkrans deposit and this form is more likely to be that associated with the tools. Even so, this does not preclude the possibility that the Australopithecines were capable of making tools. Hunting and meat eating probably led to the making of stone tools in order to obtain flakes for cutting purposes. Furthermore, hunting presumably required efficient organization and communication among the participants and this, in time, led to the development of language.

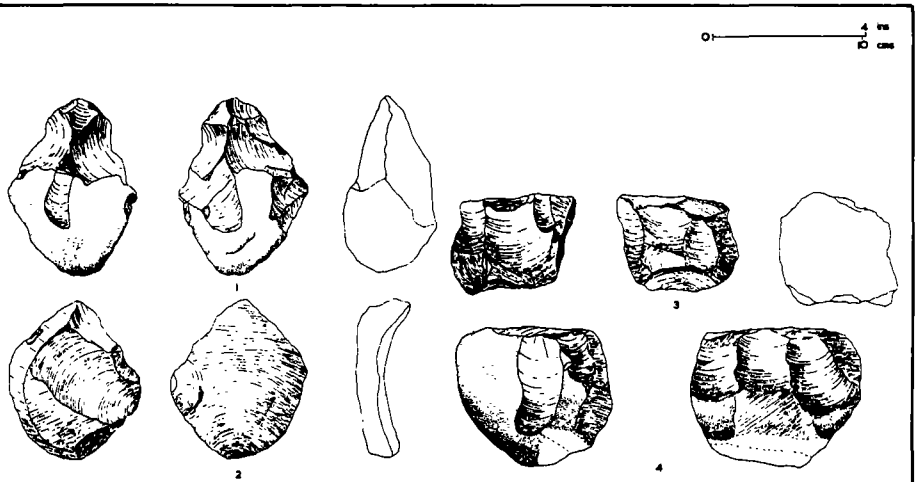
The earliest stone tools: the Oldowan industrial complex

It should be borne in mind that, besides stone, a number of other materials, such as wood, bark, horn and bone, could also have been used for tools. Unfortunately, most other materials do not lend themselves to preservation and therefore stone-working remains the starting-point of our enquiry.

The earliest stone industries of Southern Africa produced several distinctive types of tool, including choppers, polyhedral stones, scrapers, flakes, and so on. Compared with the East African artefacts, these tools display attributes that are closer to the more advanced form of the Oldowan complex than the earlier form, and it is now generally accepted that the South African sites date from some 1.5 million years ago. Two hominid lines can be distinguished by that time: that of the robust Australopithecine and that of the more recent *Homo*. It is still not clear which of these two lines was responsible for the industries.

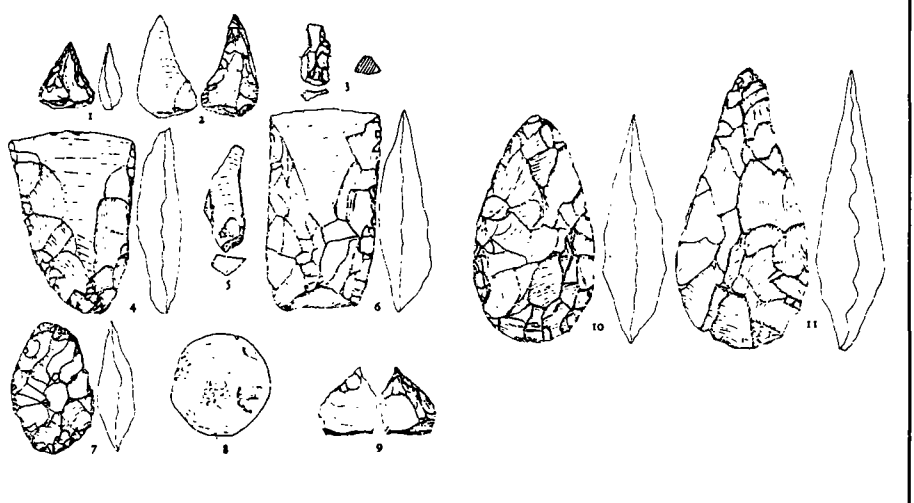
The Acheulian industrial complex

The earliest Southern African assemblages belonging to the Acheulian industrial complex come from two sites located at the junction of the Vaal and its tributary, the Klip, near Vereeniging. The tools are often abraded and are therefore not in their original context. A whole range of tools is represented: handaxes, cleavers, polyhedral stones, pebble tools, scrapers and flake tools. Occasional finds of other early-looking assemblages have been made in different parts of Southern Africa, such as Cape Province and



20.3 *Lower Acheulian hand-axe, flake and two core/choppers from the Middle Breccia, Sterkfontein (from R. Mason, 1962,* Prehistory of the Transvaal, *Witwatersrand University Press)*

20.4 *Upper Acheulian tools from Kalambo Falls, Zambia (large tools quartzite, small tools chert): (1) convergent scraper; (2) concave side scraper; (3) denticulated side scraper; (4) divergent edged cleaver; (5) flake knife with marginal retouch; (6) parallel edged cleaver; (7) ovate hand-axe; (8) spheroid; (9) awl or bec; (10) elongate ovate hand-axe; (11) lanceolate hand-axe. (After J. D. Clark, 1970,* The Prehistory of Africa, *London, Thames and Hudson)*



Livingstone in Zambia, but it is still difficult to put a date to them. In Southern Africa, *Homo erectus* was very probably responsible for these Acheulian industries, but no fossil discovery has so far been made.

It is with the appearance of the later, or more advanced, Acheulian that we begin to find a proliferation of sites in Southern Africa that seem to suggest a significant increase in the number of hominid groups. None of these sites is as yet accurately dated because they all lie well beyond the range of radio-carbon dating and the rocks with which they are associated are unsuited to dating by the potassium-argon method.

The most northerly site is that of the Kalambo Falls on the border between Zambia and Tanzania, where wood remains have been exceptionally well preserved and can be dated to more than 190 000 years before the Christian era. This date concurs with that from Isimila, in central Tanzania, and suggests that these Acheulian industries existed between 700 000 and 125 000 years ago. The Kalambo Falls occupation concentrations were situated on sandbanks close to the river. Pollen evidence shows that the temperature was higher and the rainfall rather lower than at the present time. Towards the end of the Acheulian sequence, however, there is evidence from the pollens and plant remains of lower temperatures and some increase in rainfall, which enabled certain plants to grow at elevations lower than they do today. Various wooden implements, including a club, digging sticks, bark fragments, and other remains were found in association with the handaxes, cleavers, flakes and scrapers forming the stone tool industry at this site. Some of these new living sites provided ample evidence of the use of fire. In addition, a large number of carbonized seeds and fruits belonging to edible plant species still used in the Kalambo Basin were discovered. As these become ripe in the closing part of the dry season, it is thought that these Acheulian living floors represent dry season camp sites that were occupied in the months of September and October.

At Mwanganda's, at the north-west end of Lake Malawi, an elephant appears to have been dismembered by three groups of individuals, since three separate piles of bones were found together with sets of Evolved Oldowan tools.

The favoured living places in Acheulian times were, however, always close to water, such as *dambos*, where game was in the habit of gathering and where water was always available. A site such as this exists at Kabwe (Broken Hill), adjacent to the celebrated *kopje* that produced the skull remains of *Homo rhodesiensis*. At Cornelia, it is possible that animals may have been driven into the mud in these *dambos* and then butchered. In the dry Karroo bush of northern Cape Province and Botswana, the Acheulian population settled around pans and shallow lake sites that abounded in the region at the time.

Yet another habitat favoured by Acheulian Man – the shoreline – is shown by the large site found at Cape Hangklip, False Bay, in consolidated dune sands overlying the beach. At this site the diet consisted of marine animals and shell fish.

Spring localities were also occupied, such as the Amanzi site in the present-day winter rainfall belt, south of the Great Escarpment near Port Elizabeth. On this site, tools were found that had been discarded, and trampled underfoot by elephants and other game, which had also come there to water.

Lastly, caves were sometimes occupied by Acheulian Man in Southern Africa. These included the Cave of Hearths at Makapan in the northern Transvaal, where the remains have yielded a human jaw fragment from a juvenile having affinities with *Homo*

rhodesiensis. This cave has also produced a number of tools of both early and later Acheulian forms.

The later Acheulian in Southern Africa probably extends from about 700 000 to 200 000 years before the Christian era. Here again, however, excavations will have to be made on a larger number of sites for this period to be better known. This would also make it possible to shed more light on the considerable complexity of the Acheulian industries, for although there are assemblages that consist mostly of handaxes and cleavers, there are others that comprise choppers and smaller tools of the Developed Oldowan pattern, and yet others where picks and more heavy-duty implements are added to the range. Similarly, there is infinite variety in the types of habitat and resources of these hunters of the later Acheulian.

The Final Acheulian or Fauresmith

Certain assemblages have long been known to exist on the high interior plateau. They are characterized by generally smaller-sized and well-made handaxes, a wide range of flake tools, core-scrapers and a small number of cleavers. The raw material used was lydianite (indurated shale) in the regions where that rock abounds, but elsewhere quartzite was more commonly used.

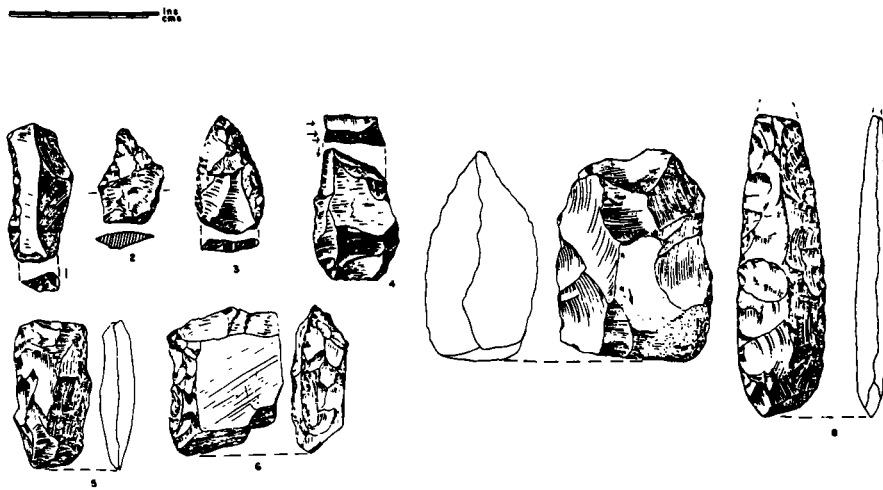
In this assemblage, a method of core preparation known as the disc-core technique, yielding several small flakes, is well represented; on the other hand, the Levallois technique, yielding one larger flake to each preparation of the core, appears to be absent. These industries have been termed Fauresmith, after the site in the Orange river region where these almond-shaped handaxes were first found on the surface. They appear to date from 115 000 to 80 000 years before the Christian era.

In the regions with heavier rainfall and more closed vegetation, the late Acheulian was replaced not by the Fauresmith, but by industrial entities with a high proportion of picks, core-axes, choppers and core-scrapers. This complex, which is known as the Sangoan, is found in Zambia, Zimbabwe, parts of south-east Africa and in the coastal regions of Natal. These assemblages are mostly undated, but at Kalambo Falls it has been possible to date the local manifestation of the Sangoan to between 46 000 and 14 000 years before the Christian era. The difficulty of correlation of these Sangoan-type industries is compounded by ecological and other factors, but the correlation between these heavy tool-kits and the heavy rainfall, thicker vegetation areas is undeniable.

In the Fauresmith and Sangoan, therefore, we can detect the beginnings of regional specialization in tool-kits reflecting adaptive patterns in the grasslands different from those in the woodlands and forests.

The Middle Stone Age

Some time between 100 000 and 80 000 years ago, the sea level began to drop from its previous highstand of 5–12 metres. Shortly after this time, Man began to occupy favoured localities on the recently abandoned beaches and in caves. At the same time, the semi-arid climate that became established over part of the equatorial region greatly



20.5 *Tools of the Middle Stone Age Lupemban Industrial Complex from Kalambo Falls: Rubble I, Site B1, 1956. All are in chert except 4, dihedral burin (silcrete) and 7, chopper (quartzite). 1, single concave side scraper; 2, denticulate, convergent and nosed scraper; 3, unifaced point; 5, core axe; 6, core scraper; 8, lanceolate ('Human behavioural in southern Africa during the later Pleistocene',* American Anthropologist, *vol. 73, pp. 1211–36)*

20.6 *Artefacts from Sangoan assemblages in the Zambezi Valley, near Livingstone, Zambia. 1 and 2, picks; 3 and 8, core axes; 4, disc core; 5 and 6, modified flakes; 7, spheroid (After J.D. Clark, 1950, 'The Stone Age cultures of Northern Rhodesia', South African Archaelogical Society)*

restricted the forest, which was gradually replaced by grassland and woodland offering a more favourable habitat for Man and game animals.

The underlying techniques of this time were the Levallois and disc-core methods for manufacturing flakes and making them into light-weight tools by direct percussion. In Southern Africa, the regional industries of the period can be grouped, on the basis of their technology, into three major units.

Group I is characterized by large prepared flakes made by the Levallois method and by long blades struck by direct percussion. Only a few sparse assemblages of this type are known, and these are undated.

Some assemblages appear to be contemporaneous with those of Group I, although they cannot be assimilated to them. For instance, at Florisbad, at a site dated 48 000 years before the Christian era (peat layer I), an industry of flakes, scrapers, polyhedrals, anvils and grindstones in dolerite has been discovered. This same layer has also yielded what appears to be the grip end of a curved wooden throwing-stick and a fragment of a human cranium. At Chavuma, in Zimbabwe, the industry is characterized by picks and a few handaxes and lighter tools, including points, scrapers and blades made of chalcedony, opaline breccia, quartzite and quartz. The Twin Rivers industry, in Zambia, which has been dated to about 22 000 years before the Christian era, resembles that from Chavuma.

Group II consists of a large number of assemblages from both caves and surface sites, generally dating between 40 000 and 20 000 years before the Christian era. These industries are characterized by the use of two flaking techniques, the Levallois and the so-called disc-core, both of which were used to produce triangular flakes and an increasingly large number of blades, chiefly from quartzite and lydianite. These tools are found in the winter rainfall areas south of the Great Escarpment, in south-west Africa, and in the Orange Free State and Transvaal region.

Group III ranges in age from 35 000 to 15 000 years before the Christian era. It is distinguished by a much larger number of extensively retouched artefacts. In general, the tools have smaller dimensions and show a refinement in the retouching that is not found in the earlier groups.

In addition to these three groups a fourth group (Group IV), known as the *Magosian* or 'Second Intermediate Complex', has been identified. This combines an evolved and often diminutive expression of the disc-core and Levallois techniques with the manufacture of delicate, often ribbon-like, blades struck from cores by means of a bone, horn or hardwood tool. The raw materials selected were often crypto-crystalline rocks. These Group IV industries do not date back to more than 15 000–20 000 years ago and are found in Zimbabwe, Zambia, the eastern Orange Free State, the southern Cape Province and parts of Namibia.

Assuming for the moment that the assemblages are homogeneous, the overlap between the dates mentioned above shows that a developed blade technology was present in Southern Africa contemporaneously with the prepared flake technologies of the traditional Middle Stone Age. The situation is not dissimilar to that in North Africa, where contemporaneous industrial complexes – the Dabban and the Aterian – are found to display regional differences. Rather than look for the reasons for this situation in wide-scale human migrations, it may be preferable to stress the

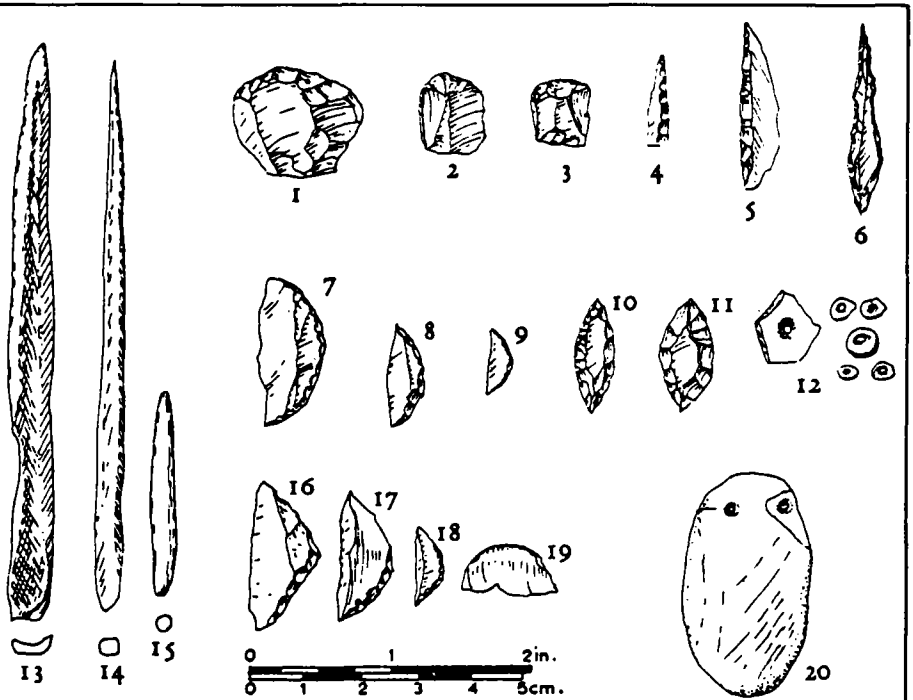
possibility that isolated groups living in comparable environments evolved similar patterns of adaptation.

In a bid to bear out these assumptions, it is necessary to review briefly the fossil evidence from Southern Africa after the end of the Acheulian, with which the very similar skulls of Saldanha and Kabwe (Broken Hill) are believed to be associated. However, although it may be suspected that the virtually complete Saldanha skull and other remains associated with it are representative of the kind of hominid responsible for the local Sangoan and final Acheulian, this cannot be proved until the datings are more reliable. The Saldanha and Broken Hill fossils are morphologically similar to the one found in Bed IV at Olduvai Gorge (H. 12) and the one from Njarassi in the East African Rift Valley. This would seem to suggest that these rhodesoid forms that were related to *Homo sapiens* replaced *Homo erectus* in the subtropical regions of sub-Saharan Africa more than 100 000 years ago.

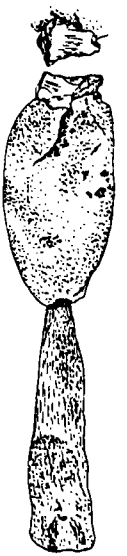
Another vestige of this hominid is to be seen in the Florisbad skull, which has been dated to 48 000 years ago and has a robust morphology close to that of modern Man. Some 10 000 years ago, genetically related, but regionally distinct populations, the remote ancestors of some of the present-day peoples, had become differentiated – the San bushman stock, both large and small, in Southern and east Central Africa; the negroid in equatorial and West Africa; and the nilotic form in East Africa. The fossil evidence is fragmentary and usually confined to a single specimen. In addition, the appearance of modern Man in the prehistoric record is associated with a series of innovative cultural practices and traits. The multiplicity and standardization of different types of tool, the frequency of burial places and the placing of objects with the dead, and the more widespread use of pigment for decoration, all bear witness to the evolution of *Homo sapiens* towards a life-style involving more ritualistic and symbolic aspects. Grinding equipment makes its first appearance with the Group III and IV occurrences and more particularly after about 25 000 years before the Christian era. A whole set of heavy-duty tools discovered in Zambia is a reflection of an exploitation pattern more suggestive of the cultivation of food plants.

Fewer features are known from Middle Stone Age sites than from those of the Acheulian. The Cave of Hearths at Makapan provides evidence as to how fireplaces and housing shelters were distributed. Several stone foundations pointing to the existence of wind-breaks have been discovered at the Orangea I site. In Swaziland, haematite for use as pigment appears to have been first extracted as early as 28 000 years ago. Anvils and former hearth-floors have also been found in the Middle Stone Age horizons at Kalambo Falls and have been dated to about 27 000 years before the Christian era. At all these sites, the variety of animal remains would appear to suggest that there had been a distinct improvement in hunting techniques.

While the Middle Stone Age of Southern Africa is broadly contemporaneous with the Upper Palaeolithic in Europe, its earlier stages, although very inadequately known, appear to be more generally contemporary with the European *Mousterian* or the Jabrudian of the Middle East.



20.7 *Utensils and decorative objects from the Later Stone Age Wilton complex (after J.D. Clark, 1970,* The Prehistory of Africa, *London, Thames and Hudson)*



20.8 *Crescent adze-flake or scraper in chert, mounted in mastic, with rhino horn handle, from a cave at Plettenberg Bay, Eastern Cape Province, South Africa (after J.D. Clark, 1970,* The Prehistory of Africa, *London, Thames and Hudson)*

The Late Stone Age

In Southern Africa, the conventional picture of the Late Stone Age is one of industries producing very small-sized 'microlithic' tools, usually referred to as Wilton after the cave sites in the western Cape Province. At some of the sites in the subcontinent, however, what has come to be known as pre-Wilton industries have been recognized. These made their appearance about 20 000 years before the Christian era and represent a radical change in stone tool technology. The prepared core techniques of the Middle Stone Age are replaced by occurrences with informal cores and irregular flakes struck from them. The only consistently formal tools are large scrapers, together with several small forms of flake and convex scraper. Specimens of all these are known from sites at the south coast, and from the Orange Free State, Transvaal and Namibia, where these findings are associated with the dismembering of three elephants.

In Zimbabwe, the equivalent industry is the Pomongwan, which dates from 9400 to 12 200 before the Christian era, whereas in Zambia it is dated from 21 000 to 23 000 years before the present. This radical technological change accordingly seems to have been fairly widespread between about 20 000 and 9000 years ago. It may have been the outcome of the environmental changes occurring at the time, which were responsible for dictating other hunting methods.

These pre-Wilton industries are associated with the hunting of large ungulate fauna, such as hartebeeste, wildebeeste, blue antelope and quagga. In addition, the existence of a large number of marine animals in the faunal remains indicates that the rise in sea level during this period had made it possible to engage in the direct harvesting of food resources from the sea.

The microlithic tradition is associated with the development of more efficient forms of composite tools, the most significant of these being the bow and arrow.

Many Late Stone Age sites are known and there is reason to believe that there was a significant increase in population during this period. This seems to be borne out by the expansion of hunting and the new techniques it involved: caves and shelters came to be increasingly occupied, local resources were exploited more intensively, and hunting became more important and more specialized. The pattern of exploitation was probably not very different from that of the present-day Kalahari San and other hunter groups living in the arid regions.

There must have been ample opportunity for these hunters to indulge their intellectual interests, some of which are manifest in the magnificent rock art of the Drakensberg mountains, Zimbabwe and Namibia. Although much of the art may not be more than 2000–3000 years old, it provides a well-documented record of these hunters' life-styles.

In the very first centuries of the Christian era, the Late Stone Age hunting–gathering populations were replaced over much of Southern Africa by agricultural peoples skilled in the techniques of metallurgy. These populations are most likely to have been an advance guard of Bantu-speaking groups that migrated into the subcontinent from a homeland somewhere in the north–west. There is accordingly no evidence for the cultivation of any plants before the coming of the Iron Age peoples, although some of the Late Stone Age groups in the south–west had been familiar with sheep and

cattle-raising at least by the first century before the Christian era. There is also some debate as to the source from which they obtained their stock. Some suggest, on linguistic grounds, that it was from the eastern and central Sudan. Whatever the original source, this pastoral phase can hardly have begun before about 300 before the Christian era, and it came to an end in the eighteenth century of the Christian era.

The record provided by prehistoric studies in Southern Africa shows the high interior plateau lands to have played a leading part in the evolution of Man the tool-maker. The increasing ingenuity and efficiency with which succeeding hominid populations developed and combined adaptations and innovations demonstrate the great antiquity and continuity of many cultural traits which still persist to the present day.

21 *The prehistory of Central Africa*

PART I

Geographically, the Zaire Basin extends from the Gulf of Guinea in the west to the great lakes region in the east and approximately from latitude 10° south in Angola and Shaba (formerly Katanga) to the watershed of the hydrographic basins of Lake Chad and the River Zaire in the north.[1]

It lies mainly in the equatorial zone and its plant cover consists of some of the densest forest to be found in Africa. This forest belt is known to have extended much further north during certain very wet periods than it does at present. In the light of recent research, prehistoric cultures, and more particularly those coming after the Acheulian, are thought to have developed locally, conditioned by the primeval forest and without any contact with the inhabitants of those areas where the vegetation was less dense. At a much later date, the large-scale migrations of the Neolithic pastoralists were to skirt the northern edges of the forest without penetrating it. Any contacts that may have existed have to be sought more in the east and south of the continent.

Moreover, the fact that the forest was difficult to penetrate has prompted a number of prehistorians to suggest that this zone was very sparsely populated in prehistoric times. However, the findings of recent expeditions and the vast number of pebble tools that have been collected now go to show that the tropical forest was, in fact, as thickly populated as other parts of Africa.

Assertions to the contrary, which have now tended to become superseded by events, probably stemmed from the fact that, in the humid equatorial zone, the acidity of the soils prevented the preservation of organic remains, such as wood, leather, horn, bone and so on, and that consequently few skeletons and artefacts have been found on archaeological sites.

Basic chronology

As a result of recent research, it is possible to distinguish three main pluvial periods, followed by two periods during which rainfall tended to increase again, although to a

1. The term Central Africa is taken to include the following countries: Zaire, the Central African Republic, the People's Republic of the Congo and Gabon, as well as parts of Angola, Rwanda and Burundi.

lesser degree. These periods were interspersed with shorter dry phases.

The *Kageran* pluvial

This appears to have been the most significant pluvial. It was a period of intensive valley excavation, during which the very old gravel terraces containing the pre-Lower Acheulian industries – the earliest industries of the Zaire Basin – were formed. A long arid period followed the Kageran pluvial and the old terraces were covered with a thick mantle of laterite, in which a more evolved, but imprecisely dated pre-Acheulian industry has been found.

The *Kamasian* pluvial

This pluvial occurred at the end of the Lower Pleistocene and lasted throughout the Middle Pleistocene. It consisted of two phases separated by a relatively dry period during which, in regions of low-lying relief, some river-beds were completely filled in and rivers cut out new courses. In the lower strata of these fossil river-beds, pre-Acheulian tools that were more highly developed than those of the Kageran pluvial, including the first bifacial implements, have been discovered.

After the end of the Kamasian pluvial, the chipped pebble tool industries were superseded by the Lower Acheulian, with its handaxes of much superior craftsmanship.

The first Kamasian climax was followed by a moderately dry phase, which was responsible for the formation of laterite, slope scree, river silt and argillaceous sediment. The Middle Acheulian industry belongs to this climatic period, which witnessed the development of a specific flaking technique akin to the Levallois side-core technique, known as the Victoria West I method.

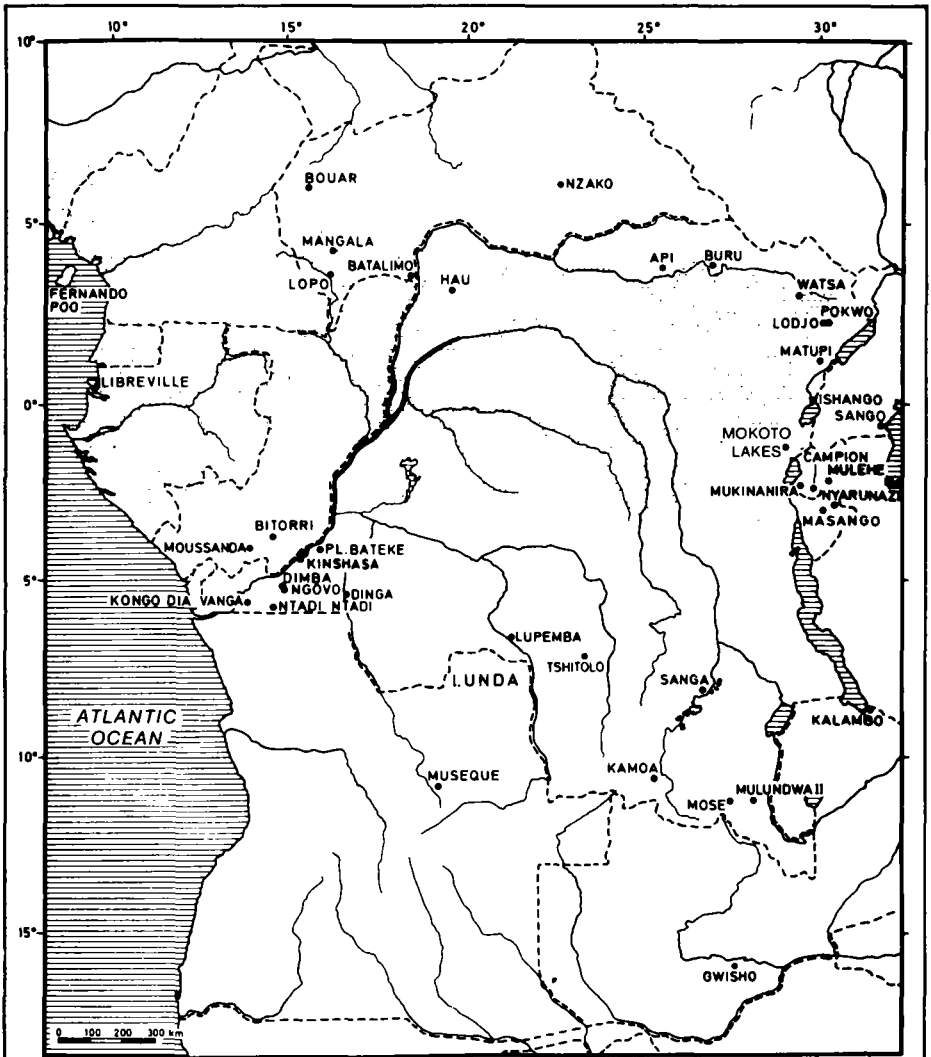
During the second, less pronounced Kamasian climax, the Acheulian industry continued to evolve, with the development of the pick, which was to become a very important tool in the forest zone.

The post-*Kamasian* arid period

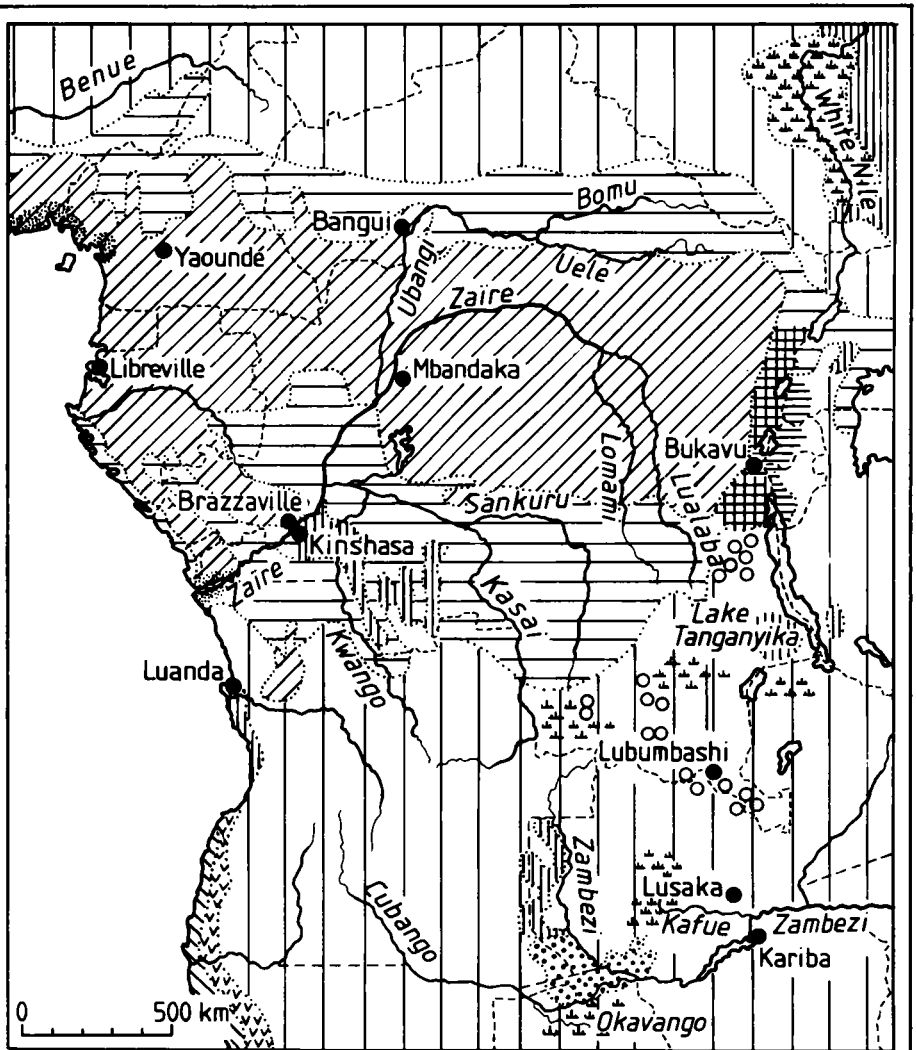
This was the most arid period in the region. The Sahara spread southwards and the Kalahari desert northwards, while the equatorial forest virtually disappeared altogether. The Acheulian industry gave way to the Sangoan, which was characterized by an abundance of picks and heavy-duty handaxes.

The *Gamblian* pluvial

In the course of the Gamblian pluvial, the equatorial forest zone returned to its former state and the rivers hollowed out valleys and deposited layers of silt in low-lying terraces. The Sangoan industry tended to evolve into a new and less massive industry known as the Lupemban, which is also regarded as a forest culture. Industries akin to those of South Africa and Kenya, which are identified with the Middle Stone Age, developed in the south-eastern regions.



21.1 *Central Africa: places mentioned in the text (F. Van Noten)*



21.2 *Central Africa: vegetation zones (F. Van Noten)*

The *Makalian* and *Nakuran* periods

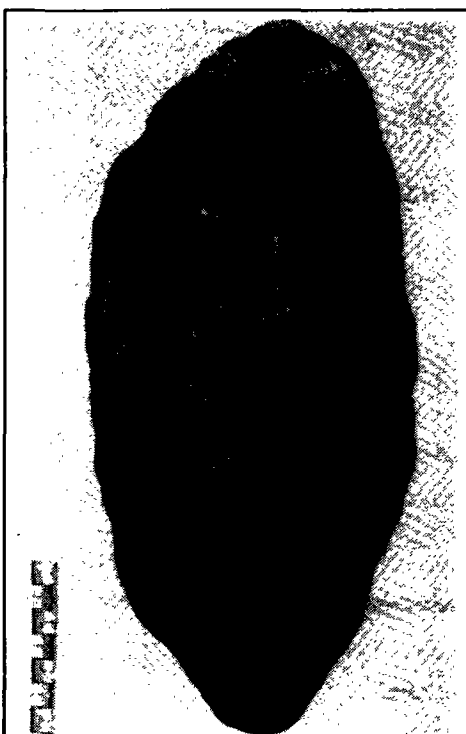
These two post-Gamblian wet periods were much less marked than the pluvials that preceded them. They were separated by a short dry phase and indeed the Nakuran is not very clearly differentiated in the Zaire Basin. In the Makalian, the rivers hollowed out shallow beds and these were then filled in again. The Lupemban industry evolved locally and the Tschitolian, which followed it, saw the appearance of skinning-knives and arrow-heads.

During and after the Nakuran wet phase, Neolithic industries, including the Tschitolian, spread over the whole of equatorial Africa. On the other hand, the Copper and Iron Ages did not penetrate into this region until a much later date.

Prehistoric industries of the Zaire Basin

Pre-*Acheulian* industries

In Zaire and the Central African Republic, these pebble tool industries are found in old lateritic terraces or in deep alluvial river-bed deposits.



21.3 *Upper Acheulian hand-axe from the River Ngoere, Upper Sangha, Central African Republic (Museum National d'Histoire Naturelle)*

Kafuan
The Kafu site is in Uganda. The industry there consists of river pebbles from which three flakes were removed in three main directions to form a crude cutting edge. The Kafuan is divided into four technological stages, the last of which is close to the Oldowan. However, some authors cast doubt on the purported human origins of the Early Kafuan chipped pebbles.

Oldowan
This industry, which was first identified at Olduvai Gorge in Tanzania, consists of river pebbles that are generally not as flat as those of the Kafuan. The pebbles were shaped by removing flakes on alternate sides to produce a curved cutting edge. This industry has been found in Shaba and in the west of the Central African Republic; it probably also existed in Angola, Cameroon and Gabon, although its presence on the seaboard of the Gulf of Guinea is not certain.

The *Acheulian* industry

The breakdown of the Acheulian into four or five stages is bound up with the tool-shaping and retouching techniques used, rather than with a clear-cut chronological sequence. The Acheulian deposits largely consist of alluvial formations and are therefore seldom in their original stratigraphic context. This gives rise to a host of dating problems. The Acheulian industry still uses pebble tools, but handaxes and cleavers – and even picks in Central Africa – become more important.

Acheulian I
The tools consisted of very large flakes produced by striking blocks of stone against a fixed support. These flakes were then used to make handaxes and cleavers, which were massive heavy-duty tools with curved cutting-edges. Chipped pebble tools were also present in large numbers.

This stage is represented in Shaba, Angola and the Central African Republic, in low-lying terraces or alluvial formations, by crudely chipped pebbles that have been worn down by water action.

Acheulian II
This industry is very similar to that of the previous stage and is likewise found in the same regions of Central Africa. However, the tools are less water-scoured and, above all, are better finished than the Acheulian I tools. Signs of retouching with a wooden or bone hammer can be observed on the edges of the handaxes and cleavers, making them straighter.

Acheulian III
This industry is found near the surface in gravel deposits in Shaba. It was at this stage that a technological innovation was introduced, in that the core was first prepared for the purpose of producing large-sized flakes. This technique is known as Victoria

West I.[2] The preparation of the core gave a multi-faceted striking platform from which flakes were removed and then reworked to produce handaxes or cleavers with a regular and symmetrical profile.

Acheulian IV
At this stage, the chipping and flaking techniques were basically the same, but the core was made rounder than in Stage III and the retouching of the handaxes and cleavers was more refined. This Upper Acheulian industry is found near the river Kamoa and in Kasai and Shaba.

Acheulian V
The final Acheulian stage corresponds to the existence of human settlements on the middle and lower dried-out river terraces. In addition to earlier trimming techniques, the Levallois technique came to be used. The use of picks also became more widespread, presumably in connection with wood-working. Stone balls similar to South American 'bolas' have likewise been found. Instances of this final Acheulian stage have been discovered in the Mangala river deposits in the Central African Republic, on the Kamoa in Shaba and in Angola.

Unfortunately, nothing is known about the people of this culture for, as a result of the acidity of the soil, no human bones or organic remains have been preserved in any part of the Zaire Basin.

The *Sangoan* industry

The original site of this complex is Sango Bay, on the west bank of Lake Victoria. The Sangoan industry stems directly from the local Acheulian culture without any trace of external influence. It was contemporary with the end of the Kanjeran pluvial and lasted during a transition phase between that pluvial and an arid period. The stone tools found consist of massive handaxes, a few rare cleavers, flaked pebbles, a large number of picks and, above all, multi-purpose tools such as chisel-picks and plane-picks, which were presumably designed for wood-working. As the Sangoan industry evolved, these tools became smaller in size, while the flaking technique came close to perfection.

The Sangoan industry is very widespread in such locations in the Zaire Basin as the Kinshasa plain and upper Shaba, where it differs from that of the western areas in that no daggers or leaf-points are present. The richest Sangoan deposits are undoubtedly those in the Central African Republic, where their state of preservation is quite remarkable. Like the Acheulian before it, the Sangoan industry evolved locally, without much contact with the world outside its forest environment.

The *Lupemban* industry

According to the classification recommended by the Pan-African Congress of Prehistory held in 1955, the Lupemban is a Middle Stone Age industry that marks an advance on its Sangoan predecessor.[3] The Lupemban developed at a time when rainfall patterns were

2. Victoria West: name given to two Levallois flaking techniques noted in particular in the industries discovered in the vicinity of the Victoria Falls, on the Zambezi.
3. Lupemban: named from the prehistoric site of Lupemba in Kasai. The term was first used by Abbé H. Breuil.

returning to normal at the beginning of the Gamblian pluvial, and it lasted almost 25 000 years. At the beginning of the Lupemban period, a few handaxes were still being made, but these were soon to be phased out, and no cleavers at all have been found. The Levallois technique was used to produce blades and flakes, and these were trimmed by hammering. At a later stage, a more advanced technique consisting of chiselling or punching was used to produce blades. The Levallois technique continued to predominate in the production of flakes. The Lupemban is marked by five stages.

Lupemban I
Examples of this stage are found throughout the western Zaire Basin, where the industry seems to have been an offshoot of the Sangoan. Points, daggers and actual arrow-heads began to appear at the end of this stage.

Lupemban II
This stage was identified at Pointe Kalina and specimens have also been found at Stanley Pool. The leaf-shaped chisels of Stage I evolved into hatchets. Straight-edged chisels and a new type of cutter replaced the earlier Sangoan models, and weapons included daggers with very thin, finely flaked leaf-points.

Lupemban III
This industry is known from surface deposits at Stanley Pool and in Angola. At this stage, stone-shaping skills had reached their peak of perfection as a result of the pressure-trimming technique, which was used in preference to hammering. Tools of the early Lupemban type, such as picks, chisels, small handaxes, scrapers, cutters and blades, have also been found at these sites, but they are smaller in size. An increasingly wide variety of leaf-shaped, tanged and denticulated arrow-heads can be observed.

Lupemban IV
Very little is known about the Lupemban IV stage. Its main feature would seem to have been a change in the flaking technique.

Lupembo–Tschitolian
This final stage seems to have occurred during an arid phase, situated chronologically just before the first Makalian wet period. The known deposits are located on gravelly alluvium formations or at the bottom of the wet layer overlying them, in many instances on river islands.

The flaking technique at this stage was still of the Levallois type. Retouching, on the other hand, represented a combination of hammering, pressure and steep trimming. The tool kits still included chisels, gouges and handaxes, but no more scrapers or backed blades were produced. In addition to the normal cutters, there were 'micro-cutters' which, in some instances, have been taken for arrow-heads. Arrow-heads themselves became varied in shape – leaf or lozenge-shaped, barbed, more seldom denticulated and tanged.

In Angola, this stage is dated to 11 000 years before the Christian era. It has not yet been identified in the Central African Republic and Cameroon, although it may have existed in the People's Republic of Congo and Gabon.

Prehistoric cultures in non-forest environments

While the Lupemban industry continued in the forest zone in the west of the Zaire Basin, other cultures – the Proto-Stillbay, the Stillbay and the Magosian – were developing in Shaba and eastern Angola.

Proto-Stillbay and *Stillbay*

These two industries are not appreciably different from one another, and in both cases the tool-kits comprise single-face points, end-scrapers, arrow-notches, throwing stones, a few handaxes and thick semi-leaf points. The retouching is steep and the Stillbayan style proper displays greater mastery of the Levallois technique. The oldest human remains found in Zaire also belong to this second stage. These consist of two molars discovered along with quartz pebbles and a bifacial point in the bone-bearing breccias of Kakontwe.

Magosian

This industry was originally identified in Uganda. It is a culture in which a number of Stillbay features are found and it includes microlithic tools too. The Magosian also exists in Shaba, but no clearly defined site has yet been revealed.

A Mesolithic industry: the Tschitolian

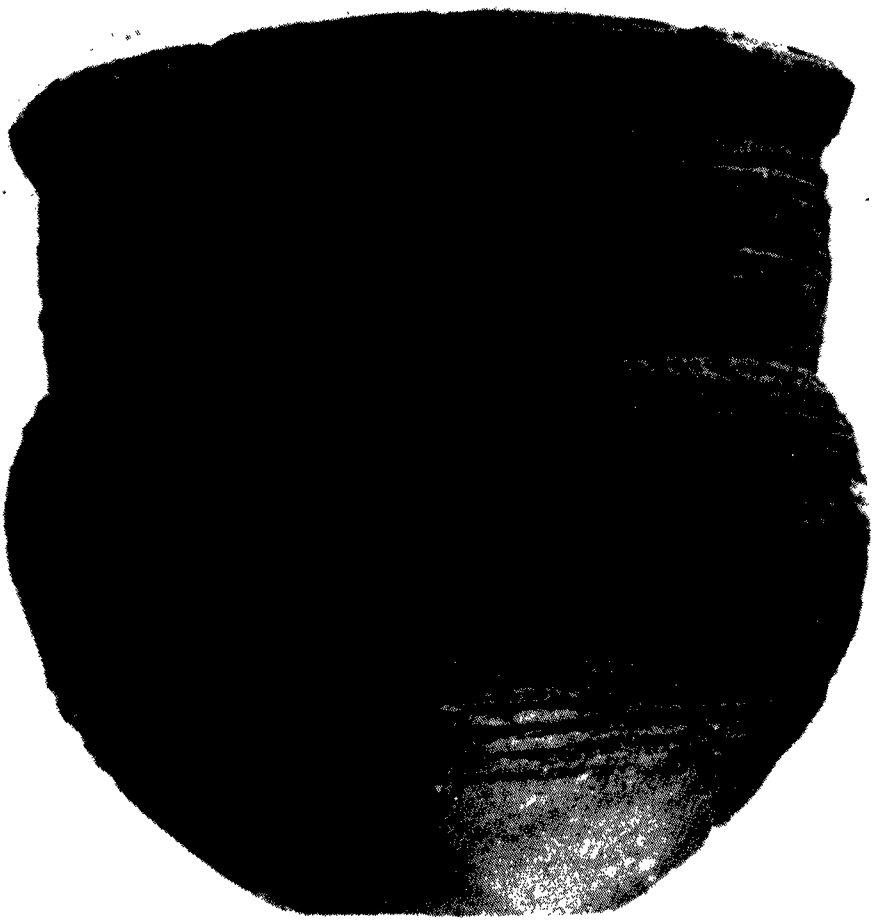
Two relatively dry periods caused the equatorial forest to recede, particularly at high elevations, and Tschitolian man accordingly settled on this high-lying land.[4] A number of new tools made their appearance, many of which were of the microlith type. Since the weapons of the Tschitolian industry are confined to arrow-heads, it can be regarded as being a pre-Neolithic culture with neither pottery nor polished axes. It emerged as a late form of African forest culture prior to the development of the Neolithic culture of western Zaire.

The Neolithic industry

The Neolithic culture of the Zaire Basin is contemporaneous with the last short pluvial known as the Nakuran. The climate was much the same as it is today, although the forest cover was denser, since it had not yet suffered from the inroads made by man.

Coming from the north, after having crossed the river Zaire, the peoples of a Neolithic culture known as 'Western Congo' gradually spread into the region. The distinguishing feature of this Neolithic culture is the almost exclusive use of rocks such as schist, quartz and jadeite, which were difficult to work and produced very poor tools. The tool kits include crude picks, chisels, roughly flaked pebbles, pierced stones and, above all, a large number of axes; the last-mentioned were first cut to shape and then finely polished. Arrow-heads were often made of quartz and were of poor workman-

4. Tschitolian: this term was coined when a stone tool deposit was found at Tschitolo in Kasai, Zaire.



21.4 *Flat-bottomed Neolithic vase from Batalimo, Lobaye, Central African Republic (Laboratoire de Préhistoire, Museum d'Histoire Naturelle)*

21.5 *Megalithic monument in the Bouar region, Central African Republic (R. de Bayle des Hermens)*

ship. At some sites, such as Ishango, bone tools, consisting chiefly of harpoons, are associated with abundant pottery remains.

Neolithic sites have also been found in western Kwango, on both banks of the river Zaire between Stanley Pool and Congo dia Vanga, as well as in Gabon and the Central African Republic. These sites seem to have existed until quite recent times, since the introduction of metals into this forest zone took place at a very late date, the use of iron being dated to the ninth century of the Christian era.

Megalithic monuments

Megalithic cultures only existed in Cameroon and the Central African Republic.[5] The monuments in the Bouar region, in the Central African Republic, are particularly spectacular. They take the form of tumuli of varying sizes, and are spread over an area some 130 kilometres long and 30 kilometres wide.[6] The excavations carried out on these

5. Megaliths are monuments built of rough-hewn or dressed blocks of rock, or standing stones set out in groups or individually according to a definite plan, such as a circle.

6. Tumulus (or mound): a pile of earth or stones covering a burial place.

monuments have not produced any conclusive archaeological evidence, but the first structures can be said to date to about 5500 years before the Christian era and the most recent to about 450 years of the Christian era. The latter date seems to suggest that they were used a second time.

Rock art

Lying as it does between two major regions where rock art flourished – the Sahara and South Africa – the Zaire Basin also has its rock art. In Cameroon and Angola, the predominant form consists of geometrical designs engraved on rock slabs. More recent paintings have been found in the Shaba province of Zaire. The art of this group is abstract and not representational like that of South Africa.

In the Central African Republic, the rock art is situated in the north and east of the country. In the former region, rock shelters contain paintings in red ochre representing human figures and signs. In the east, engravings predominate, again on rock slabs, and appear to be the work of people who were already familiar with iron.

This art is very similar to that found in Bantu areas and hence it is recent and may date even to historical times. Even so, it is an important pointer to the study of population migrations in a little-known period of protohistory or of the nascent history of tropical Africa.

PART II

For the purpose of this section of the chapter, Central Africa is considered to include Zaire and some of the countries bordering it, namely the People's Republic of the Congo, Gabon, Rio Muni, the Central African Republic, Rwanda, Burundi and Angola.

The density of the forest, the climatic conditions and the acidity of the soil have made it difficult to discover and preserve identifiable archaeological sites and remains with any accuracy. In Central Africa, probably to a greater degree than anywhere else, the habitual sequence of Early, Middle and Late Stone Ages, separated by intermediate periods, is no longer really acceptable in chronological or even in typological terms. These broad categories can only be regarded as extremely relative and provisional. For many years, Central African prehistory consisted only of typology and chronology and very little attention was paid to Man. However, we are firmly convinced that it is impossible to establish major well-defined cultural areas. We must be content with noting the presence of Man without being able to tell whether he evolved *in situ* or came from somewhere else. Man certainly adapted at a very early stage to well-defined habitats, each with its own particular climate, flora and fauna. The outcome is identifiable areas, sometimes with certain features in common, but also displaying regional and even local variations that cannot be accounted for merely by the influence of changing ecological conditions.

Geographical background

The morphology of the Central African region is the result of a series of tectonic movements that date back to the beginning of the Tertiary era and may not yet have ended.[7] The central basin, which does not rise more than 500 metres above sea level, is girdled by plateaux and mountains. The relief of the ancient substratum is very distorted.

Apart from the southern Angolan seaboard and the Cubango–Zambezi basin, rainfall in the Central African region is plentiful and regular all the year round. The rain forest that has accordingly developed covers the Zaire Basin and the greater part of the People's Republic of the Congo, Gabon, Rio Muni and southern Cameroon. This equatorial forest is bordered by thick semi-deciduous forest, which is often very degraded, but is capable of surviving a two- or three-month dry season. Forming an arc around the dense forest zone of the Gulf of Guinea, open woodland and Sudano–Zambezi savannah cover an area embracing central Cameroon, the Central African Republic, southern Sudan, eastern Rwanda, Shaba, Zambia and Angola, where the dry season may last for as long as seven months in the year. Very marshy depressions occur along the courses of rivers, especially on the White Nile, in the Zaire Basin and the Upemba depression in Zaire, and in the Zambezi Basin in Angola and Zambia.

The evolution of the environment

In prehistoric times, however, the vegetation pattern was affected by significant climatic variations known as pluvials and interpluvials (arid periods). The pluvials, which are considered as contemporaneous with the glacial periods in the northern hemisphere, have been named, from the earliest to the most recent, the Kageran, the Kamasian and the Gamblian. Two later wet phases – the Makalian and the Nakuran – which occurred at the beginning of the *Holocene*, were subsequently identified. The evolution of the environment in Central Africa has thus been greatly influenced by the climatic conditions existing over the past 50 millennia, which can be deduced from the study of present-day forms of vegetation and ancient pollen evidence that have made it possible to reconstruct the ancient cover.

Thus, from 50 000 to 10 000 years before present, Central Africa passed through a long dry phase contemporaneous with the last European glaciation, the Würm, while the wet phase that started about 12 000 years ago might be said to correspond to the climatic fluctuations marking the beginning of the Holocene. During this long dry period, which may have been interrupted by a more humid interlude about 28 000 years before the Christian era, there was a significant extension of the woodland savannah, while, in the course of the humid period, the dense forest spread to cover the greater part of Central Africa. Its retreat in modern times has only been due to the hand of Man.

7. The Tertiary era consists of five stages, these being, from the oldest to the most recent, the Palaeocene, the Eocene, the Oligocene, the Miocene and the Pliocene. It covers a period ranging from some 65 million to 1.8 million years ago.

The peopling of Central Africa

In the absence of human bones, which have been destroyed by the acidity of the soil, it is generally acknowledged that the first sign of Man is represented by the chipped pebbles known as pebble tools. These are comparable to those found at Olduvai Gorge in Tanzania. Similar artefacts are to be found over virtually all Central Africa – in the Kasai basin and Shaba in Zaire, in Cameroon and Gabon, in the Central African Republic and in north-eastern Angola. We feel that it is wrong to regard these pebbles as actual tools, since they chiefly consist of rock cores of raw material from which flakes have been removed. The real tools were the flakes, which were either used as they were or were trimmed to form end- or side-scrapers.

No living-site dating from this period, which goes back some 2 million years, has yet been found in Central Africa, nor has any trace been found of the wood or bone implements, which presumably represented just as important a part of the tool-kits used by these first hominids.

It is only with the appearance of Acheulian tools that indisputable evidence exists of human presence in Central Africa. Its earliest stage, the Lower Acheulian, is known only from the Lunda region, whereas the most recent, the Upper Acheulian, which is usually found in arid environments, has been discovered in various places in the central basin, Angola, Rwanda, Zaire and the Central African Republic.

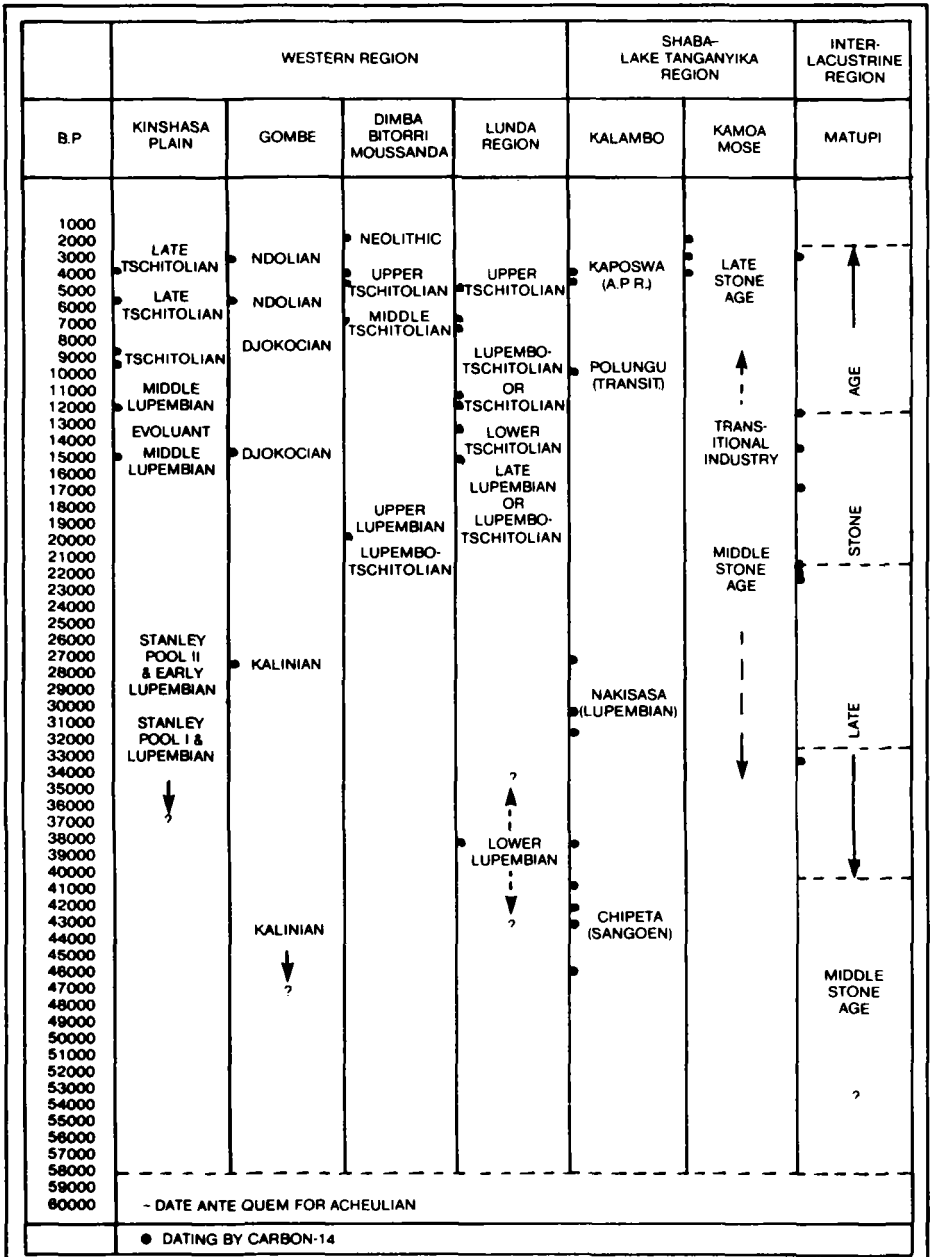
The characteristic features of Acheulian industry consist of handaxes and cleavers, and various attempts have been made to classify them by their shape. Some authors have identified five different stages in the region. Alongside these tools, a variety of other artefacts have been found including trihedrals, picks, knives, spheroids and sundry small tools. One of the few stratified sites at which the Acheulian culture has been found is on the banks of the Kamoa river in Shaba, which is thought to have been some kind of workshop-cum-living area that was occupied on a seasonal basis. The raw materials used for making the tools were brought from a location 1.5 kilometres from the actual site. The cores were fragmented *in situ*, and only the flakes produced were transported to the living area to be converted into tools. The earliest dating for this site goes back to 60 000 years before the Christian era.

The type of Man responsible for these industries can only be surmised by analogy with other regions in Africa, where *Homo erectus* has been found in association with Acheulian tools.

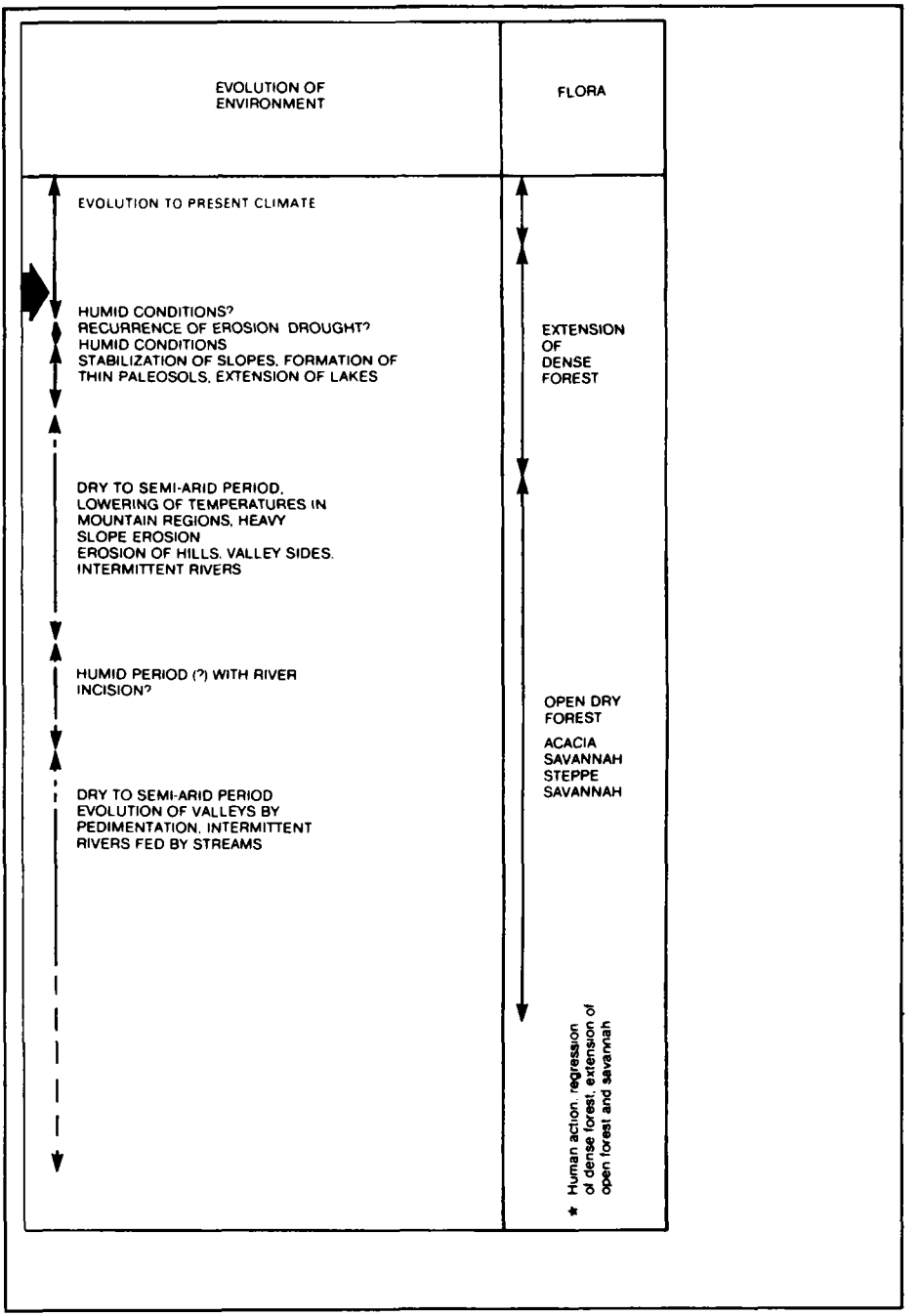
Adaptation and technological development

Post-Acheulian industries from a number of regions, although often differing from one another, nevertheless give the impression of some degree of unity. For practical purposes, the geographical area being examined can be divided into a western part and an eastern part. In the western part, which extends from Angola to Gabon, the region about which most is known covers the south-western Zaire Basin whereas the eastern part covers the interlacustrine region and the area from Shaba to Lake Tanganyika.

In the western part, a set of industries has been tentatively identified and these are generally interpreted as forming a chronological and typological sequence consisting of



21.6 *The names of the industries, present carbon-14 dating, the evolution of the environment and flora (F. Van Noten)*


EVOLUTION OF ENVIRONMENT
FLORA
EVOLUTION TO PRESENT CLIMATE
HUMID CONDITIONS?
RECURRENCE OF EROSION DROUGHT?
HUMID CONDITIONS
STABILIZATION OF SLOPES, FORMATION OF THIN PALEOSOLS, EXTENSION OF LAKES
EXTENSION OF DENSE FOREST
DRY TO SEMI-ARID PERIOD, LOWERING OF TEMPERATURES IN MOUNTAIN REGIONS, HEAVY SLOPE EROSION
EROSION OF HILLS, VALLEY SIDES, INTERMITTENT RIVERS
HUMID PERIOD (?) WITH RIVER INCISION?
OPEN DRY FOREST
ACACIA SAVANNAH
STEPPE SAVANNAH
DRY TO SEMI-ARID PERIOD
EVOLUTION OF VALLEYS BY PEDIMENTATION, INTERMITTENT RIVERS FED BY STREAMS
* Human action, regression of dense forest, extension of open forest and savannah

the Sangoan, followed by the Lupemban and, lastly, the Tschitolian. There are crude picks such as were already found in the Acheulian and these persist right up to the Tschitolian. Hence, this artefact cannot be regarded as being a specifically Sangoan tool. In some instances, it is found in association with an industry where very fine workmanship produced beautiful leaf-shaped lance-points and long daggers. Arrow-heads subsequently appear, bearing witness to the use of the bow and arrow for hunting.

The eastern part displays a much more complex set of industries. These are comparable with those in the western part, but bifacial flaking is less common. On the other hand, the so-called Mousterian and Levallois flaking techniques are very widespread. The Sangoan and Lupemban industries in this part are quite typical and make it possible to distinguish two different areas: that covering the northern part, or Great Lakes region, is represented by leaf- and spear-shaped bifacial tools and by daggers, whereas the other, covering the southern part (that is, Shaba and the shores of Lake Tanganyika), does not contain any points, but has chisels and gouges that are not present in the Great Lakes region. This finding runs counter to the distinction made between forest industries and savannah industries, and indeed no particular region appears to have been more forest-covered than any other at that period. This interpretation is borne out by the climate, which was presumably drier than it is now. It was only towards the end of the period that the forest began to spread. *Homo sapiens* seems to have been responsible for these cultural artefacts, although no bone remains have been recovered.

By and large, the Lower Sangoan–Lupemban can be put at between 45 000 and 26 000 years before present, the Lower Tschitolian between 10 000 and 7000 years before present, and the Upper Tschitolian between 6000 and 4000 or 3500 years before present.

Specialized hunter–gatherers

At a given moment, probably between 50 000 and 40 000 years before present, very small chipped tools, or geometrical microliths, consisting of segments of circles, triangles, rectangles and trapezoids, started to make their appearance. They were first used in the Middle Stone Age and became widespread during the Later Stone Age, when they were used as arrow-heads, lance and harpoon-points, and knife blades. The region can again be divided into western and eastern parts in respect of this period.

The western part covers northern Angola, Kasai, Kwango, lower Zaire and the People's Republic of the Congo, where the Lupemban tradition still existed, although it was gradually evolving into the Tschitolian. Geometrical microliths have been found in abundance, but they did not predominate in the way they did in the eastern part, where they outnumber all other forms. In the Lunda region, for instance, a valley style with large numbers of small skinning knives, and a plateau style, in which tanged points predominate, have been identified. In Zaire, the Tschitolian is dated to between 13 000 and 4500 years before present, depending on the region. The question is whether the different Tschitolian styles are the outcome of various forms of adaptation to differing environments. Perhaps future research will provide the answer.

In the eastern part, on the periphery of the dense equatorial forest, the earliest Late

Stone Age industries do not differ from those immediately before them. Only one site, at Matupi Cave, furnishes information on this period. The cave was occupied from 40 000 to 3000 years before present. The thousands of quartz microliths found there were made by the so-called 'bipolar' technique. Heavy-duty, or macrolithic, implements made of quartzite, sandstone or schist include grindstones, pestles, anvils, hammerstones, scrapers and a few chisels. The bone remains suggest that the environment was drier at that time than it is now. The animals hunted by the occupants of the cave were, in decreasing order of frequency, bovines, hyraxes (lizards), rodents, wild pigs, small monkeys and porcupines. They can accordingly be said to have lived in a savannah environment, although there were gallery-forest formations not far away, and the remains found have included a few bone tools, pigments and the occasional piece of simple jewellery.

The Ishango site has yielded a microlith industry using very poor-quality quartz, but producing harpoons with one and subsequently two rows of barbs. This industry has been dated to 21 000 years before present. One astonishing find consists of a small bone rod decorated with incised lines, which served as a handle for a quartz flake. The inhabitants of Ishango lived by hunting and fishing, their chief quarry being the hippopotamus, although birds were also prized. The human remains discovered show that the inhabitants bore no relationship to any present-day human population.

Industries that stand typologically midway between the pure microlithic and the typical industries of the western part of Central Africa made their appearance in the Great Lakes region, as well as in Shaba and on the shores of Lake Tanganyika. At Kamoa in Zaire, for instance, these transition industries are estimated to date from 15 000 to 12 000 years before the Christian era. It seems, therefore, that these different cultures may have existed side by side. The site at Gwisho, in Zambia, gives a very complete picture of life in the Late Stone Age in the fifth millennium. Together with polished tools, a large number of wood and bone objects have been found and bear witness to the importance that the techniques for working such materials had assumed even in open savannah land.

The end of the Stone Age

Polished tools are not necessarily specific to the Neolithic, and in fact they already existed in the Late Stone Age. Their distribution pattern shows that they were used on the periphery of the central basin. In the east, such finds are extremely rare. On the other hand, tools of this type represent the bulk of the archaeological discoveries made north of the equatorial forest, such as in the Uele basin and even as far as Ituri. As the excavations at Buru seem to suggest, the Uele Neolithic industry may not date back much more than the seventeenth century before the Christian era, and could therefore be said to belong to the Iron Age.

Farther west, another concentration of polished axes has been found in the region where the Ubangi river penetrates into the forest. Off the coast of Cameroon, on the island of Fernando Po, polished axes associated with pottery have been dated to the seventh century of the Christian era, and similar tools are in use at the present time.

The last area runs parallel to the Atlantic seaboard from Gabon to north-western

Angola. In this case, the tools are rough-hewn and only the cutting edges are polished. In Gabon, the axes have a characteristic wavy cutting edge. The only finds in the People's Republic of the Congo and Angola have been in surface deposits.

In the absence of economic and social data, it is impossible to assume that the inhabitants of Central Africa engaged in agriculture and stock-raising.

Mention should also be made of the megaliths found in the Bouar region of the Central African Republic. These date from the fifth millennium before the Christian era, or perhaps the first, but this may be a case of their having been used a second time. The megalithic pavement at Api is a natural phenomenon, and the same is true of all the other purported megalithic monuments in Zaire.

Some authors consider that none of the terms currently used, such as Sangoan, Lupemban and Tschitolian, correspond to any scientifically established facts. Even so, as we have endeavoured to demonstrate in this section of the chapter, we feel that it is possible to single out regional variations among the post-Acheulian stone industries and to follow up the way in which they evolved. We consider that, faced with a particular environment, Man had to adapt the tools he used accordingly. However, we do not believe that the environment had an absolutely paramount influence on these human developments, at least not in Central Africa.

22 *The prehistory of North Africa*

Unlike East Africa, North Africa appears to have lagged behind in two key areas of prehistory: excavation methods, which have often been neglected, and absolute chronology, which is imprecise because of the lack of stratigraphical sequences where soil layers have remained undisturbed and in their original state. Thus, in the absence of early hominid fossils, of dating methods applicable to the ground formations and of Palaeolithic occupation sites, the age of hominid settlement in the Maghrib and the Sahara can at present only be determined through correlation of the archaeological remains with the fauna, flora and types of technology encountered.

An increasingly palaeo-ethnological approach has to be adopted for prehistoric research in Africa in general, and in the Maghrib in particular: instead of looking at 'Man and his environment', we have to see how 'Man accommodates to that environment'.

The earliest human industries: the pre-Acheulian

There is no lack of evidence for the presence of Man in the Maghrib, but this is difficult to interpret other than in typological terms. Such interpretation is based on the stratigraphic patterns of the coastal regions, especially in the case of Morocco, and on animal palaeontology. Somewhat tenuous comparisons can be drawn with the sites in Tanzania, Kenya and Ethiopia.

In the light of these chronological and stratigraphical findings, hominids do not appear to have been present in the Maghrib and the Sahara at as early a date as in East and Southern Africa. There is no trace of Australopithecines in the shape of their bone remains or of flaked stones heralding a pebble industry proper. Nevertheless, pebble tools have been found in Morocco, Algeria and the Sahara, and appear to be between one and two million years old, as old as those found at Olduvai Gorge. However, nowhere in the Maghrib and the Sahara are there archaeological structures comparable to those in East and Southern Africa.

The efforts of prehistorians have accordingly had to be focused on establishing correlations between the chronology, the stratigraphic sequences and the evolution of tool types, more particularly in Morocco and the central and western Sahara.

Acheulian industries

Examples of the Acheulian in the Maghrib are plentiful. Apart from surface deposits, this industry is found in three quite specific types of site.

1. Those connected with the coastal Quaternary, which can be identified with a given earlier sea level. On the Atlantic seaboard of Morocco, for instance, an archaeological sequence has been reconstructed, starting from the pebble tools of the pre-Acheulian and culminating in the Middle Palaeolithic. For reasons to do with the morphology of the coastline, Algeria and Tunisia do not have seaboard sites of this type.
2. Sites in river and lake deposits. The first of these are extremely rare and their interpretation is generally imprecise. This is true of a large number of Algerian, Moroccan and Tunisian sites, such as that of Redeyef, near Gafṣa, in Tunisia. Lake-shore sites are rare in all three countries. On the other hand, Acheulian assemblages are common further south, from Mauritania to Libya.
3. Sites associated with former artesian springs, which appear to have attracted Man from the Acheulian to the Aterian periods. Sites of this type include Tit Mellil and Aïn Fritissa in Morocco, and above all Ternifine, near Mascara in Algeria. At the last-mentioned site, the Acheulian industries and fauna are very abundant and were found in association with a hominid cranium that has been given the name *Atlanthropus* and is related to *Homo erectus*.

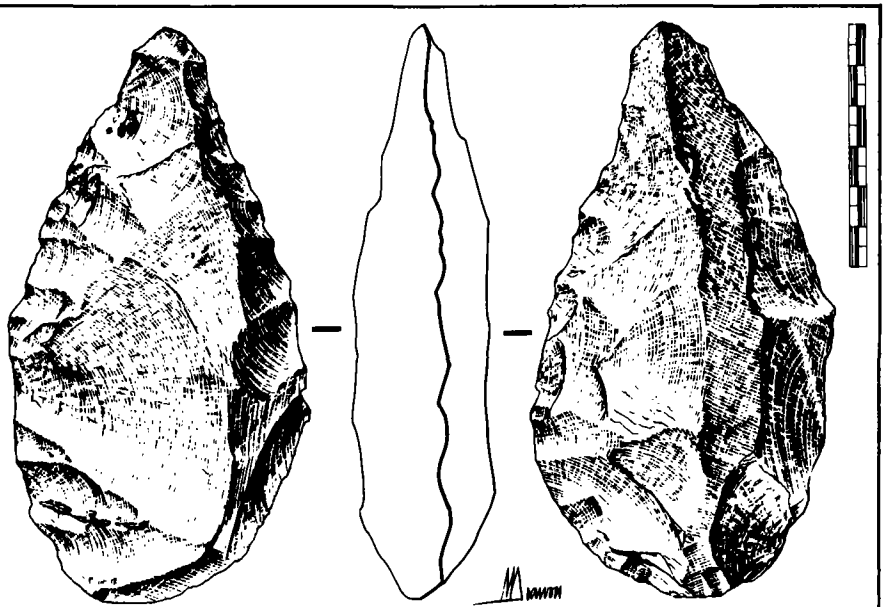
As far as stone tools are concerned, the Acheulian in the Maghrib and the Sahara is not fundamentally different from the same industry in Europe. Its main components are flakes, bifacial handaxes and trihedrons, but its most original feature is undoubtedly the importance of cleavers produced from stone flakes.

Two findings emerge from a typological analysis of these Maghribian cleavers. The first is the appearance – from as far back as the early Acheulian – of the Levallois technique, in which the rock core was prepared in such a way that only one flake at a time was prised away from it. (The so-called Tabelbalat–Tachenghït cleavers from the western Sahara in Algeria were produced by this technique. The second finding is the use of the Southern African Kombewa technique to obtain bifacial flakes with a perfectly sharp cutting edge.

The hominids responsible for these industries belonged to the genus *Homo erectus* and can be dated to approximately 400 000–500 000 years ago. They were probably familiar with fire and may have been endowed with speech.

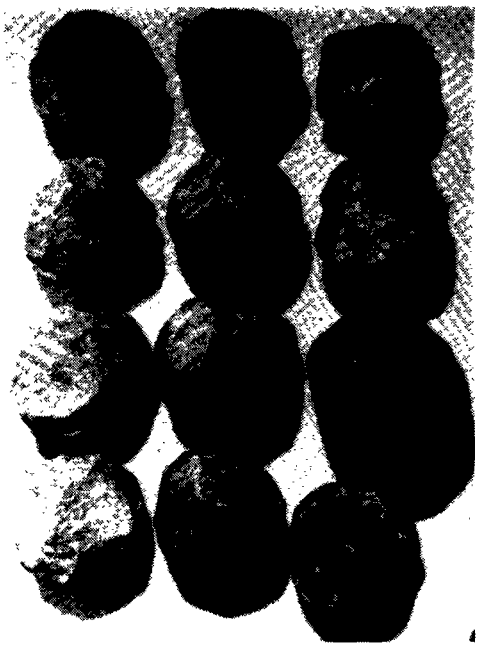
The Mousterian industry

The existence of Mousterian culture in the Maghrib similar to that identified in Europe has long been disputed. Yet the industries discovered in both the western and eastern Maghrib are perfectly representative of that style and still show abundant signs of the use of the Levallois technique. This Maghribian Mousterian may have originated in the eastern Mediterranean.



22.1 *Bi-faced Acheulian tool, the most advanced impelement found on the Ternifine site, western Algeria. Excavations led by C. Arambourg, 1954. (Drawing, M. Dauvois)*

22.2 *Hand-axe found on the Acheulian site of Erg Tihodaïne, Algerian Sahara (M. Bovis)*



22.3 ◀ *Spherical faceted pebbles. Aïn Hanech (M. Bovis)*

22.4 ▲ *Mousterian pointed tool, El-Guettar, Tunisia; excavations led by Dr Gruet (M. Bovis)*

22.5 ◀ *Aterian tools – pedunculated points, scrapers and Levallois cores, Wādi Djouf-el-Djemel, eastern Algeria (M. Bovis)*

Its most remarkable feature was the original way in which it developed to become the *Aterian*, after the Bir el Ater site south of Tebessa. In terms of technology, the Aterian produced a vast number of tanged tools. This was an early development from the Mousterian; it had an extremely long lifespan and spread from north to south through the Maghrib and the Sahara. It therefore coincides chronologically with part of the Middle Palaeolithic and at least the beginning of the Upper Palaeolithic in Europe. The earliest date to which the beginning of the Aterian can be assigned probably goes back to before the fortieth millennium before the Christian era, although the dates obtained from sites investigated in the Maghrib and the Sahara indicate a period of between 37 000 and 30 000 years before the Christian era. It is even more difficult to put a date to the end of the Aterian. It spread throughout the Sahara and perhaps even as far as the great lakes, and the manner in which Aterian technology evolved already heralds the Neolithic. However, there is no positive evidence of this 'pre-Neolithic' Aterian, although no intermediary industries between the two periods have been discovered.

As for Man in the Aterian period, recent finds in Morocco give weight to the theory that he was not of the Neanderthal type, as at the Mousterian stage, but was already a *Homo sapiens*.

The Upper Palaeolithic and epi-Palaeolithic

The current state of our knowledge on these periods is centred on four industries: the Ibero-Maurusian, situated on the seaboard; the 'Collignon horizon', in Tunisia; the Capsian, divided into the typical Capsian and the Upper Capsian; and the Neolithic of Capsian tradition, stemming, as its name suggests, from the former.

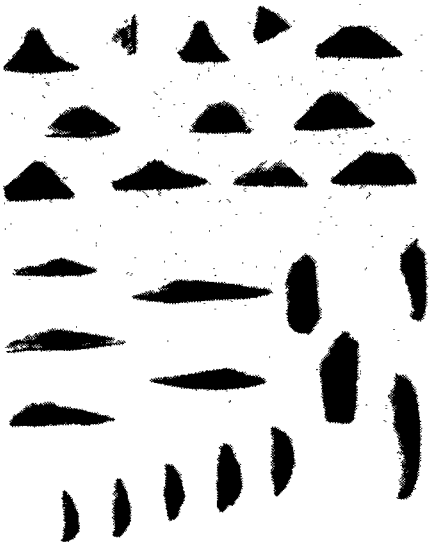
The Ibero-Maurusian

Fresh excavations at the Tamar Hat site in Algeria have made it possible to secure very early datings and to obtain a clearer picture of these Ibero-Maurusians, who were hunters of horned sheep and who lived in coastal caves separated from the sea by marshes and an emerged continental shelf abounding in shellfish. The Ibero-Maurusian was, in fact, a coastal culture, although it penetrated inland in places, as is clearly evidenced by the Columnata site at Tiaret, in Algeria. There is virtually no trace of it in the Tangiers region or on the coast of the Tunisian Sahel or in Tunisia generally.

Even a detailed analysis reveals little of note among the Ibero-Maurusian artefacts. A few hundred micro-burins, which bear witness to an original flaking technique and have been collected from sites such as La Mouillah, in Algeria, confirm that they were used to produce the trihedral-tipped points known as La Mouillah points, rather than geometrical microliths as in the Capsian industries. There is very little bone industry, the only original feature being skinning knives. There is no personal or mural art, even though the Ibero-Maurusian was contemporaneous with the rock paintings of Lascaux in France and Altamira in Spain. Yet the Cro-Magnon men of the Algerian Mechta el-Arbi type, who belonged to the genus *Homo sapiens*, were present on both sides of the Mediterranean at that period.

The generally held view, although there is no tangible evidence to support it, is that

22.6 *Typical Capsian industry (M. Bovis)*



22.7 *Upper Capsian industry: geometrical microliths (trapeziums, scalene triangles, crescents and micro-burins) (M. Bovis)*

22.8 *Neolithic-Capsian tradition: pestle and mortar, showing traces of coal, ochre and fragments of Helix Shells, found at Damous el-Ahmar, eastern Algeria (M. Bovis)*

this culture originated in the east and split into two branches, with the European Cro-Magnon spreading along the northern Mediterranean and the Mechta El-Arbi along the African coast to the south. Anthropologically, they may have descended from the Neanderthals through Arterian Man, but their stone tool industry shows evidence of traditions alien to the Mousterian and Aterian cultures preceding it. There are a number of other distinctive features, such as dental mutilation and burial places in caves or rock-shelters, as at Afalou-bou-Rhummel in Algeria and Taforalt in Morocco.

On the other hand, they were to survive until the Neolithic and they even colonized the Canary Islands towards the end of the third millennium.

The 'Collignon horizon' and other pre-Capsian blade industries

Stratigraphy and geomorphology have furnished evidence showing that the blade industries of pre-Saharan Tunisia, in the Gafṣa region, were earlier than the entire Capsian sequence; these have been called the 'Collignon horizon'. However, it has not yet been possible to establish a precise chronology for them. From the typological standpoint, these industries contain a high proportion of backed blades and they may also be eastern in origin, from Cyrenaica, Egypt or the Near East.

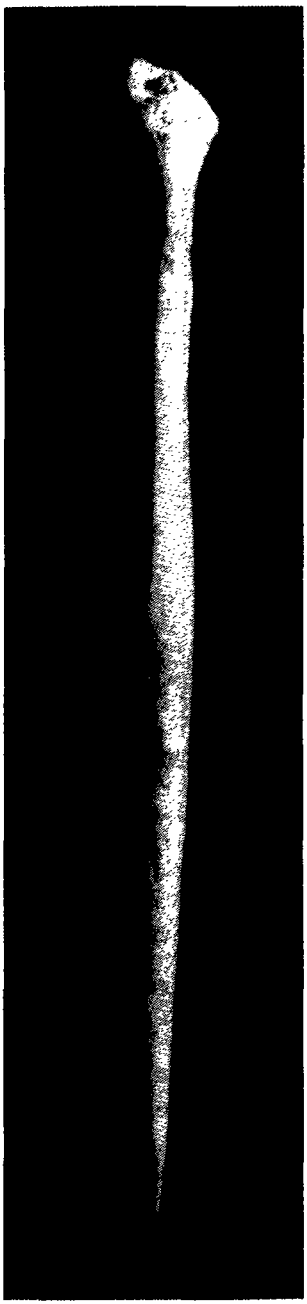
Moreover, between the Ibero-Maurusian, which was largely Palaeolithic, and the later Capsian, there were a host of local industries such as the Keremian, the Kristelian and the Columnatan in Algeria, all of which date back to about the seventh millennium before the Christian era.

The Capsian industry

The Capsian sequence has been defined in terms of three styles staggered in time. These are the 'typical Capsian', the 'Upper Capsian' and the Neolithic 'of Capsian tradition'. In the first two instances, the sites are composed of piles of refuse consisting of a mixture of ashes and charred stones, hundreds of thousands of snail-shells, bones of animals eaten by men, stone and bone tools, ornamental and personal objects, human remains, and so on. It can be surmised that the dwelling-places consisted of huts, which would account for the piles of refuse. These may have been reed huts bonded together with clay, to judge from the find made in the Khenchela region in eastern Algeria.

Capsian tools are of remarkable quality. Truncated burins predominate, but there are also long-backed blades, frequently with ochre-stained backs. The micro-burins are not produced from 'La Mouillah points', as in the case of the Ibero-Maurusian, but from true geometric microliths in the form of trapezes and scalene triangles. Bone industry is not very prevalent. The typical Capsian has only been found in a very limited area straddling the present-day border between Algeria and Tunisia. It may have existed in the seventh millennium before the Christian era, in which case the problem of its being contemporary with the supposedly more recent Upper Capsian would arise. Furthermore, virtually nothing is known about the people who developed the 'typical Capsian' culture.

The Upper or Evolved Capsian is found in a wide variety of styles which spread over western Algeria and at least part of the Sahara. It is an industry of small-sized artefacts,



22.10▲ *Upper Capsian: engraved limestone plaquette from Khanguet el-Mouhaad, eastern Algeria (M. Bovis)*

22.9◀ *Upper Capsian: human fibula fashioned into a dagger found at Mechta el-Arbi, eastern Algeria, during excavations in 1952 (M. Bovis)*

rich in geometrically-shaped microliths of generally outstanding workmanship, especially in the case of the triangular and trapezoid tool-forms.

The Upper Capsian, or at least its northern branch, lasted down to the fifth millennium before the Christian era and survived until the Neolithic. It is therefore common to find 'typical Capsian', 'Upper Capsian' and Neolithic 'of Capsian tradition' all existing at the same time, although in different regions.

Capsian culture accordingly lasted almost 2000 years, only a few centuries less than Egypt under the Pharaohs. It is possible to obtain a glimpse of some of the anthropological features of the peoples concerned. Capsian Man did not belong to the Cro-Magnon type of Mechta-Afalou. He was a Mediterranean type, and the most complete specimen we have is the Aïn Dokkara Man, from Tebessa, dating from the seventh millennium. Hundreds of Capsian dwellings have been found. The fact that these peoples led a sedentary life before the advent of pastoralism and agriculture is quite remarkable. Even so, their dwellings were no more than huts made of branches, perhaps daubed with clay. Hunting did not play a significant role in their lives: the land molluscs and plants they gathered occupied a more important place in their diet than animals. There is no real proof that they practised agriculture.

The Capsian peoples buried their dead in a variety of positions, such as in a bent posture with the arms and legs folded under the chin. The purpose for which they used red ochre still remains a mystery. Even more surprising is their use of skulls as trophies, as at Faid Bouar, in Algeria. Furthermore, they already practised dental mutilation on the living and removed as many as eight incisors from their womenfolk.

These same Capsian peoples were the first artists in the Maghrib and produced ornamental objects, including engraved ostrich-shell fragments from the typical Capsian onwards, and various small engraved plaques and sculpted stones, which may have foreshadowed rock art.

Neolithization and Neolithic peoples

In the Maghrib, the Neolithic period is an offshoot of the Capsian. The contention that the Neolithic 'of Capsian tradition' was very widespread is borne out by the fact that a number of Neolithic features, such as pottery, polished stone tools and food production, were grafted on to it. The arrow-heads found in such quantities in the Sahara are evidence of the continued existence of the life-style of hunters who had settled in regions that they exploited in the form of a pastoral pre-agricultural economy, although they sometimes migrated into the mountains in search of grazing.

Between the fifth and first millennia before the Christian era, there were therefore other forms of neolithization in the Maghrib than the Neolithic 'of Capsian tradition' proper. In the first place, the regions unaffected by Capsian influence underwent a distinctive development that displayed two key features: evolution from the Ibero-Maurusian and, above all, contact with Mediterranean Europe. This raises the issue of seaborne navigation. There are, in fact, several coastal styles in the Neolithic Maghrib which provide evidence of contacts with Europe, for example through their pottery and their imports of obsidian, a natural volcanic glass. This is also true of the Atlantic seaboard of Morocco.

The problem of the spread of this Neolithic culture to the northern Sahara also arises. The rock art of these regions was initially naturalistic and consisted of engravings, but paint was subsequently used. Its origins have to be sought in the Capsian neolithization process. Here again, however, the link between industry and art remains to be proved.

Once again, we can only conclude that the prehistory of the Maghrib is still imperfectly understood, owing to the lack of modern excavations and stratigraphic sequences yielding reliable dates.

23 *The prehistory of the Sahara*

The Sahara is now a vast desert covering the greater part of North Africa. It is not easy to define either its limits or its characteristics, but aridity is the factor common to all its various regions. Stretching 5700 kilometres from east to west between the Red Sea and the Atlantic, and 1500 kilometres from north to south between the pre-Saharan Atlas and the Sudanic Sahel, desert conditions now cover an area of nearly 8.6 million square kilometres. Yet the Sahara as we know it today has changed considerably since prehistoric times.

The migrations of the peoples who lived in the region can be ascribed to the increasingly dry and hot climate, which resulted in sparser rainfall and in the drying up of the springs and rivers. This, in turn, was responsible for the disappearance of the animal and plant life providing sustenance for the population, which was forced to move back to the fringes of the desert, where conditions were more clement.

The chronology of the prehistoric civilizations in the Sahara calls for two comments. First, nowhere in the Sahara is the stratigraphic pattern meaningful enough to enable us to draw an accurate picture of the prehistoric stages.[1] Secondly, apart from the Neolithic, we do not have precise dates that would make it possible to reconstruct an exact chronology.

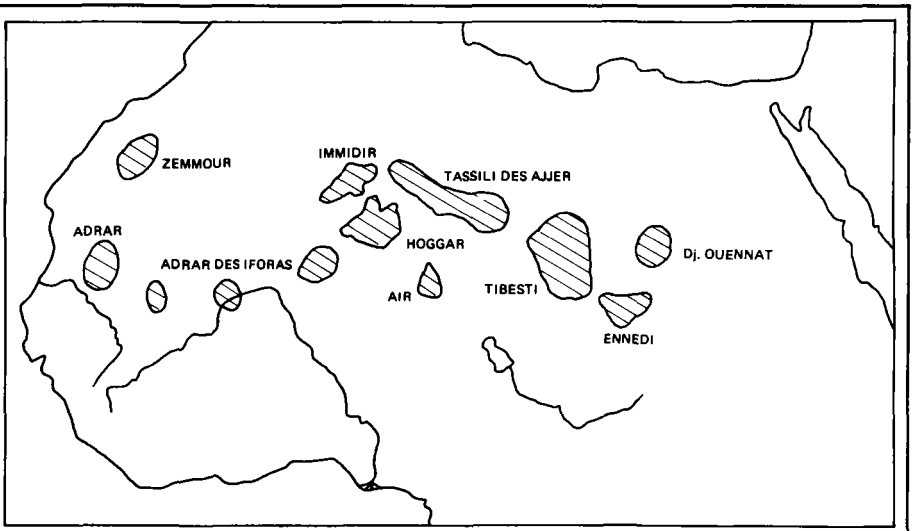
The picture presented in this chapter is drastically simplified. It will be noted that there has so far been no evidence to warrant speaking of an Upper Palaeolithic stage in the Sahara, since the use of that term is not borne out by the facts. Still less is it possible to speak of the Mesolithic – a term which, in any event, is tending to become obsolete.

The Sahara has yielded hardly any human skeletons together with their associated industries, yet the few that have been found point to the very great antiquity of Man in the Sahara.

1. Stratigraphy: the study and interpretation of the layers successively deposited in one place. It is easy to understand why a region subject to such climatic cataclysms as the Sahara should not contain much stratigraphic evidence. In reality, when we take micro-climates into account, the problem of the climatic periods that can be deduced from the stratigraphy becomes extremely complex. In fact, the stratigraphic sequences show that the Sahara was already a desert by about 1000 years before the Christian era.

− 1000 to + 1000	So-called pre-Islamic monuments.	Last wet period.
− 1000 to − 2000	Recent Neolithic.	Silting up of tributary beds.
	Tichitt.	Drying up of springs.
	Fadelian.	First wells.
	Borkou.	Subsidence of alpine micro-climates.
− 2000 to − 5000	Early Neolithic.	Last glacial erosion of valleys. Reeds growing in lakes.
	Meniet.	
	In Guezzam.	
	Tilemsi.	
− 5000 to − 7000	?	Ancient dunes, type II.
		Aukar.
− 7000 to − 15000	Aterian.	Final level of great lakes containing diatoms.
	Saoura.	
	Tidikelt.	Silurus, elephant, hippopotamus, rhinoceros.
	Mauritania.	
	Aïr.	
		Torrential rainfall.
	Acheulian III–VIII as established by Biberson (1961).	Ancient dunes, type I.
		Volcanic activity.
		Ferruginization of conglomerates.
		End of erosion.
		Formation of Teffassasset terraces.
		Flowing of great rivers.
	Pebble Culture.	Formation of great lakes.
		Violent erosion.

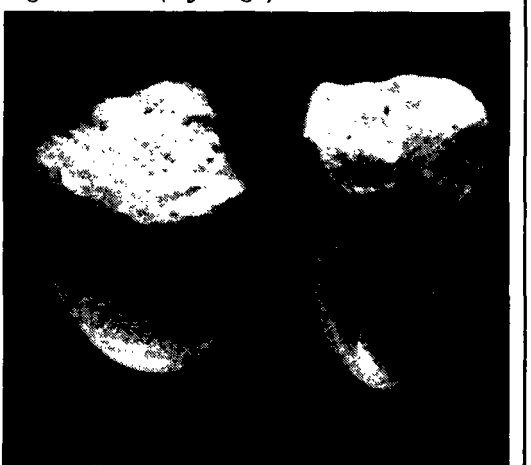
23.1 *Outline of Saharan prehistoric chronology*

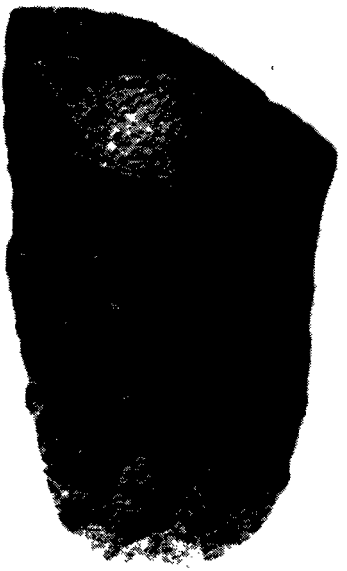


23.2 ▲*Principal sites of Saharan paintings and rock engravings (H.J. Hugot)*

23.4 ◀*Lower Palaeolithic hand-axe from Tachenghit, Algerian Sahara (H.J. Hugot)*

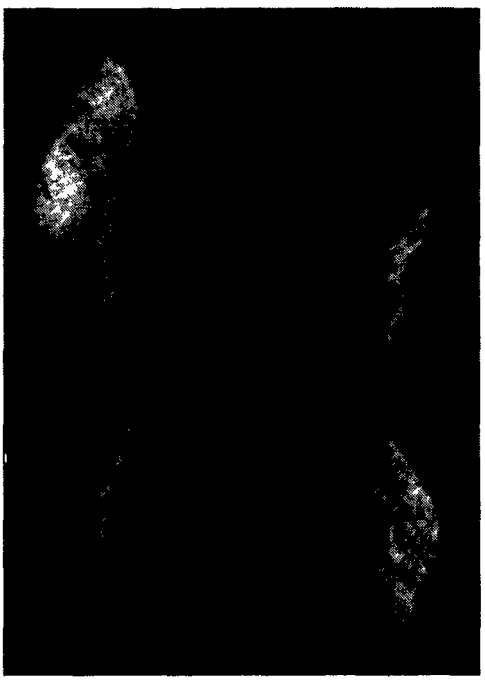
23.3 ▼*Chopper tools (Pebble Culture) from Aoulef, Algerian Sahara (H.J. Hugot)*





23.5 ◀ *Lower Palaeolithic cleaver from Tachenghit, Algerian Sahara (H.J. Hugot)*

23.6 ▼ *Large bi-facial double point, Aterian Industry, from Timimoun, Algerian Sahara (H.J. Hugot)*



23.7 ◀ *Aterian points from Aoulef, Algerian Sahara (H.J. Hugot)*

The palaeolithic

The appearance of Man in the Sahara and the pebble-tool industry

The terraces of former rivers that have now dried out are, in some instances, composed of several separate levels which, depending on their stratigraphic and chronological order, have been called old, middle and later terraces.

At Djebel Idjerane, near In Salah in the Algerian Sahara, for instance, pebble tools have been found in the old terrace. We know that such pebbles are the first implements to bear marks that can be recognized as the work of Man. It has been postulated that these objects were produced by *Homo habilis*, although no trace of that species has yet been found in the Sahara. Other assemblages of pebbles, such as those found at Aoulef, or on the banks of the Teffassasset and the Wādī Saoura, have been scattered or destroyed.

Unfortunately, no animal or human fossils from this period have been discovered, and it can only be surmised that these very crude tools, which are found more or less throughout the Sahara, were in fact shaped by our remotest ancestors.

Homo erectus, the maker of bifacial tools

The Pebble Culture gave way to the Lower Palaeolithic, among the features of which were the handaxe and the cleaver. Although very little indeed is known about the ecology of the Pebble Culture, we are slightly better informed about the environment in which the bifacial tool-makers lived.

The Sahara at that time was a region of great lakes, with high water levels and sufficient rainfall to maintain a type of vegetation indicative of an almost cool climate. Owing to the considerable erosion caused by the action of wind and water, stratigraphic evidence for this period is extremely limited, although enormous quantities of bifacial tools have been found all over the Sahara.

At Tihodaïne, in Algeria, an Acheulian industry has been found together with remains of rhinoceros, elephant, hippopotamus, buffalo, wart-hog, zebra, crocodile, gazelle, various bovines and other species. The Tihodaïne Acheulian industry is clearly an evolved form, and bone and wooden hammers were frequently used to produce the flaked tools. It therefore already represents an advanced stage of the Acheulian and is not an immediate sequel to the earlier Pebble Culture.

Tabelbala and Tachenghit, also in Algeria, are well known for their bifacial tools of reddish quartzitic sandstone, and especially for their impressive range of cleavers produced by the sophisticated Levallois flaking technique. In this same part of Africa, at Mazer, Beni Abbes and Kerzaz, J. Chavaillon and H. Alimen have found undisturbed evidence of an Acheulian culture that was either an immediate forerunner of the flaked-tool industries or should be identified with a Middle Acheulian stage.

A very large number of Acheulian artefacts have also been found at Aoulef, Sherda, El Beyes, Esh-Shaheinab, at Kharga in the western Sahara, and in the Libyan desert. The Acheulian can accordingly be said to be present throughout the Sahara, but it is impossible to put a date to it since, apart from four or five sites, the original stratigraphic

sequence does not exist. The bulk of the work, especially in the form of thorough excavations and soundings, remains to be done.

A point calling for clarification: the flaked-tool industries

Further mastery of the difficult art of stone-carving was partly responsible for the increasing refinement of the shapes produced. The progress achieved appears to be due to the use of softer hammers made of wood or bone. However, although the biface handaxe can be said to be the characteristic tool of the Lower Palaeolithic, it was by no means the only tool manufactured by *Homo erectus*. There are many reasons for believing that, from the time when the technique was first evolved, flakes were also used, as were a good many of the chipped fragments struck off the rock core. In point of fact, there was a preponderance of flaked tools in the Middle Palaeolithic. This development was also accompanied by a reduction in size of the bifaces, which ultimately even came to be used as arrow-heads.

Mention should also be made of the existence, in the western part of the Sahara, of the Kombewa technique, which was common in Southern Africa. This technique made it possible to produce double-edged flakes. Kombewan core flakes are found in association with Acheulian industries in this region.

By contrast, the most revolutionary development was the widespread use of the Levallois technique, which appeared in the Sahara at a very early date and was the forerunner of the techniques used in making the cleavers found at Tachenghit and Tabelbala.

The Aterian

At the stage research has now reached, the Aterian in the Sahara can be said to correspond to the place occupied in other instances by the Mousterian, with which it shares a number of features, such as the use of the Levallois technique as reflected not only in the retouching style, but also in the typology of the finished tools. However, the Aterian differs from the Mousterian in one main respect: the existence of a tanged stem at the base of such tools as retouched or coarse-hewn points, scrapers, burins and even drills. In short, it is an industry representative of migratory hunters. It has become the practice to ascribe this interesting industry to *Homo sapiens*.

The Aterian is acknowledged as being a North African industry that spread far southwards and stopped roughly at the shores of the great lakes in the southern Sahara. As it moved southwards, it progressively evolved until it produced such dazzling artefacts as those of the Adrar Bous culture where, in addition to the now traditional tool-kits of cores, blades, flakes, scrapers, notches, double-foliate points made by the bifacial technique and stone balls, we also find very fine tanged points, again made by the bifacial technique.

The Aterian culture is very widespread. It is found in Tunisia, Morocco, in the Wādī Saoura and Tidikelt in Algeria, in northern Mauritania, in the Ahaggar, in the Erg Admer and at Tihodaïne, at Adrar Bous in Niger and even in the Fezzān and at Zumri in Libya.

It is very difficult to place the Aterian in its chronological context. It may have

appeared about 35 000 years before the Christian era. On the shores of Lake Chad, its progress seems to have been arrested by the last high-water level, in which case it may have died out some 9000–7000 years before the Christian era, although this is only a hypothesis.

Accordingly, in a bid to solve the chronological problem, it has been suggested that the Aterian should be placed under the uncontroversial heading of terminal Palaeolithic. J. D. Clark recently used the term Mesolithic to describe an evolved post-Aterian industry at Adrar Bous, in Niger. However, in the present state of our knowledge, not all prehistorians acknowledge that there was a Mesolithic or epi-Palaeolithic period between the terminal Palaeolithic and the Neolithic.

The Neolithic[2]

We know little or nothing of the origins of the Neolithic peoples. They appear to have spread out across the Sahara from different starting-points. According to M. C. Chamla, it is observed that the Neolithic population of the Sahara is characterized by the mingling of black peoples with whites of Near-Eastern origin usually described as Mediterranean.

The first Sudanic Neolithic population

The Neolithic population of the Sahara was by no means homogeneous. If we take the waves of settlement in their presumed order, the oldest seems to be that which formed on the banks of the Nile on a level with Khartoum and Esh-Shaheinab, and then spread westwards along the shores of the great lakes. This wave does not seem to have gone much beyond the eastern fringes of the Aukar, in Mauritania, or to have penetrated into the forest, but it did send out two feelers northwards, one into the Ahaggar as far as the northern edge of the mountains before Tassili N'Ajjer, and the other from Tilemsi towards the Wadi Saoura. This 'Sudanic Neolithic' is easily recognizable from the workmanship and wealth of decoration of its pottery. Its stone-tool industries, on the other hand, are very difficult to describe precisely, since these Neolithic peoples were very skilled in making the most of the raw materials at hand. The first inhabitants of the Sahara were fishermen, hunters and gatherers, who were particularly partial to hippopotamus meat and the fruit of the nettle tree (*Celtis* sp.), but who also ate fish from the lakes, freshwater turtles and watermelons. The fact that they made a host of adzes, hoes, grinders and grindstones does not necessarily mean that they engaged in any form of agriculture: at most, these objects may suggest that certain plants were selected for purposes of consumption. They used bows and spears for hunting, as evidenced by the presence of arrow-heads, and also bone harpoons and fish hooks. They were adept at making hardstone beads from amazonite, chalcedony, haematite and cornelian and, for this purpose, they perfected drilling kits, consisting of burin splinters, needles and borers, which were probably used in conjunction with resin and fine sand.

2. Neolithic: a term designating the emergence of new techniques (especially pottery, stone-polishing, incipient domestication of animals, agriculture and urban settlement) that were grafted on the highly developed stone-tool industry of the epi-Palaeolithic.

These peoples were presumably familiar with navigation techniques and it is quite possible that they sailed on the lakes in reed canoes like the *kaddei* still seen on Lake Chad.

The Guinean Neolithic

In the south, the first Neolithic wave was closely followed by another African ethnic group that spread into the forest where, despite its size, its trace was long concealed by the forest cover. This Neolithic culture has been clearly identified in Guinea, hence its name of Guinean Neolithic, although in fact it probably originated in Central Africa.

The Neolithic culture of the Capsian tradition

Slightly later, the Neolithic culture deriving from the Capsian tradition, which was the outcome of the local neolithization of the North African Palaeolithic Capsian culture, began moving southwards. It reached Mauritania from the north-east and stretched as far as the Ahaggar. At Meniet, for example, it has been found on the surface at sites that were chiefly occupied by Neolithic peoples belonging to the Sudanic tradition.

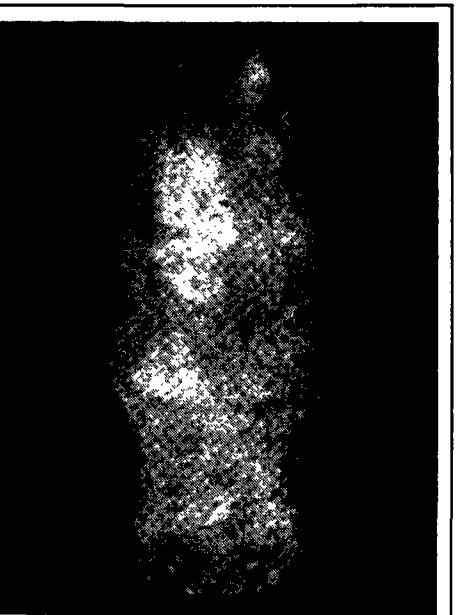
The crudely made pottery produced by this culture has few decorative features. The stone-tool industry, on the other hand, uses a consistently rigorous technique and its style in the Sahara shows up well in the proliferation of arrow-heads. The polished stone tools are often very beautiful, and the polished hardstone bowls and animal statuettes are masterpieces that quite make up for the unsatisfactory impression given by the pottery. Typical beads made from ostrich eggshells have also been found, while whole eggs, some of them engraved with geometrical designs, were blown and used as water bottles. The use of this material seems to have been specific to the Capsian Neolithic peoples. Grinding stones and grinders, presumably for crushing pigments, have also been found.

The coastal Neolithic

Another essentially coastal style, located further north, is likewise an offshoot of a Palaeolithic parent. This is the Ibero-Maurusian Neolithic, which spread along the Atlantic seaboard of Morocco. The coast of the Mauritanian Sahara was also occupied by this culture, but it has been little studied, if at all. The Neolithic peoples belonging to this Ibero-Maurusian tradition were a fishing people who consumed vast quantities of shellfish, and they have left evidence of their occupation of the region in the form of mounds of mussel and oyster shells and, further south, of ark shells (*Arca senilis*). Their pottery has little decoration and is roughly made. In addition, hearthstones and occasional stone tools have been found. It would be interesting to compare this southern culture with its counterpart to the north on the Atlantic coast of Morocco.

The Tenerean

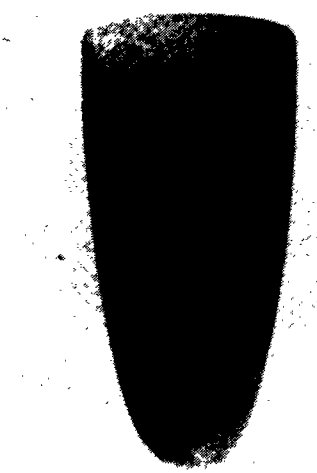
To judge from its lotus-shaped projectile points, discs, heavy concave scrapers, saw teeth and hafted axes, as well as from its typology and statistical composition, the Tenerean seems to be an original style. It has still to be ascertained, however, how the

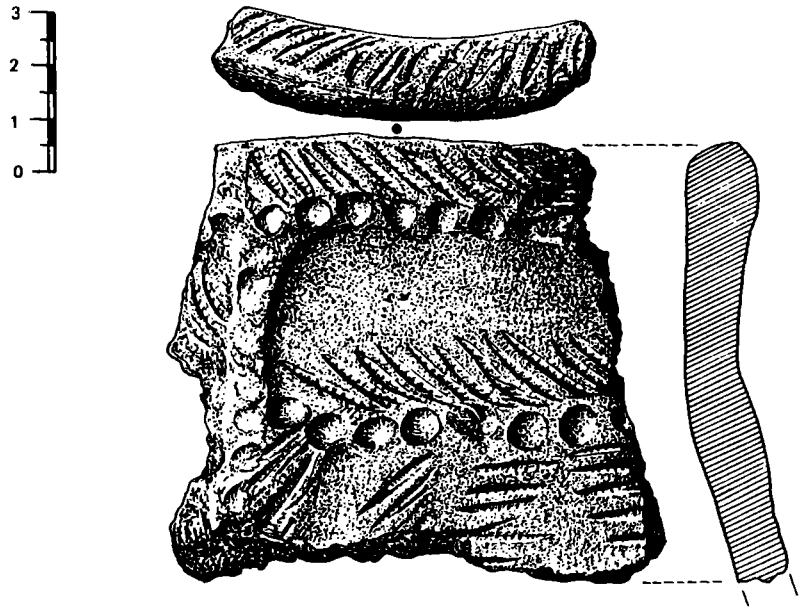


23.9▲ *Neolithic grooved axe from Adrar Bous, Niger (H.J. Hugot)*

23.8◀ *Aterian bi-facial double point from Adra Bous V, Niger (H.J. Hugot)*

23.10▼ *Neolithic polished axe from the Faya region, Chad (H.J. Hugot)*





23.11 *Pottery from Akreijit, Mauritania (H.J. Hugot)*

23.12 *Neolithic pottery from Dhar Tichitt, Mauritania (H.J. Hugot)*

obvious outside influences reached the magnificent Tenerean industry, with its characteristic beautiful green jasper artefacts. In any event, its tool kit is rich in forms that are reminiscent of the Egyptian Aeneolithic. Its pottery is comparable in every respect with that of the Sudanic Neolithic and also that of the Neolithic Sudan itself.

However, prehistorians should be careful not to take the concept of 'style' too far. The two sites, Adrar Bous and Gossolorum, at which the Tenerean has been identified belong to the same culture, but their pottery, discs, axes and other tools have to be studied very closely before this becomes apparent, since the only features that the two industries have in common is the high standard of workmanship.

The Neolithic of the Dhar Tichitt-Walata, in Mauritania

A brief comment remains to be made on the very fine Neolithic style found in south-eastern Mauritania along the course of the Dhar Tichitt-Walata. Extensive excavations in this region have shown that this rather late industry is connected with an exceptional group of dry-stone villages, which are particularly interesting on account of their urban layout and the skill with which fortifications were built. Here we have proof, in fact, that the local communities consumed millet as early as 1500 years before the Christian era, and this makes sense of the vast number of grinding implements found in the ruins of these villages. The civilization of the Dhar Tichitt-Walata was African, as evidenced by its pottery and other specific features. It may have come from the east, most probably from neighbouring Tilemsi, but this is only a hypothesis.

In short, the Saharan Neolithic can be regarded as having lasted from some 5000 years before the Christian era to the beginning of the first millennium of the Christian era. During this period, lake levels were constantly falling, until the large so-called Ethiopian fauna retreated to the edges of the desert, the flora dwindled, and Man in his turn emigrated with his herds.

Fauna and flora

The fauna of the Sahara dated from the Aterian, which ended when the lakes reached their top level for the last time, about 8000 years before the Christian era. These regions have been identified with 'Ethiopian' fauna such as rhinoceros, elephant, crocodile (*Crocodilus niloticus*), hippopotamus, zebra, giraffe, buffalo and wart-hog. The lakes teemed with large catfish (*Clarias*) and Nile perch (*Lates niloticus*), and with freshwater turtles (*Trionyx*). They were also well stocked with shellfish, and enormous piles of freshwater mussel shells have been found at some sites.

At the beginning of the Sudanic Neolithic, the lakes were isolated from one another and remained so until they dried out completely. The present-day lakes in Chad are only pale witnesses to the remote past.

Flora are a particularly clear pointer to the progressive deterioration of the climate. At the beginning of the Neolithic, hazel, lime, willow, ash and heather were still to be found in certain mountainous areas. This vegetation soon dwindled, however, and was superseded by a plant cover more representative of an arid environment, with cedars,

Aleppo pines, junipers and olives, and the gum-trees and nettle trees that were to provide such important ingredients in the local diet.

The Sahara as a cradle of agriculture

The practice of agriculture cannot be said to be proved merely by the existence of artefacts and tools that could conceivably have been used for that purpose.[3] Indeed, they may just as well have been used for wild plants as for domesticated species. The existence of agriculture can be demonstrated by fossil seeds and pollens, regardless of whether they are found in association with the artefacts or not, provided their morphology shows signs of having evolved through domestication.

What we do know is that the Saharan Neolithic peoples collected food in the form of large quantities of wild berries and seeds from the jujube and nettle trees and wild grasses. At Meniet and Tichitt, evidence has also been found of seeds belonging to the gourd family (*Curcurbitaceae*), probably watermelons. Such plants provide the bulk of the harvest gleaned from food gathering or are, at most, signs of proto-cultivation; however, they are not signs of organized agriculture, which can be defined more specifically as involving the preparation of the soil for the deliberate purpose of cultivating selected plant species.

On the other hand, almost everywhere pastoralists appear to have replaced the hunting, fishing and gathering peoples at a very early stage. The decline in rainfall was scarcely conducive to agriculture and it became quite impossible as the Sahara dried out. Cattle, sheep and goats gradually superseded one another. This hypothesis may be borne out by the fact that, in many parts of the Sahara, the Neolithic remains are scattered on the surface and are more reminiscent of nomad encampments than settled villages, although such villages certainly also existed.

At the same period, in the northern Sahara, the so-called 'cattle age' was at its height and the pastoralists appear to have acquired such consummate skill in herding techniques that they must have had a long period of apprenticeship. In the Sahara itself, the rock paintings and engravings and the archaeological remains offer many clues to the presence of cattle and goats about 2000 years before the Christian era. It is not certain that these species were domesticated in the fullest sense of the term, but there seems to be evidence for some form of selection of animal species, chiefly in the Sudanic Neolithic.

Conclusion

The fascinating study of the Sahara's past is still in its infancy and it offers specialists and interested laymen an exceptional opportunity, which should be quickly grasped before the exploitation of the remaining natural resources deprives us for ever of the prospect of unravelling mysteries that concern the past of all mankind.

However, the prehistory of the Sahara is no longer suited to individual research. It

3. Artefacts that may have been used for agricultural purposes include the whole range of grinding equipment, such as grindstones, crushers and pestles, and those used directly for cultivation, such as digging sticks and swing-ploughs, as well as parts of saws and sickles.

has become a collective venture, requiring teamwork and funds and, in that respect, it has been unfortunately somewhat neglected. It is up to those responsible for this vast and harsh desert to train people who will be capable of prevailing on it to surrender its secrets.

24 *The prehistory of West Africa*

Climate and environment

The main climatic belts north of the Equator run east and west across the whole expanse of West Africa. These belts consist of the desert in the very north, the Sahel and the savannah. Between the savannah and the wet tropical rain forest fringing the coast lies a zone of derived savannah, which was once forest, but which has been turned into savannah by the activities of man.

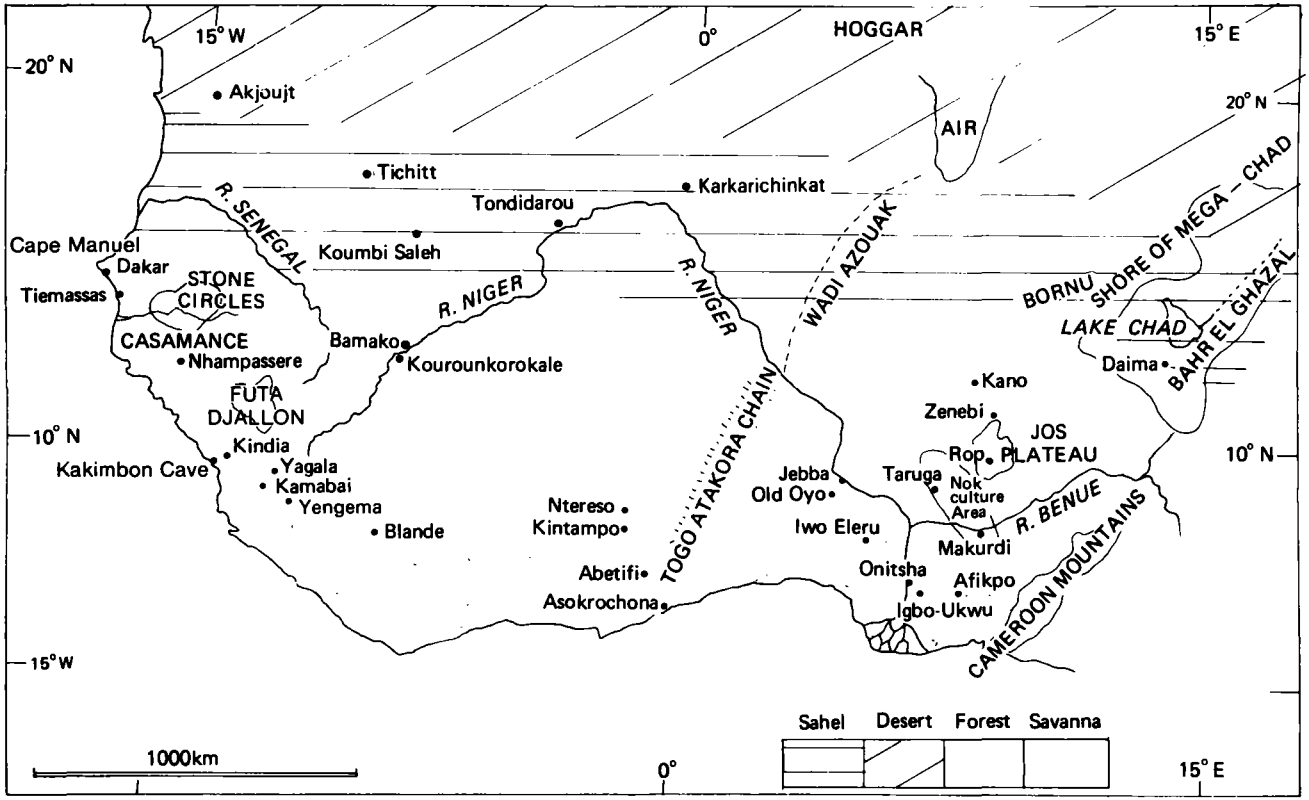
Changes in the vegetation pattern have always depended on whether rainfall was plentiful or scarce. At the present time, the rains are carried on south-westerly winds, which have gathered their moisture from the Atlantic. However, the location and extent of the different vegetation zones, and the position of the intertropical front, have varied at different times in the past, affecting the environment in which Man lived in West Africa at different periods.

Prehistoric Man

The earliest skeletal remains

West Africa has so far not produced remains of early forms of men or hominids such as have been found in East and Southern Africa, nor artefacts of correspondingly early date. Can it be assumed that there were no such beings in West Africa? This is a question which it is impossible to answer because the archaeological data is too imprecise. Moreover, it is notorious that in the prevailing conditions of high humidity and soil acidity, preservation conditions are very much worse than in the arid or semi-arid regions.

Animal fossils and human remains are therefore largely non-existent. However, skull fragments of a human specimen, named *Tchadanthropus uxoris*, have been found near Largeau, in Chad, but these are too incomplete for it to be identified with any certainty with the genus *Homo habilis* or *Homo erectus*. There are no examples of the last-mentioned form in West Africa, although specimens of the same type, called *Atlanthropus mauritanicus*, have been found in Algeria.



24.1 *West Africa: vegetation zones (C.T. Shaw)*

The earliest artefacts

Although prehistoric Man made tools of bone and wood as well as of stone, wood is rarely preserved, and soil conditions in West Africa militate against the survival of bone. Examples of pebble tools are known from a number of places in West Africa, but it is not possible to be sure at the moment if any of them date from the same period as the Oldowan industry in East Africa, which is situated between 2 million and 0.7 million years ago. Careful investigation of pebble tools found along the Gambia river in Senegal demonstrated that some were likely to be of Neolithic origin and others to have derived possibly from the Late Stone Age. Palaeontology gives some relative dating for the Yayo deposits in Chad, which produced *Tchadanthropus*, but unfortunately there were no associated implements.

Climatic changes

More recently, two factors have served to improve the scientific approach for West Africa: an increase in the amount of relevant research and the emergence of a new theoretical framework for climatic change in Africa.

We have no reliable geological or geomorphological information on West Africa bearing upon early climatic changes. Study of Lake Chad has shown high lake-levels from 40 000 years before the Christian era. These findings point to a period of high humidity, during which the West African forest seems to have extended a good deal further north than it does today. Then, from about 20 000 years before the Christian era, West Africa appears to have been subject to a much drier climate than at present. During this time, the West African rivers were discharging into an ocean that was some 100 metres below its present level, because so much water was locked up in the polar ice-sheets. Thus the Senegal and Niger rivers flowed in channels well below the present level and their courses were blocked by vast sand dunes. Lake Chad was dry at the time and sand dunes formed over its floor and in parts of northern Nigeria, indicating much lower annual rainfall than at present. All the other evidence suggests that there was a generally dry period around 18 000 before the Christian era. If sand dunes were forming at the latitude of Kano, the savannah and forest belts must have been pushed far to the south; in fact, it is probable that most of the forest disappeared, except in relict areas with the highest rainfall such as coastal Liberia, part of coastal Ivory Coast, the Niger delta and the mountains of Cameroon.

By 10 000 before the Christian era, conditions seem to have begun to get wetter again. In Mali, the Niger overflowed and again covered a vast area, and the sand dunes formed in the previous dry period were reddened as a result of seasonally wetter conditions. During this period the forest would have again spread northwards. It seems likely, therefore, that a dry period in West Africa roughly coincided with a glacial period in the northern hemisphere. At the same time it was wetter than at present in the northern Sahara, which was watered by the rains from the Atlantic.

Lastly, as world temperatures rose, the ice-sheets melted and retreated northwards. It became drier in the northern Sahara, but there were sufficient reserves of ground water and vegetation for the desiccation process to be delayed until about 3000 years before the

Christian era. However, as the Sahara continued to dry out, it became uninhabitable and the people living there re-assembled further south.

The Stone Age

The terms Early Stone Age, Middle Stone Age and Late Stone Age will be used to designate the prehistoric periods in West Africa. The chronological boundaries of these divisions of the Stone Age vary somewhat from area to area, but, very roughly, they may be thought of as 2 500 000–50 000 before the Christian era for the Early Stone Age, 50 000–15 000 before the Christian era for the Middle Stone Age, and 15 000–500 before the Christian era for the Late Stone Age. Furthermore, the term Neolithic as applied to the Sahara and West Africa is ambiguous, since it is not clear whether it refers to a period, a type of technology, a type of economy, or else to a combination of the three.

The Early Stone Age in West Africa

What are usually regarded as early types of bifaces (formerly called Chellean) are absent from the Sahara, but have been claimed for Senegal, the Republic of Guinea, Mauritania and Ghana, where they are said to be stratigraphically established in a rolled condition, in the alluvial formations of former water courses. The area of their distribution has been mapped, and seems to indicate a colonization from the river Niger along the Atakora chain and the Togo hills. They have been identified as belonging, along with other stone tools, to the Acheulian period.

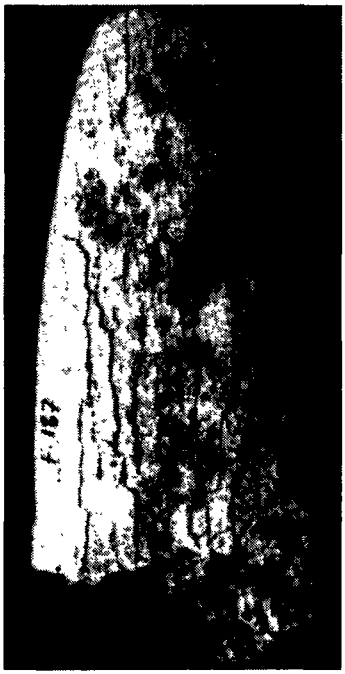
The later stages of the Acheulian, marked by fine handaxes made with soft wood or bone hammers, are prolific in the Sahara and are more widely represented than in the earlier periods. Perhaps this distribution is to be correlated with a period when rainfall was presumably more plentiful in the northern Sahara and the desert zone moved southwards and offered little attraction to the hunting and gathering peoples. An exception to this seems to have been the high ground of the Jos plateau, in Nigeria, where the climate may not have been so arid and may have provided the open or lightly-wooded grasslands favoured by Acheulian Man. The layers at this site have been dated to a period of more than 39 000 years B.P.

At the same period, it is likely that the Futa Jallon massif, in Guinea, would also have been suitable for human occupation, and a certain amount of Acheulian material has been found in that area. Middle and Upper Acheulian remains have also been found scattered around to the north of the upper Senegal river, which could be regarded as linking the Futa Jallon area to the prolific sites of Mauritania.

Traces of Acheulian material have been recorded in south-eastern Ghana and along the Togo/Atakora chain of hills, suggesting that these regions, which probably provided a more favourable environment, may have been penetrated from the north.

The Sangoan

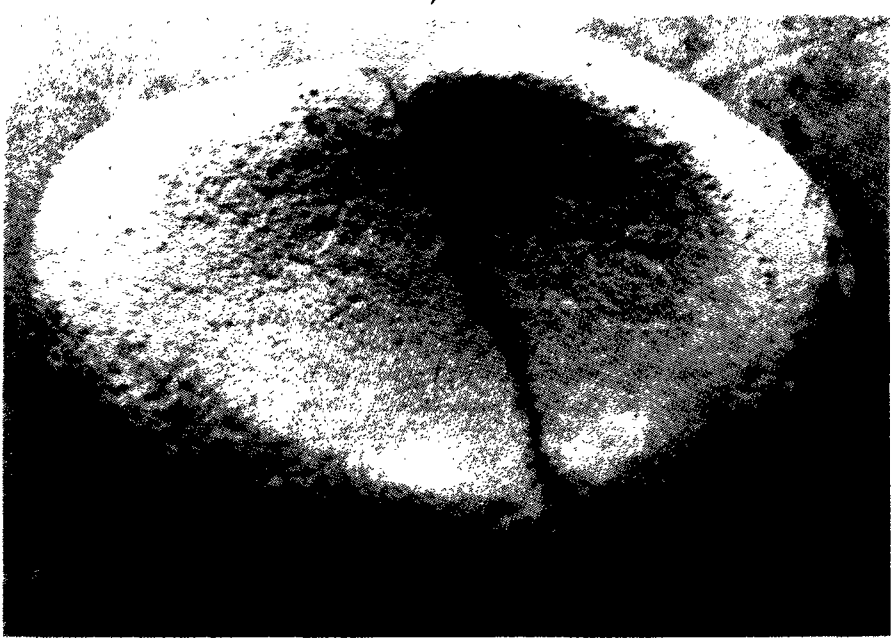
There are difficulties of definition over the Sangoan industrial complex, and indeed doubt has been cast on whether there is a true Sangoan in West Africa at all. Following



24.2 ▲ *Stone pendants (basalt) from the Neolithic site at Patte d'Oie (I. Diagne, Musée de l'IFAN)*

24.3 ◀ *Bone smoothing tool, found on the Neolithic site at Cape Manuel (I. Diagne, Musée de l'IFAN)*

24.4 ▼ *Millstone made of volcanic rock, found on the Neolithic site of Ngor (I. Diagne, Musée de l'IFAN)*



the Acheulian, a complex of industries came into being that retained some of the latter's tool-kit, such as picks and bifaces, although the cleaver disappeared and spheroids became rare. There was an abundance of picks, often of a heavy and massive form. Choppers, often made of flaked pebbles, also occur.

In West Africa, Sangoan tools have a more southerly distribution than the Acheulian, suggesting a new pattern of settlement, such as at Cap Manuel in Senegal, which was formerly regarded as being Neolithic; at Bamako in Mali; to the south of the Jos plateau in Nigeria; and associated with river valleys, as in the Niger valley near Bussa. A spread of Sangoan material down the Atakora/Togo chain and into southern Ghana has been reported. Such material is rare in northern Ghana, but fairly widespread in the south.

However, there are no radio-carbon dates for a Sangoan industry in West Africa. It is possible that the southerly, riverine and woodland distribution of the Sangoan in West Africa represents a way of life adapted to dry conditions before 40 000 before the Christian era, after which Lake Chad began to fill up and spread.

The Middle Stone Age in West Africa

The term Middle Stone Age is used to describe a group of industrial complexes covering roughly the time-span 35 000–15 000 before the Christian era. In West Africa, industries belonging to the Middle Stone Age have been identified with less certainty than in the rest of sub-Saharan Africa. Rare specimens of the Lupemban type have been found in Ghana and on the Jos plateau and in the Lirue hills in Nigeria. At Nok, the industries were first identified as Lupemban, but are now thought to have closer affinities with Middle Palaeolithic industries of a Mousterian tradition. Comparable industries have been reported from Ghana and Ivory Coast, from Dakar and from the central Sahara.

At Tiemassas, near the coast of Senegal, archaeological excavations have revealed, among other things, bifacial points together with Middle and Upper Palaeolithic-type artefacts. This was first considered to represent a mixture of Neolithic and earlier elements, but it was then identified as belonging to the Mousterian tradition. The problem is not resolved, since the stratigraphic sequences for all these finds are sadly lacking.

The Late Stone Age and Neolithic

Over most of West Africa, the Late Stone Age is characterized by the appearance of very small stone tools, known as 'microliths'. At this point we become bedevilled by the word 'Neolithic' and its ambiguity of meaning. In Africa, it is better avoided whenever possible, and certainly in the case of sub-Saharan Africa.

In parallel with North Africa and the Sahara, there was a time when finds from Rufisque in Senegal were attributed to the Neolithic of Capsian tradition, but they are probably best regarded as belonging to the microlithic continuum, or 'Guinean microlithic', which is very widespread in the eastern half of West Africa. In the western half, by contrast, it is absent at the most southerly sites, in the area of Liberia, Sierra Leone and the south of the Republic of Guinea. There is a possibility that some form of

agriculture can be associated with it, as rice was then replacing the yam as the staple crop in the western half of West Africa. This African rice, *Oryza glaberrima*, was probably domesticated in the area of the Middle Niger delta. Flat, broad pieces of quartzite roughly chipped into shape are also regarded as hoes and as evidence of cultivation in Ghana, but there are no clear associations or dates for these. Pottery does not appear to have been very widespread in these regions.

It seems, therefore, as if in this western part of West Africa there was some kind of Middle Stone Age tradition (which is also identifiable at Dakar and Bamako), which survived comparatively unchanged in the most southerly sites and did not adopt or develop the microlithic technique. The reasons for this may well be ecological, since the microlithic technique is associated with a savannah zone economy in which hunting played an important part. If one plots the distribution of the sites without microliths – such as Conakry, Yengama and Blande – and those with microliths – Kamabai, Yagala, Kindia and Nhampassere – it will be seen that the boundary running between them is very close to that separating the forest from the savannah. The technical innovations of ground stone axes and pottery subsequently arrived in the area from the north. The date of arrival of these influences is situated in the middle of the third millennium before the Christian era, which is just when the desiccation of the Sahara became widespread. It seems reasonable to connect the two events and to see the influence of people moving out of the Sahara, although there is as yet no evidence based on the discovery of human bones. In most of the rest of West Africa, a microlithic phase precedes the techniques of making pottery and ground stone axes, which appear to have been grafted onto the microlithic tradition rather than to have replaced it.

In Ghana, following an early phase with pottery and microliths, the Kintampo Culture had ground stone axes, stone armlets – which are well known from the Sahara – and a peculiar type of hatched rubbing stone produced by the percussion technique. The early (Punpun) phase of this culture is dated to more than 1400 before the Christian era, while the later phase has revealed the existence of dwarf goats and domestic cattle of a breed closely resembling the present-day West African Dwarf Shorthorn.

Along the northern edge of this area, in the Sahel immediately south of the Sahara, there was a somewhat different situation in the later part of the Late Stone Age, with adaptations to the local ecology evident in the material culture. At Karkarichinkat, north of Gao in Mali, the pastoralist peoples, who also engaged in fishing, lived mainly on mounds above the level of the seasonal stream between 2000 and 1500 before the Christian era. They had pottery and used arrow-heads, ground stone axes and occasional microliths.

A thousand years later, at Daima, in north-eastern Nigeria, it is quite likely that the cattle-raisers also cultivated sorghum on the fertile clay soils left behind by the shrunken Lake Chad. They had pottery, ground stone axes and a prolific bone industry, but no microliths.

A specialized adaptation to completely different ecological conditions occurred at the opposite end of the region, along the southern margins of West Africa on the Atlantic coast. Here, Late Stone Age peoples exploited the abundant shellfish of the lagoons and estuaries, both by fishing and by collection along the shoreline. Their refuse formed the

mounds of shells found in Ivory Coast (from 1600 before the Christian era to the sixteenth century), Senegal and Nigeria (between 3000 and 1000 before the Christian era).

When the cattle pastoralists first moved southwards in the third millennium before the Christian era, they not only encountered microlithic hunters, but moved out of an area where flint was available into an area rich in quartz, which was less suitable for making bifacial tools. Ntereso, in central Ghana, which has been dated to the second millennium before the Christian era, is the only site to have retained that flaking technique.

This movement of people scarcely seems to have had any visible influence on the physical type, since both population groups were negroid. What was more important was the domestication of suitable indigenous wild grasses, which gave rise to the African cultivated millets. The most important of these was *Sorghum bicolor* or Guinea corn, which was cultivated during the first half of the second millennium before the Christian era in the area between the Sahara and the savannah, from the Nile to Lake Chad. Other wild grasses were domesticated to become pearl millet and finger millet and, above all, African rice.

In the moister zones of West Africa, the important staple was the yam, of which more than one African variety was domesticated. However, we do not as yet have archaeological or botanical evidence for the earliest date of such cultivation. The same is true of nuts from the oil-palm. Nevertheless, a sufficient agricultural basis had been established by the first millennium of the Christian era to support such ancient kingdoms as Ghana, Mali, Songhay, Benin and Asante.

The coming of metal

Why is it that there was no Bronze Age in sub-Saharan Africa and why was the region not more influenced by ancient Egyptian civilization? The reasons are partly to do with the fact that the third millennium before the Christian era, when that influence might have occurred, was also the millennium of the final desiccation of the Sahara, which no longer served as an indirect link between Egypt and West Africa.

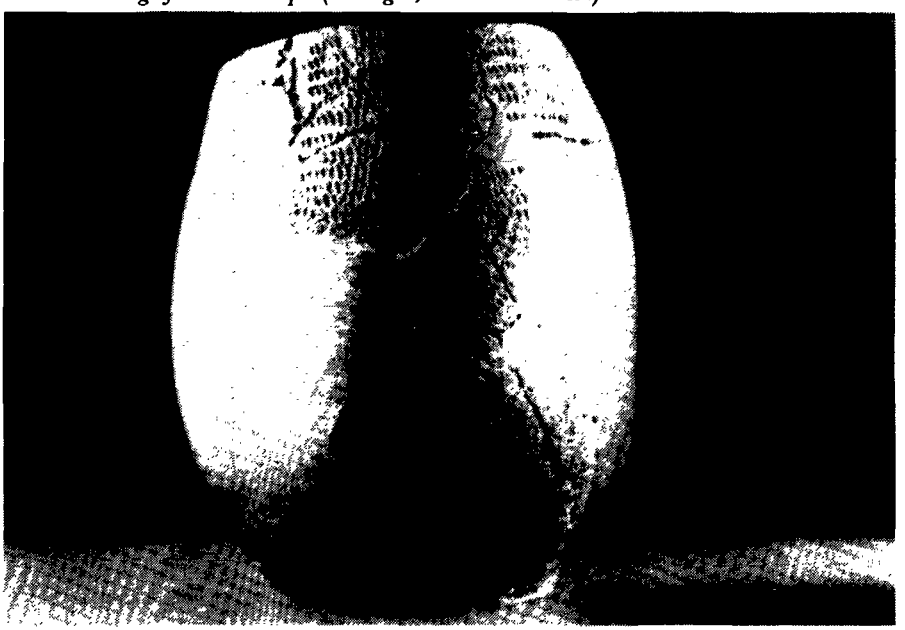
The Early Iron Age (from about − 400 to about + 700)

West Africa learnt about iron from outside the region. This did not merely involve the importing of finished objects, but also a knowledge of working the metal. At Taruga, in central Nigeria, a number of iron-smelting sites have been excavated and have given radio-carbon dates ranging from the fifth to the third century before the Christian era. Excavations in occupation mounds in the valley of the Niger also indicate the presence of iron metallurgy by the second century before the Christian era.

According to the present state of our knowledge, it seems possible that two civilizations introduced West Africa to this technique: the Garamantes of North Africa and the Kingdom of Meroe, in Sudan. The degree and nature of this introduction are far from clear. A further example is the Taruga site, where a large number of terracotta figurines attributed to the Nok culture have been dated to − 620. They were found in association

24.5 *Megalithic circle, Tiekene Boussoura, Senegal. The 'king's tomb' is visible in the foreground (I. Diagne, Musée de l'IFAN)*

24.6 *Iron Age flat-bottomed pot (I. Diagne, Musée de l'IFAN)*



with iron objects and iron-smelting draught-pipes, which it is not easy to date. The figurines may represent the earliest effigies of the ancestors of the present-day Yoruba.

Near the Gambia river, in Senegal and Gambia, a large number of dressed stone pillars, isolated or arranged in circles, have been found. The most elaborate stones are double and resemble a lyre in shape. Excavations carried out in their vicinity have produced three radio-carbon dates in the seventh and eighth centuries of the Christian era. They appear to be funerary monuments. A similar collection of stones was discovered at Tondidarou, in the Middle Niger bend area, but these have been destroyed.

Along the northern edges of West Africa, negroid peoples were in contact with the nomadic Berbers of the desert, who were now equipped with camels and ferried West African gold towards the north. By the end of the eighth century of the Christian era, the fame of 'Ghana, the land of gold' had reached Baghdad. These northern areas of West Africa were now equipped with an agriculture and an iron technology. Further south, in northern Sierra Leone, the changeover to the use of iron took place much later and at a much slower pace, not before the eighth century of the Christian era, but that period already comes within the province of history proper.

24.7 *Anthropomorphic statue found on Thiaroye site, Senegal (I. Diagne, Musée de l'IFAN)*

25 *The prehistory of the Nile valley*

Sudan, Nubia and Egypt, three very different regions linked by one river, are all part of one and the same valley. It is hard to imagine today, when the climatic and ecological conditions are very different, that the vast desert hemming in the valley on both sides once provided areas of settlement and communication links with the rest of Africa or, as the climate and ecology changed, became an insurmountable barrier.

Physical factors also conditioned the way of life of the valley's earliest inhabitants in their never-ending struggle to adapt to favourable or hostile habitats. Against this background, we propose to give a brief account of their long evolution from the origins of Man to the glories of the Pharaonic period, bearing in mind that, from as early as the Neolithic age, Egypt already exhibited distinctive features of its own.

The Oldowan culture

The most widespread and characteristic feature of this culture is the existence of pebble tools, or choppers. Since 1971, systematic research carried out at Thebes, in Upper Egypt, has brought to light 25 successive alluvial layers dating from the early Quaternary. The discovery in 1973 of three stratified sites containing pebble tools yielded a wealth of information that swept away the last lingering doubts as to whether early hominids had been present in Egypt. The pebble-tool layers were found beneath the Early Acheulian, or Old Stone Age, horizon characterized by the presence of trihedrals at its oldest levels.

Quite recently, a hominid tooth was found in association with choppers in early alluvial strata in the Thebes mound, although the species has not been identified. These finds confirm the earlier discovery of pebble tools made at Abbassia, near Cairo, in 1925 and more recently at Adaima, in Upper Egypt. It has not been possible to obtain absolute datings for any of these complexes.

The Early Stone Age

In the Nile valley, evidence of this culture is found all the way from the Sudan to Egypt, without any apparent break. As a result of recent research, it is better known in the northern Sudan than further south. The Lower Acheulian, represented by sometimes

crude handaxes with wavy edges, is found in association with pebble tools at Atbara, Wawa and Nuri. The Middle and Upper Acheulian industries, which have been mainly studied in the north, are notable for their more refined craftsmanship and for the first appearance of industries of the pre-Levallois type. These subsequently gave rise to the Levallois flaking technique proper, which is to be seen at Khor Abu Anja. Recently in the Sudan, at the latter site and at Sai, specimens have been found of the Sangoan industry, which has so far been recorded chiefly in Central and Southern Africa, and which seems to lose several of its distinguishing features below Wādī Halfa. A few biface cleavers bevelled at the distal end have also been found in the Sudan.

In Egyptian Nubia, the Acheulian has been found on the old river terraces; in Egypt, however, the stratified sites at Abbassia, near Cairo, those investigated at Thebes in 1974 and the old Nile terraces have yielded Acheulian industries in successive strata. Throughout Egypt and Nubia it is possible to follow the pattern of technological – and no doubt cultural – progress through from the production of bifacial handaxes to the Levallois flaking technique.

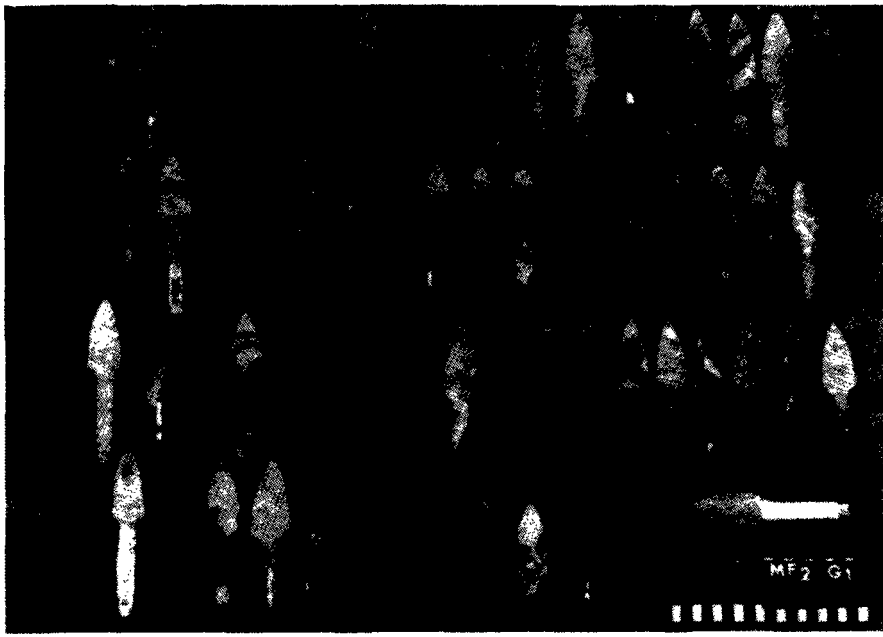
The Kharga site has superimposed strata of a more recent Acheulian stage culminating in the Middle Stone Age. Although the bifaces exhibit the conventional shapes found elsewhere, specimens are sometimes also found that have been reworked to form cleavers at the distal end, and in fact this is currently the only type of cleaver known in Egypt. Also peculiar to Egypt are handaxes produced by a technique similar to that known as 'Victoria West'. This consists of striking off a large flake, usually from one of the sides or occasionally from one of the ends, and then using the flake itself.

The Middle Stone Age

Changes in the way of life led to the generalized use of flakes instead of handaxes, which became increasingly rare and then disappeared altogether. These flake tools, which had faceted stems and were often made by the pre-Levallois technique already mentioned, came from a prepared core that produced flakes of predetermined shape. In some parts of Africa, this process survived until the Neolithic, which goes to show that it was the product of very advanced technological thinking for the time.

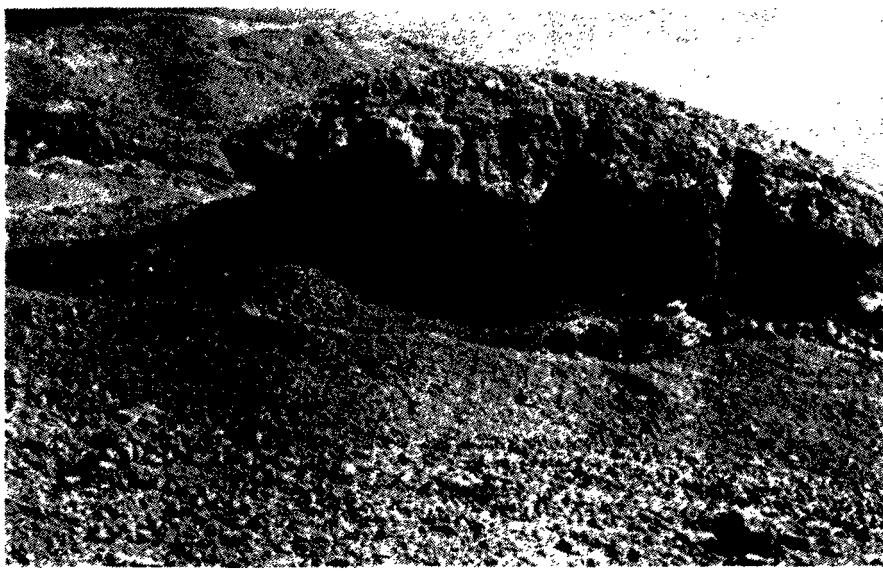
The Mousterian industry that used the Levallois flaking technique has scarcely been investigated in the southern Sudan, although it probably occurs at Tangasi and, in a more highly developed form, at Abu Tabari and Nuri. On the other hand, recent research in the north has established four distinct groupings: Nubian Mousterian, sometimes associated with Upper Palaeolithic tools (from *c.* – 45 000 to – 30 000); denticulate Mousterian; Lupemban Sangoan; and in Sudanese Nubia, Khormusian, which differs from the northern Mousterian in that it has trimmed Levallois-type flakes, denticulate pieces and occasional burins. It has been dated from *c.* 25 000 to 16 000 B.P. Compared with the northern Sudan, the data collected in Egyptian Nubia is inadequate.

The Aterian, the typical industry of the Maghrib and the southern Sahara, is distinguished by flakes with a pronounced tanged base and by the use of foliate trimming. Probably commencing with the Mousterian, it lasted in some areas until as late as the Neolithic. In Egyptian Nubia, it is associated with a very prolific fauna: white rhinoceros, large bovines, wild ass, two species of gazelle, antelope, fox, jackal, wart-hog,



25.1 *Flint javelin heads from Mirgissa, Sudan; excavations led by J. Vercoutter (French Archaeological Mission to the Sudan)*

25.2 *The Valley of the Queens (J. Devisse)*



ostrich, turtle and an ancestor of the dromedary. In the Cairo region, the Aterian tends to become microlithic.

All these lines of research converge to demonstrate the existence of an early 'Acheulian–Levallois-type' period, followed by another marked by the existence of massive cores, which gradually became smaller and more refined. In a later phase, we find blade-like flakes showing increasing traces of secondary retouching, which is suggestive of the Mousterian, together with sundry other tools.

As regards the men responsible for these industries, it should be noted that two skull fragments probably dating from this period were found at Silsileh in 1962, but it has not yet been possible to identify them with any certainty.

The Late Stone Age

In the Nile valley, the problems entailed in drawing clear dividing lines between one period and another make it difficult to single out the chronological sequences. At the same time, changes in ecology seem to have affected the relations existing between the inhabitants of the valley and their neighbours, in that old affinities broke down and new ones were formed. The list of cultural types now known or recently identified gives the impression that they represented a very wide and scattered range. The comments apply equally to the ensuing period, the epi-Palaeolithic.

In the Sudan, the Late Stone Age has just been studied in the more northerly regions, where it exhibits two industries, the Jemaian, near Wādī Halfa (from *c.* – 15 000 to – 13 000), and the Sebilian,[1] likewise at Wādī Halfa (from *c.* – 13 000 to – 9600).

Two industries have been identified in Egyptian Nubia: the Amadian and the Sebilian at the Sebua site.

In Egypt, three Late Stone Age styles can be distinguished: the Gizean, which has been identified near Cairo; the Hawarian, which extends from Esna to the tip of the delta and may betray some Aterian influence towards the south; and the Khargan, in the Kharga oasis.

The Levallois flaking technique is predominant in all these styles, although they differ in respect of the varying proportions of scrapers, burins, blades and denticulate implements making up the tool-kit. Only the Hawarian displays any microlithic tendencies heralding the subsequent epi-Palaeolithic period.

The epi-Palaeolithic period

In the Nile valley, this period generally differs from its forerunner in that flaking techniques are superseded by the production of microlithic blades and lamellae with faceted butts. There are, however, instances of survivals, recurrences and overlapping from one style to another.

Research conducted in the northern Sudan and south of Egyptian Nubia has unearthed a complex of thirteen industries that probably represent different styles of one

1. Sebilian: the entire period was at first thought to have been characterized by the Sebilian throughout the region. However, research has shown that this industry is only really characteristic of the Kom Ombo area.

and the same culture. These are the Halfian, where a new type of very fine retouching technique is used (from *c.* – 18 000 to – 13 000); the Ballanian (from – 14 000 to – 12 000); the Qadian, where graves located inside the dwelling-places have produced skull fragments of a people very similar to those of the Cro-Magnon species (from *c.* – 12 000 to 5000); the Arkinian (*c.* – 7400); the El-Kabian (*c.* – 5000); the Shamakian (from *c.* – 5000 to – 3270); the Silsilian, yielding Cro Magnon-type human remains (*c.* – 13 000); the Fakurian (*c.* – 13 000); the Sebilian, which retained the Levallois flaking technique (*c.* – 11 000); the Menchian; the Lakeitian; and the Helwanian. Lastly, the Natufian, which was an industry originating in Palestine, is thought to have made a series of incursions into Egyptian territory. At Helwan, a phase of this industry has been identified, characterized by pieces with their backs shaped by crosswise retouching (*c.* – 7000). The El-Khiam arrow-heads, with their symmetrically slotted base, which were also very widespread in Palestine, can probably be associated with this style.

The Neolithic and predynastic periods

This long period, covering roughly two millennia (from – 5000 to – 3000), calls for more detailed analysis. The peoples of the Nile valley, who started out as nomads or semi-nomads, gradually became the harbingers of the main features of civilization as we know it today: a fixed habitat, the use of pottery, domestication and breeding of cattle, agriculture and the production of a host of tools to meet Man's growing needs.

Sudan

Four cultural complexes can be identified in the Sudan.

The Khartoumian

This is perhaps the earliest culture of the period in the Sudan (*c.* – 4000). It has been identified in over a dozen localities spreading over an enormous area, from Dongola to Abu Hagar. Data from the excavations at Khartoum furnish evidence of a fixed habitat consisting of wattle huts, the large-scale use of pottery with incised 'wavy-line' and 'dotted-line' decoration, and the use of grindstones. There is an abundant variety of distinctly microlithic and geometrical stone tools made of quartz. Bone harpoons with a single row of barbs suggest that the population engaged in fishing. There are also sets of grinding implements. Personal adornments include disc-shaped beads made of ostrich shells and a few drop-earrings; red and yellow ochre were used for painting the body. The dead were buried in their dwellings, lying on their sides. The inhabitants were of the negroid type. In their lifetime, they underwent ritual mutilation of the teeth, as was the practice among the Capsian and Ibero-Maurusians in the Maghrib and the Neolithic peoples in Kenya. The fauna associated with them include buffalo, antelope, hippopotamus, wild cat and porcupine, and an enormous number of fish.

The Shaheinabian culture

The Shaheinabian occurs at a number of sites scattered in the area to the south of the Sixth Cataract. It is probably an offshoot of the Khartoumian, but differs from it in that

it used red slipware pottery, 'barrel-plane' gouges and polished bone axes. Microliths and flat and convex hammer-heads supplement the stone tool-kit. Bone harpoons are still present, but mother-of-pearl fish-hooks make their appearance, as do amazonite and cornelian beads and labrets (stone plaques inserted into the lips, which are still worn today). Buffalo, antelope, giraffe and wart-hog were hunted, and the dwarf goat was domesticated. The Shaheinabian has features in common with the Fayumian of northern Egypt, for example, and with the cultures to the west and north-west of the Sudan, to judge from the use of amazonite and gouges. The Kadero site, which is another example of this culture, has yielded relatively recent graves dating from *c.* – 3500 to – 3000.

The Abkian
The Abkian of both the northern and southern Sudan, at least as far as Sai, is probably contemporary with the Khartoumian and subsequently with the Shaheinabian (from *c.* – 3380 to – 2985).

The post-Shamakian
The post-Shamakian, dating from *c.* – 3650 to – 3270, has been found at only two sites.

Egyptian Nubia

In Egyptian Nubia, the apparent absence of the above cultures may chiefly be due to the fact that there has not been sufficient research. The Nagada I culture has been found at only a few sites, while Nagada II occurs near Abu Simbel and at Khor Daoud, Sebua, Bahan and Ohemhit. From the first dynasty onwards, contacts between Nubia and Egypt tapered off and the Nubian industries, which go under the name of the A, B and C-Groups, evolved on their own until the time of the New Kingdom.

Egypt

In Egypt, the differing geographical conditions were responsible for the formation of two distinct cultural groups, one in the south and the other in the north.

The southern cultural group (Upper Egypt)
The southern group emerges from the outset as having been an advanced civilization. It has been described on the basis of the study made of the large number of extensive cemeteries and of the more limited remains of places of settlement.

The Tasian
The Tasian, which has so far been only summarily investigated and is even questioned by some authors, occurs in Middle Egypt at Tasa, Badari, Mustajidda and Matmar. Tasian pottery is brown or more rarely red in colour, with black edging, and the surface is sometimes ribbed. The shape of the pots resembles that of a chalice. The stone tool-kit includes polished axes, scrapers and knives. Rectangular palettes for cosmetics, mainly of alabaster, rings, ivory bracelets and pierced sea-shells are included in the range of items used for personal decoration. There are also bone spoons and fish-hooks. Graves

are oval or rectangular, sometimes with a side recess, and contain a body lying on its side, with the arms and legs drawn up, the head pointing to the south and the face turned to the west. The grave goods are identical to those found in the dwelling.

The Badarian

The Badarian, which is primarily located in Middle Egypt, occurs at Badari, Mustajidda, Matmar and Hamamia. Badarian pottery, which is of very fine workmanship, comes in a variety of colours such as red, brown, grey and red with black edging, and the surface is sometimes ribbed. Polished-stone vessels were also used. The bone or ivory ladles, combs, bangles, fish-hooks and statuettes display considerable artistic skill. The statuettes, in particular, may have had a ritual function. Items of personal adornment include quartz beads set in copper, sea shells and rectangular palettes for cosmetics, made of slate, and often with a concave base. Wheat, barley and flax were cultivated, cattle and sheep were domesticated, and gazelle, ostrich and turtle were hunted for food. Dwellings, which probably consisted of simple light-weight huts, have disappeared. The burial traditions were the same as in the Tasian culture, although the graves are more commonly oval or circular rather than rectangular. The grave goods are the same as those found in the dwellings. Badarian sites are found all along the Nile valley and in the eastern desert and Nubia.

Nagada I[2]

Nagada I (from *c.* – 4000 to – 3500) has been identified in Middle Egypt, Nubia and the eastern desert and is more recent than the Badarian culture. Nagada pottery does not have incised decorations, but is painted in white on a red background with linear and naturalistic motifs. The cylindrical stone pots, which are often made of basalt, have pierced handles and are frequently conical at the base. The biface stone tools include arrow-heads, knives of various types, polished axes and discoid or conical hammer-heads. Human and animal figures are represented on the slate cosmetics palettes and on bone or ivory objects. It is not altogether clear whether these were used for ritual or magical purposes, although they have only been found in graves. Only one site, at Mahasna, has yielded evidence of dwellings, which consisted of light stockade-like shelters, with the granaries located inside the homes. Graves did not differ greatly from earlier periods, although multiple burials and the dismembering of corpses formed part of the ritual. One of the most distinctive features of this first Nagada period was the increased use of copper.

Nagada II[3]

Nagada II (from *c.* – 3500 to – 3100) can be identified from the entrance to the Fayum depression at Gerza as far as the southern part of Egyptian Nubia, and at Hamamia, Mustajidda and Armant. The white-decorated ware was superseded by pink pottery with brown decoration in the form of stylized symbolic motifs representing spirals, boats, plants and figures with upraised arms. Also characteristic of this culture are the

2. Nagada I: sometimes known as the Ancient Predynastic or Amratian.
3. Nagada II: also known as the Middle Predynastic or Gerzean.

pot-bellied vessels with wavy handles, which subsequently became cylindrical and were eventually made without handles in the early historical period. Pots made of polished stone were generally of the same shape as the pink ceramic ware. The stone tool-kit included knives with a V-shaped end and combined concave and convex cutting-edges. In some instances, the handles were covered with gold leaf or were inlaid with ivory. Copper-working became more sophisticated, producing points, pins and axes. Bone and ivory figurines also became highly stylized. The round clay dwellings were let slightly into the ground and were covered over with a roof. Burial practices showed further refinement: the graves were lined with wood, mud or brick, and offerings were placed in side graves. The direction in which the bodies pointed was also more varied than at earlier periods.

The northern cultural group (Lower Egypt)

The northern cultural group is significantly different from its southern counterpart, in that the settlement sites were larger, the pottery was monochrome and, at some periods, the dead were buried inside the actual dwellings.

Fayumian B

Fayumian B is thought to belong to a final Palaeolithic or else to a pre-ceramic Neolithic culture. It includes both plain and microlithic blades and a set of gouges and arrow-heads, which suggest that it may have had contacts with the Sahara (from *c.* – 6500 to – 5190).

Fayumian A

Fayumian A, which has been much more thoroughly studied, has crude pottery of various shapes, among which the pots with feet or projecting bosses are reminiscent of the Badarian. The stone-tool industry belongs to the Neolithic tradition, but a wide range of bone tools and cosmetics palettes have also been made. No actual constructed dwellings have been discovered, but granaries consisting of baskets sunk into the ground, presumably near such dwellings, have been preserved. The inhabitants consumed pork, goat, beef, hippopotamus and turtle. No graves have been discovered.

The Merimdian

The Merimdian (from – 4180 to – 3580) is identified with a single settlement site of more than two hectares in the area west of the Nile delta. The pottery is decorated with incised patterns in relief, often representing a palm-leaf motif. There are few stoneware vessels and the stone and bone tools are similar to those of the Fayumian culture. Personal adornments are as varied as in earlier periods and include pins, jewellery and cosmetics palettes made of slate and granite, both of which were imported from the south. Dwellings ranged from light-weight oval huts to sturdier structures. They were adjoined by basketwork granaries, which were later replaced by pottery jars sunk into the ground. The dead were buried without any grave-goods in oval graves situated among the dwellings. Dogs, goats and sheep were domesticated, but hippopotamus, crocodile and turtle were still hunted, and the population also engaged in fishing. The

Merimdian may have been contemporaneous with the Fayumian in the north and with Nagada I in the south.

Omarian A

Omarian A has been identified near Helwan. It consists of a settlement located at the top of a sheer cliff and is the only example of its kind in Egypt. The monochrome pottery is of fine quality and comprises a wide variety of shapes, including pots with bosses familiar from earlier periods. Calcite and basalt pots were also occasionally used. The flint-tool industry generally used the bifacial flaking technique. On the other hand, the blade industry displayed a number of features, the most striking of which, in both technical and aesthetic terms, was the introduction of ridge-backed knives curving towards the point. Fishing net-sinkers made of flakes are also found. The bone industry is of high quality, but fish-hooks were made of horn. Personal adornments were more plentiful and include gastropod shells from the Red Sea, ostrich-shell beads, bone, stone and the backbones of fish. Pierced fossil nummulite shells were used as earrings. Galena and resin were imported. Crude palettes for crushing ochre were made of limestone and quartzite. The animal population included domesticated bovines and goats, and a number of other animals and fish were caught. Wheat, barley and flax were cultivated, in addition to which food was obtained from wild plants such as the sycamore, date-palm, tamarisk and esparto grass. Dwellings were of two types: some were oval in shape, with the roof supported by posts, whereas others were round and were partly located below ground-level, with the granaries located among the huts. The dead were buried in earthenware jars on the settlement sites themselves and were all positioned with the head pointing to the south and the face turned to the west.

Omarian B

This culture is thought to be contemporaneous with the beginning of Nagada I in the south. It was identified east of the Omarian A site, from which it differs in respect of the burial practices followed and the smaller-sized stone tools produced. The cemetery was located away from the settlement proper and the graves were covered by stone cairns. This site has not yet been completely excavated.

Maadian

The Maadian culture was discovered through the as yet incomplete excavation of a single settlement site adjoining two necropolises at Maadi, near Cairo, and in a third necropolis found at Heliopolis, a southern suburb of Cairo. Maadian pottery is monochrome and the style is less refined than the Omarian. The most commonly encountered types consist of elongated ovoid pots with a protruding rim, the most representative specimens being pots with circular base-rings reminiscent of the basalt vessels of the same type. The less-common brown-decorated pots may have been imported from the south, more specifically in the Nagada I period, as were the cylindrical basalt pots. Even rarer are the forked V-shaped flint knives, which may also have been imported from Nagada I. The few items of personal adornment include lozenge-shaped cosmetics palettes, which again come from Nagada I.

Above all, however, for the first time in the Predynastic cultures of northern Egypt,

the Maadian provides evidence of the large-scale use of copper. This new factor can be ascribed to contacts with the mining areas in Sinai. Furthermore, it was at about this time that the Maadian began to display several features in common with the cultures of eastern Egypt, particularly in its pottery – the same style has been found as far away as Palestine – as well as certain flint tools and manganese, too. The flora and fauna resources of Maadi seem to have been identical to the domesticated species of earlier cultures.

The inhabited area of Maadi yielded a large number of stakes driven into the ground, which have made it possible to distinguish two types of light-weight dwellings: oval and rectangular huts, the latter having been built with dry bricks. A third type of hut has also been discovered: it was underground with steps leading down to it. Earthenware jars sunk into the ground served as grain silos, and circular excavations turned out to be provision stores. The cemetries were situated outside the villages and contained round or oval graves, in which corpses were doubled up on their sides, their heads pointing towards the south and their faces to the west. Animals such as gazelles or dogs (the latter principally at Heliopolis), which were undoubtedly considered sacred, were also buried in these cemetries.

In fact, this culture seems to be a transition period, heralding the Predynastic and the beginning of the historical period.

Nevertheless, the advent of the historical period, with the introduction of writing, the unification of Egypt under a single ruler, and progress in the technology of metal, did not change certain features of the way of life of the Nile valley peoples. In particular, reference is made to the persistence of the use of flint; indeed the mastery of flint-working actually reached its peak under the early dynasties, as witness the superb, so-called 'sacrificial' knives from the royal tombs at Abydos in Upper Egypt, and Sakkara and Helwan, near Cairo: the perfection of their workmanship and their great size are astonishing.

In Egyptian Nubia and part of Sudanese Nubia, on the other hand, archaeological research had not gone far enough by the end of the rescue operations; this has deprived us permanently of much valuable information about the past of these areas.

This brief outline can claim to be no more than an attempt to piece together the links in the chain of African history with the help of the data available on the period before the coming of the Pharaohs. One outstanding fact demonstrated by the information available is that, from the Neolithic period onwards, there were constant close contacts between Egypt and the neighbouring areas to the east, west and south.

26 *African prehistoric art*

Man, by definition, has always been a tool-maker. At the same time, he has also been a maker of works of art.

In spite of the damage caused by the elements and in spite of pillaging by Man, notably during the colonial period, Africa is still the continent with the greatest number of specimens of prehistoric art. These are to be found mainly in the upland regions and mountain massifs, especially in the cliff formations running along the edges of the mountains and overhanging existing or dried-out water courses. The main centres are in the Sahara – in Algeria (the southern Oran region and Tassili N' Ajjer), in southern Morocco, in the Aïr and Ténéré regions in Niger, in the Tibesti massif in Chad, in Nubia, and at the Dhar Tichitt site in Mauritania – and in Southern Africa: in Lesotho, Botswana and Malawi, at Ngwane in Namibia, and in the Republic of South Africa, especially in the Orange and Vaal river basins and the Transvaal, where the paintings are found inside rock shelters and the engravings on the surface. There are few African countries where artistic remains have not been discovered, although it is true that they are not all of prehistoric origin.

One reason for this proliferation of art in Africa's deserts and steppes is that in prehistoric times Africa was the most densely populated continent of the planet, especially in those regions that have now become arid. Moreover, the dry air in those regions helped to preserve human artefacts over periods lasting for thousands of years, while the cliffs overhanging the valleys deep within the mountain ranges or on their fringes provided dwelling places that were easy to defend and to keep supplied with water and game.

In the case of the Tassili cliffs, for instance, the alternating cycles of heat and cold, combined with storm-water runoff, eroded the foot of the sheer rock walls to form huge shelters from which people taking refuge could dominate all the surrounding landscape. This observation-platform-cum-fortress and the natural galleries carved into the sandstone by the scouring effects of wind and water offered Man a place where he could depict the teeming life all around him.

Chronology and development

Dating methods and problems

The stratigraphic method consists of classifying objects on a time-scale according to the place they occupy in the sequence of superimposed ground layers. In our case, it is not of great value, for the layers deposited on the shelter floors were washed away and subsequently replaced with fresh layers during the very wet periods that occurred in prehistoric times. Besides, the shelters may have been cleaned out by the various occupants. The only reliable chronological evidence would be the discovery of organic colouring matter that fell from the walls into a layer that is known not to have been disturbed since that time.

The colouring method can also be a useful pointer, since the paint colours most closely resembling the natural rock are those likely to have been applied at the earliest date, whereas the lighter colours contrasting more sharply with the rock base may be considered more recent. However, everything depends on the consistency of the rock and on whether it has been exposed to sun or wind, for example. Similarly, the way in which the lines of a rock engraving are worn down through erosion from a clear-cut V-shape to a flatter U-shape provides only a very rough clue to the age of the work of art.

Works of art may also be tentatively dated from the animal species they represent. The *Bubalus* antelope, for instance, was an extremely old species that became extinct at a very early date. However, an artist may well have been depicting stylized images of animals that had died out long before.

What is more, a naturalistic style, which attempts a faithful portrayal of reality as the artist observes it, may not necessarily predate a more abstract style that is not bound by the objects it interprets. Furthermore, although it is true that paintings overlying others must be more recent, it is often difficult to see which of two lines is the lower one, and the line on top may even have been made by the same artist, for reasons unknown to us.

There remains the radio-carbon dating method (cf. Chapter 9 above). Even here, however, a good many pitfalls have to be avoided, by ensuring that the paint debris analysed is not mixed with recent organic matter, for instance, or by determining whether a carbon specimen may not have been the result of a fire caused by lightning. The number of such datings is nevertheless on the increase. At Meniet, in the central Sahara, for example, a carbon fragment has yielded a date of 5410 ± 300 years B.P.

Datings may sometimes become embroiled in politics, as when the white population of South Africa attempts to scale down the age of archaeological evidence by dating the Drackensberg paintings to the seventeenth century of the Christian era, long after the arrival of the Bantu, even though these paintings show animals, men and scenes from much earlier times.

Periods

Professor J. Ruffié has said that 'man was originally a tropical animal'. Setting out from Africa, he went on to colonize Europe where, some 4000 ago, there was the

splendid flowering of rock art in the underground grottoes of France and Spain.

African rock art dates from the Neolithic, a period which research is tending to set further and further back in Africa – to between 4000 and 10 000 years before the Christian era, depending on the region.

A distinction has often been made between four main series of rock art, named after the type of animal most commonly represented. They are known respectively as the ages of the *Bubalus*, the Ox, the Horse and the Camel. The *Bubalus* was a kind of enormous buffalo, which appears in the earliest specimens of rock art about 9000 years B.P. Elephants and rhinoceros were also depicted in the same period, and all these species are indicative of a thickly wooded environment. From about 6000 years B.P., the ox starts to be represented, in two forms: the *Bos ibericus*, with short, thick horns, and the *Bos africanus*, with long widely-spaced horns. The horse made its appearance in about 3500 years B.P., and is sometimes depicted in the 'flying gallop' style, with its four legs splayed out. By this time, which already comes within the historical era, the hippopotamus had disappeared from rock paintings, suggesting that there were no longer any permanent water courses or lakes. The camel was introduced into Egypt by the Persian invasion in about 500 before the Christian era and belongs exclusively to the historical period.

The two periods coming within strictly prehistoric times are thus those of the *Bubalus* and the Ox. Attempts made to divide them into sub-periods have proved extremely difficult. The ram, for example, is classified as coming after the *Bubalus* and the elephant, and yet it sometimes seems to be contemporaneous with them. At that time, it may have been semi-domesticated or kept in captivity for some religious purpose. Similarly, the great ox engravings at Dider, in the Tassili, or the ox wearing a pendant at Wādī Djerat seem to belong to the *Bubalus* period. There was therefore some overlapping.

In regions other than the Sahara, the major periods are often later in time and are defined on the basis of a variety of criteria such as the nature of the people and animals represented, the techniques used, and the genres and styles.

Techniques, types and styles

Techniques

Engravings

As a general rule, engravings are earlier than paintings and the most highly perfected techniques are to be found in the earliest periods. Very hard rock fragments struck with a hammerstone, specimens of which have been found near the sites, were used to carve on sandstone or even on granite and produced models of precision. In some cases, the line is only lightly traced, as in the elephant engraving at Bardai in Chad. In others, the thick, but clear-cut line bites deeply into the rock as, for example, in the pictures of elephants at In Galjeien and of rhinoceros at Gonoa, in the Tibesti. The incisions are V-shaped or U-shaped and were hollowed out with stone hatchets or pieces of very hard wood, while damp sand may have been used as an abrasive for smoothing down their

surfaces. Feats of almost acrobatic skill must have been needed to produce some of these engravings, which stand 5 metres or more high.

In Central and Southern Africa, delicate effects were obtained by hollowing out the surfaces and polishing them to a high sheen to represent the shades of the animals' coats or the loads they were carrying. This technique foreshadows the bas-reliefs of Pharaonic Egypt. In addition, the natural rock was used very skilfully to confer an added dimension to the pictures. Near Leeufontein in South Africa, a rhinoceros is carved on a rock whose rough surface and sharp edges exactly reproduce the animal's scaly hide. Elsewhere, the lower jaw of a zebra is delineated by a slight bulge in the rock shaped like a real-life jawbone. Another masterpiece of prehistoric stone-engraving is the group of giraffes at Blaka, in Niger, with their variegated coats, their legs in such natural attitudes, and even the waving motion of their tails. With the passage of time, however, the quality of engraving declined and the workmanship became increasingly coarse.

Paintings

Again, simple ladders or even scaffolding must have sometimes been needed to paint pictures situated as high as 4 metres off the ground, out of the reach of animals and people. In some cases, the paintings are monochrome, and in others polychrome. Where several colours have been used, the carefully worked-out combinations were designed to reproduce the delicate variations in the shades found in real life. Workshops of a kind were therefore needed, and remains of these have been found at I-n-Itinen, complete with grinding-stones and tiny pestles and paint-holders. The amazingly fresh and vivid colours that have survived up to the present are a tribute to the quite remarkable lasting qualities of the pigments used. There was a range of basic colours such as red, a brownish red and brown, which were obtained from laterite and iron oxide; white obtained from kaolin, latex, animal droppings and zinc oxide; and black obtained from charcoal, powdered bone ash, soot or burnt fat. Yellow, green and violet were also among the colours used. These ingredients were ground up to a fine powder with a pestle and mortar and then added to a liquid, which may have been milk, melted fat, egg white, honey or cooked bone-marrow. The result was a set of bright colours that have lasted for thousands of years. They were applied with the fingers or else with feathers, straw or macerated-wood spatulas, or brushes made of animal hair attached to a stick by means of sinews. They were also sprayed on the surfaces by squirting liquid from the mouth. Here again, the natural rock features were sometimes very skilfully exploited: at Tihilahi, for example, a crevice in the rock has been used to represent the water-hole at which the herd is preparing to drink.

Jewellery

The method used to make certain types of bead has been reconstructed from a study of the debris remaining from several of the stages involved in working cornelian, a very hard rock. A flat disc was initially prepared by percussion flaking and grinding. A large square-section needle was then struck from a flint core and was used first as a graving tool to start piercing a hole on either side of the disc and then as a rotary drill to finish off the hole and smoothe it down with fine sand mixed with plant resin. Other equally

refractory rocks, as well as bone, ivory and ostrich eggshells, were used to make necklaces, bracelets, anklets and other adornments. Pumice stone was used for polishing.

Pottery

Clay for pottery-making was prepared with a binder made from cow dung. Pots were then made by the coil method, in which the clay coil is worked with the fingers and a smoothing-stick. The necks of the pots were made in a variety of shapes, and the faultless firing techniques used were responsible for producing a wide variety of colours, from bright pink to dark brown. Plant glazes are still used in Africa today for varnishing or decorating both pottery and houses, and they were already known at that time. The designs produced with bone combs, fish-bones and the imprints of ears of corn, rope or seeds show tremendous powers of imagination and virtuosity that are as apparent at Esh Shaheinab in the Sudan as they are at Wādī Echid in Mali, where the closely grouped pottery kilns point to the development of ever-larger workshop sites and to the emergence of a craftsman caste.

Sculpture

Sculpture is represented by miniatures of reclining cattle, a hare with its ears flattened back along its body, the striking head of a ram at Tamentit in the Tūwāt, the magnificently stylized head of an owl at Tabelbalet, and small figures of women and birds.

Types and style

In the Sahara, it is possible to distinguish three main types and styles that more or less coincide with the above-mentioned periods. The first type displays a monumental, semi-naturalistic tendency, in which two stages can be distinguished. The first is the *Bubalus* style found in the western and central Sahara and in the Fezzān and Chad. The subjects, which are almost invariably engraved, generally consist of individual large animals drawn in bare outline with masterly skill. The main features of the second stage are paintings of horned sheep and antelopes, and of men with round heads. The outline, whether in the small paintings or the vast murals, is no longer austere, but lively, even betraying a sense of agitation. There then appears to have been a move from the first stage of contemplation and awe, inspired by the overwhelming spectacle of nature, to the second stage, involving an active or emotive ritual in which men who are sometimes masked defer to animal totems.

The second main type consists of naturalistic paintings and carvings. This descriptive style uses a broader palette of colours and shows Man as a domesticator of animals. The setting is one of Saharan encampments and villages, the most representative site being that at Jabbaren.

The third type is stylized and abstract. The quality of the engravings declines, but, in the paintings, the finer and freer line is better suited to reproducing stylized effects or the impression of movement. The wash technique also made it possible to render more subtle shades of colouring. The paintings represent horses and chariots and dromedaries, all stylized, while humans are drawn with a profile formed of two triangles or with a long neck, with the head missing. Hence the tendency is towards an elaborate and sophis-

ticated style of drawing and yet, at the same time, towards a geometrical simplification that is not always successful.

Some of the conventions governing these styles remained unchanged throughout several periods, such as the representations of cattle with the horns full face and the head in profile, or the drawings of herdsmen with one arm outstretched and the other bent, with the hand on the hip. A number of religious themes appear, such as the ram in the southern Oran, and sexual motifs become more common, especially in the Fezzān and Tassili. Among the tools, weapons and jewellery of the period, the finest specimens are to be found in the Sudanic Neolithic in Mauritania and Mali, where they include splendid brooches, decorated pottery and the Tichitt arrow-heads with their meticulously polished barbs and perfect triangular shape.

In the other regions of Africa, the typology of prehistoric art has not yet been completely defined. In Namibia, one authority posits the existence of twenty strata forming four main stages: first, that of large animals with no human figures, followed by small panels with human figures, then by monochrome scenes of hunting and ritual dancing and, lastly, a polychrome stage embracing the masterpieces of the Philipp Cave shelter and Brandberg, which have been dated to the year 1500 of the Christian era. Frobenius, for his part, distinguished two main rock-art styles in Southern Africa. In the southernmost tip, he found a polychrome naturalistic style, primarily representing animals drawn with consummate skill, which was capable of producing an exact rendering of the folds in a pachyderm's hide or the stripes of a zebra's coat, but which does not exude much warmth in its set-piece scenes of hunting, dancing, processions and gatherings.

On the other hand, in the north from the Transvaal to the Zambezi, in Zambia, Zimbabwe and Malawi, the monochrome paintings offer an interpretation of reality in compositions brimming over with imagination. The human body with its triangular-shaped bust is shown in profile, while the limbs are represented in full face, as in Egyptian bas-reliefs. The scenes depicted are perhaps less animated than in the south, but are more charged with emotion. Among the themes they represent are solemn funeral rites; fauna – as in the Inoro grotto, which resembles some fantastic bestiary with its birds with crocodile-jaw beaks, elephants with saw-toothed backs, and two-headed beasts; popular myths such as the one connected with rain-making; and realistic or stylized landscapes. This Zimbabwean style is the reflection of a more sophisticated culture which, as it went into decline, gave way to a less vigorous and more relaxed style.

In Burkina Faso, the rock carvings in the north of the country are semi-naturalistic or stylized, whereas they tend to be more geometrical in the south.

In the Central African Republic, where excavations have furnished evidence of human occupation from the very earliest prehistoric times dating from before the Acheulian, a number of rock-art centres have been identified, with very early red stylized figures, and white figures with their hands on their hips. This art seems to bear little relationship to that of the Sahara and is more akin to the paintings of East and Southern Africa.

Motives and meanings

The term 'petroglyph' has been coined to describe rock art. In point of fact, this art is a kind of writing to which the key has to be discovered before it can be deciphered. This is

why it is important to describe the sign first, before going on to decode it and ascertain what it means.

The ideal approach would be to make a statistical compilation of quantitative and qualitative data for as many pictures as possible, as a basis for a dynamic comparative analysis by identifying the different developments in both time and space. However, it should be borne in mind that a sign is not only a sign of something, but a sign that means something to somebody and, as such, involves a form of symbolism. For that symbolism to be understood, familiarity with all the social and spiritual representations of the human group involved is necessary. In the final analysis, only the entire cultural context can provide the key to the interpretation of an aesthetic message. Only by fitting together the various cultural pieces is it possible to reconstruct the historical patterns into whose fabric they have been woven.

This is why it is unfortunate to use clichés and captions such as 'Justice of the Peace', 'the White Lady', 'the Man pulling teeth', 'Josephine sold by her sisters', 'the Martians' as titles for African rock paintings, since all such expressions reflect the interpretations of individuals moulded by a different civilization and consequently distort or disfigure the facts. As a matter of principle, African prehistoric art has to be interpreted primarily by reference to indigenous values.

That being said, there are two main approaches to the interpretation of this form of art: the idealistic approach and the materialistic. For the idealistic, prehistoric art reflects Man's vision of the world. Erik Holm has said that the art of Southern Africa is seen in its true light if we regard it as the expression of religious fervour and the urge to transcend reality. This was the metaphysics of primitive Man. He then went on to suggest that we rest content with the information supplied by myth, which, in his view, is explicit enough. Frobenius developed the same proposition. In his opinion, the lion at Leeufontein is engraved on the face illuminated by the first rays of the sun, precisely because it represents the sun, whereas the rhinoceros faces west because it is the spirit of night and darkness. The red-striped chamois symbolizes stormy weather, the praying mantis stands for lightning, and the elephant for rain clouds, as can be seen at Mount St Paul, in the Drakensberg. Hence it is sufficient to be familiar with all mythology and cosmogony (the origins of the mineral, plant and animal worlds) to have the master-key to all the riddles of African rock art, which is as 'timeless as myth'.

The materialist approach, on the other hand, places the art back in its historical context. It is merely the reflection of the tangible existence of people in a given society, an 'ideological' means for Man to signify and improve his place in the universe and social life.

These two approaches have to be merged, if we are to gain a clearer understanding of African rock art, which is undoubtedly, in one sense, a huge illustrated book offering an explanation of the world and conveying an educational message through visual images, as evidenced by the role of the prehistoric paintings in the education of the young San. In this context, the paintings are illustrations of a 'general history' concealed behind the mask of the myth recounting 'the origins and evolution of all beings'. At the same time, however, the myth offers an ideal means of enhancing productive forces and production relationships – or of detracting from them. For example, the young San who prays to a

star as he sharpens his stone arrow-head, says: 'Make me hit my quarry!'. This is a case of harnessing myth to production. In order to survive, man appeals to and mobilizes the universe.

Myth can also serve as a means of ordering the universe in order to understand it better and thereby exercise greater control over it. Indeed, portrayal of a feared being is one way of escaping from its clutches, and keeping it in sight is one way of dominating it. For instance, the three masked hunters in the painting at Djaret, who seem to be closing in on a buffalo with a disc round its neck, may represent a scene in which they are casting a spell. To this day hunters in the Sahel wear a hornbill's head, which they wave up and down in imitation of the bird, so that they can creep up on an antelope on all fours and shoot their arrows at it from close range. In some cases, images involving a woman and a masked man with a giant phallus, dancing or engaging in ritual intercourse, are clearly connected with fertility cults and, indeed, at the end of the prehistoric period, when all forms of life in the Sahara and the Namibian desert were retreating before the relentless onslaught of the drought, fertility was the overriding consideration. A hexagonal piece of jewellery from the Neolithic site at Tin Felki has been recognized by A. Hampâté Bâ as being a fertility charm in use among Fulani women. Similarly, the Agadès cross may be derived from the Tanit sign, a symbol of the female sex.

Finally, in addition to the purely idealistic or utilitarian motive, aesthetic considerations must also be borne in mind. The pleasure taken in creating shapes for the sake of contemplating them or as a form of self-expression is one of the marks of humankind, as is pleasure in recollection and the desire to perpetuate the memory of individual or collective feats. Man is a born chronicler and the prehistoric artists who produced this all-embracing sacred and profane popular art are the first African historians, since they transcribed in stone the successive stages of African Man's relationship with his natural and social environment.

The historical dimension of art as a document

Let us consider to what extent African prehistoric art can be regarded as the illustrated version of the first African history book.

The ecological environment

It is true that vestiges of the prehistoric world as represented by artefacts found *in situ* make it possible for us to reconstruct the prehistoric environment. But the themes depicted in the rock paintings are also a reflection of that environment. And, in the cases where the two concur, they bear eloquent testimony to the documentary value of prehistoric art. For example, the Adrar Bous site, which has been dated to 5140 years B.P. by the radio-carbon method, has yielded hippopotamus bones, which bear out the historical accuracy of the same animals depicted in the painting at Assadjen Ouan Mellen. Like the elephant, the hippopotamus needed fairly dense vegetation, and some traces of such vegetation have survived. In the horse and chariot period, there are drawings of palm-trees, which were presumably meant to indicate the existence of oases.

In Southern Africa, the northerly or Zimbabwean style is full of drawings of trees, some of which can be identified. Shelters in areas that are now desert contain engravings and paintings of so many different kinds of fauna that walking into them is like entering a petrified zoo. Besides several types of fish, there are the now extinct *Bubalus* with its enormous horns measuring up to 3 metres across, a number of predators, various monkeys, and ostriches, owls, etc. Among the activities depicted there are many hunting scenes, reminders of the ceaseless duel between Man and beast, and of the triumph of intelligence over brute force. At Iheren, there is a scene of a lion hunt, in which the quarry is encircled by a ring of threatening spears.

In the Nile valley and throughout the Sahara, there are countless pictures of traps, demonstrating Man's ingenuity in adapting the techniques he used to the habits and habitats of wild animals. In this civilization of hunters, even the elephant was threatened, as witness the great hunting scenes at Upper Mertoutek. Traces of this era survived for tens of thousands of years right down to historical times, when hunters ushered in the dynastic history of many African kingdoms. These pictures also show the gradual transition from the time when animals were trapped and captured to when they came to be tamed and eventually domesticated. One scene at Jabbaren shows an armed man stalking a wild animal, followed by another animal, alert, but apparently domesticated.

The different varieties of cattle are identified from their worked and decorated horns that are artificially twisted into spirals. At prehistoric Sefar, the lifelike hunting dog with its curly tail is the saluki we know today, and the same is true of the ass at Tissoukai. Even boats are shown, with a shape reminiscent of the papyrus canoes found on the lakes and rivers of Chad and Nubia.

The human context

Some paintings show men bending down using tools, or women leaning forwards in a characteristic gleaning posture. It is not easy to tell whether the figures are meant to be gathering food from wild plants or actually cultivating cereal crops, as might be suggested by the number of grindstones and grinders that have been found. At Battle Cave, young San girls are depicted setting off on a food-gathering expedition, with their digging-sticks over their shoulders.

The sheer number of paintings gives some idea of the population density of these regions. This factor, taken in conjunction with the enormous quantities of stone tools found at various sites, including the one northèast of Bechar in Algeria, could signify that production was organized on a semi-industrial scale. Men appear to have been more ornately attired than women until the Ox period, when the pattern seems to have been reversed. The men's clothes were made of animal skins and they wore decorated head-bands and feather coats, as well as a variety of necklaces, armlets, bracelets and other ornaments. Women originally wore a simple cloth strip covering the pudenda, but later they wore loin cloths with the lower folds arranged in a variety of ways, clinging dresses, brassières, and all kinds of head-dresses, such as the plumed type represented at Jabbaren.

Homes were often depicted in the form of half-spheres representing huts, complete

with furnishings and with family activities going on inside them. On the Tichitt cliffs, in Mauritania, where 127 villages have already been identified, the areas of settlement were located on southward-facing promontories. The clusters of dry-stone dwellings were built on massive rock foundations reminiscent of the *zimbabwe* or fortified dwelling-places of the Mwenemutapa empire, and each cluster was able to accommodate some 3000 people.

The various scenes depicted in African rock art can be said to be a sort of documentary film of everyday life in prehistoric times. At Takedetoumatine, for example, buxom women are sitting in front of the huts with their children, and calves are tethered in a row to a rope, while the men are busy milking the cows. The number of women present suggests that polygyny may have been practised. At Orange Springs, in the Natal province of South Africa, women are shown clapping their hands as they stand round a group of masked dancers. The vast mural in the Iheren shelter, one of the high points of prehistoric painting, shows a procession of finely caparisoned oxen, with waterskins hanging from their flanks, ridden by women in rich attire. Some animals are lowering their heads to the water-hole, while the bulk of the herd moves forward at a very stately pace.

At I-n-Itinen, a scene with elders in all their regalia and warriors in uniform shows that society was starting to evolve along hierarchical lines. It is all too tempting to regard the archers in their coats as some kind of police force.

In Southern Africa, there are a host of scenes representing battles, especially between the San and the Bantu. Even so, love held its own, as can be seen from the many pictures of sexual intercourse. Both at Acacus, in Libya, and at Wādī Djerat, in the Tassili, masked men with giant erect phalluses are seen about to copulate with women in the position of intercourse.

Religion and magic occupied a very important place. Some of the pictures are a reflection of the mystery surrounding myths and show two-headed oxen and the spiral motifs associated with animals – and probably with sympathetic magic – which were subsequently to be found on the Egyptian pottery of the earliest Pharaonic dynasties in the shape of the snake Mehen. Similarly, the umbilical cord extending from a woman's thighs to the navel of an archer out hunting suggests the existence of a mystical current emanating from the mother, who is praying with her hands raised and outstretched towards her son, who is liable to be in danger. Again, in Botswana, an animal intended for a rain-making sacrifice is shown being paraded through the landscape at the end of a rope held by a variety of personages. The key to some of these enigmas can only be found in present-day Africa. For instance, A. Hampâté Bâ deciphered a scene that was previously known as 'stylized oxen' (because the lower part of their legs was not shown) when he recognized it as an illustration of the *lotori* ceremony in which oxen are led into the water to celebrate their aquatic origin. The hand drawn alongside this scene has been interpreted as being that of Kikala, the original herdsman.

Influences and migrations – an autochthonous civilization

There is a tendency to want to explain all the cultural features of Africa in terms of outside influences. This thesis has to be rejected. The European prehistoric art found in

fairly circumscribed areas in France and Spain is earlier, dating as it does from the Palaeolithic period, but the consensus is that it had no influence on Africa, where both the Neolithic and Palaeolithic predated the corresponding periods in Europe. It was from the southern Atlas southwards that African prehistoric art really flourished.

Nor is it true that prehistoric rock art gradually spread into the heart of the continent from the Nile valley in the east. On the contrary, the art of the Egyptian Nile flourished much later than that of Saharan and Sudanic Africa. The Saharan pictures of oxen with discs between their horns are much earlier than the representations of the cow-goddess Hathor, and the Saharan falcon is likewise earlier than the forerunners of Horus shown on Egyptian Predynastic tombs. The same is true of the ram carrying a sphere, which is a very early predecessor of the ram of Amon. André Malraux considered the animal heads at Wādī Djerat as the precursors of Egyptian animal deities. The superb so-called 'Egyptian-type' boats depicted in the Sahara are quite simply Saharan-type boats. Similarly, the silhouettes thought to be reminiscent of the Hyksos, the Pharaoh, and so on – because the insignia they wear are the same as those seen on the sovereigns of the Nile valley – were widespread in the Sahara at a time when Egypt was still inhospitable marshland. It was not until historical times that Egyptian civilization outshone all others to such an extent that it came to be considered as the origin of them all; its own sources in the Sahara, the Sudan, East Africa and the Near East were completely forgotten. As for relations between Southern Africa and the Sahara region, these seem to have been fairly limited, and, in any case, despite the fact that the southern part of the continent was populated at an extremely early date, its art is distinctly later than that in the Sahara. The only affinities appear to be with the Saharan Ox period; otherwise, Southern African art displays such strikingly original features as landscapes with a profusion of vegetation, stylized rock forms and burial scenes. Comparative studies will have to be pursued, if the picture is to become clearer.

A simplified view of racial theories

It would be wrong to look upon African prehistoric art as being the work of so-called 'races', some of which, such as the Neanderthal-type Aterians of North and West Africa and the Capsians of North Africa and the northern Sahara, supposedly originated in the Near East.

Some authors claim that the works of the *Bubalus* period should be attributed to a vaguely 'Mediterranean' people who were either white or of mixed blood, whereas the 'round head' art was produced by a 'negroid' group who are sometimes said to have intermarried with peoples from the Near East to produce the culture known as the Sudanic Neolithic tradition. On this assumption, the Ox period would be the work of the ancestors of the Fulani and the influence of the Guinean tradition would have extended as far as the settlements on the Tichitt cliffs in Mauritania.

All these attempts at reconstructing the past that give prominence to influences from outside Africa are based on flimsy foundations. People have even referred to a 'distinctly African influence' in a rock painting in the Sahara . . . Moreover, the concepts of race, ethnic group, life-style and civilization are all used haphazardly, so that terms such as

blacks, whites, Fulani, Africans, Capsians or Sudanic peoples are used without being defined in any way.

The peoples of the Sudanic Neolithic are described as being an ethnic group of 'herdsmen–hunters who arrived from the east'. 'Their delicate features, their herding methods, the women's crested head-dresses and the men's plaits' are claimed as sufficient evidence for attributing all rock art exhibiting those characteristics to the Fulani. Yet, unlike the San, the Fulani have no memory of ever having produced such art. In fact, all African physical types can be seen in the paintings, as they can in almost all the ethnic groups of tropical Africa to this day. Has anyone ever seen a black group composed entirely of 'round heads'? Furthermore, there was nothing to prevent the artists from altering the features of their heroes and heroines.

It is also questionable whether the distinction between farmers and herdsmen was as marked as it is today. Writing of the peoples of the Mauritanian Neolithic, H. J. Hugot says: 'When they arrived, the black men of Tichitt had their oxen with them', and elsewhere: 'the middle pastoral period saw the arrival of negroid elements. This was the great Ox period'. Hence, neither pastoralism nor skull measurement is an adequate criterion. In both cases, they are only superficial somatic features.[1]

All the so-called 'white ladies' of African rock paintings – and in the example in South Africa, only the face is white – who have been seen by some scholars as evoking the possibility of 'columns of prospectors from the Persian Gulf', quite simply represent hunters or African girls emerging from initiation ceremonies painted, just as they are today, with the white kaolin that denotes the passing of the former personality and the acquisition of a new status.

The historical background to South African rock art is more clearly established, in that it depicts the relationships between the Khoikhoi and San, and subsequently between the Khoisan and the Bantu. The size of the hand imprints on the rock, the steatopygia of the buttocks and the semi-erect penis all offer fairly clear evidence as to the people who painted these pictures.

Aesthetics

Although there has been much borrowing from Arab and European models, prehistoric art occupies a very important place among the sources of present-day African art. The colours to be seen in the rock paintings are the very same as those that still shine so brightly on the decoration of masks and dancers.

It is an art characterized by observation, in which no detail is overlooked, as in the case of the ox at Augsburg, in Botswana, where the minutest anatomical features are rendered with an unfailing sureness of line. The giraffe and its foal at Eneri Blaka are carved with the same consummate skill, as is the mural at Iheren. It is a crowded composition and yet every individual participant is clearly singled out. There are sixteen giraffes in an elegantly intermingled group; parties of brightly dressed women travelling on their pack-oxen; various kinds of gazelles and antelopes; a new-born giraffe foal still attached to its umbilical cord; a lion carrying off a sheep and watching men armed with spears set out after it, while other sheep scurry away in terror; and an ox coming to

1. See part II of Chapter 10 above: Theories on 'races' and the history of Africa.

26.1 *Detail from the 'White Lady' cave painting, South Africa (A.A.A., Duverger)*

a pool to drink and making the frogs jump. It is a colourful and touching kaleidoscope of life.

However, attention to naturalistic detail never prevents the artist from concentrating on the gist of the subject: this is one of the unchanging features of African art. The central figure is represented in close-up and overshadows all the others, as when a Pharaoh or an Oba of Benin is depicted with his enemies or subjects.

Conclusion

African prehistoric art is a popular everyday art, yet it is imbued with a mystical or concealed meaning. It has yielded some of the finest gems of the world's artistic heritage, such as the ram with the solar disc at Bualen. This twofold approach admirably conveys the two sides of modern African man: his spontaneity in day-to-day living, and his gravity when celebrating ritual through dancing.

Prehistoric art lives on. It deserves to be re-introduced into school syllabuses and restored to Africans themselves, who are deprived of it by distances that only tourists and specialists from the wealthy countries can afford to travel. A complete register needs to be compiled, so that comparative studies can be made.

Inasmuch as images are signs that can be as eloquent as writing, African rock art could be regarded as the continent's first history book. It furnishes evidence that is immediate, but also enigmatic, and that has to be corroborated from sources such as palaeontology, climatology, archaeology and oral tradition.

Art reflects, but also stimulates action, and these prehistoric carvings and paintings proclaim the relentless struggle of African Man to dominate nature, but also to add to his own nature through the divine joy of creation.

27 *The origins, development and expansion of agricultural techniques*

For a long time European authors recounted the origins of agriculture from a purely European standpoint. In their view, it all started in the Near East, in Mesopotamia to be precise. Since the Second World War, however, although the important role played by the 'Fertile Crescent' in the Neolithic revolution is still acknowledged, much light has been shed on the crop inventions of both North and South America, the early development of a cradle of agriculture in tropical South-East Asia, and the African contribution to the history of world agriculture.

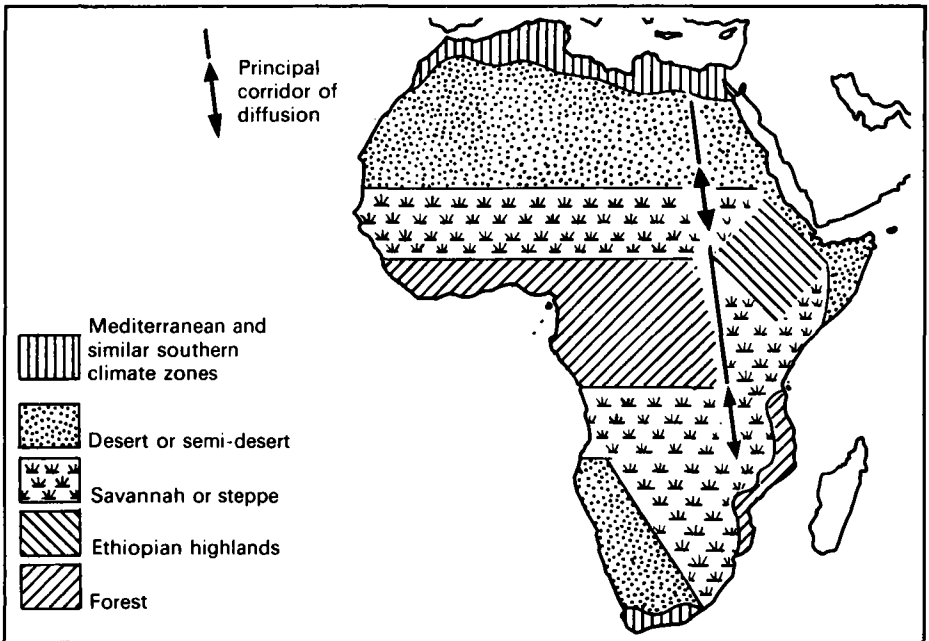
Earlier still, the celebrated Russian agronomist N. I. Vavilov had posited the existence in Africa of centres where cultivated plants could have originated,[1] and one of his assistants, A. Kuptsov, later demonstrated that such primary cradles of agriculture had, in fact, existed. None the less, for a long time colonial prejudice prevented that idea from gaining acceptance.

The last few years have witnessed the growth of keen interest in this issue, as can be seen from the papers published in *Current Anthropology* in 1968, the studies put together by J. D. Fage and R. A. Oliver, and the work of W. G. Randles on the history of Bantu civilization.

Natural environments and the origins of African agriculture

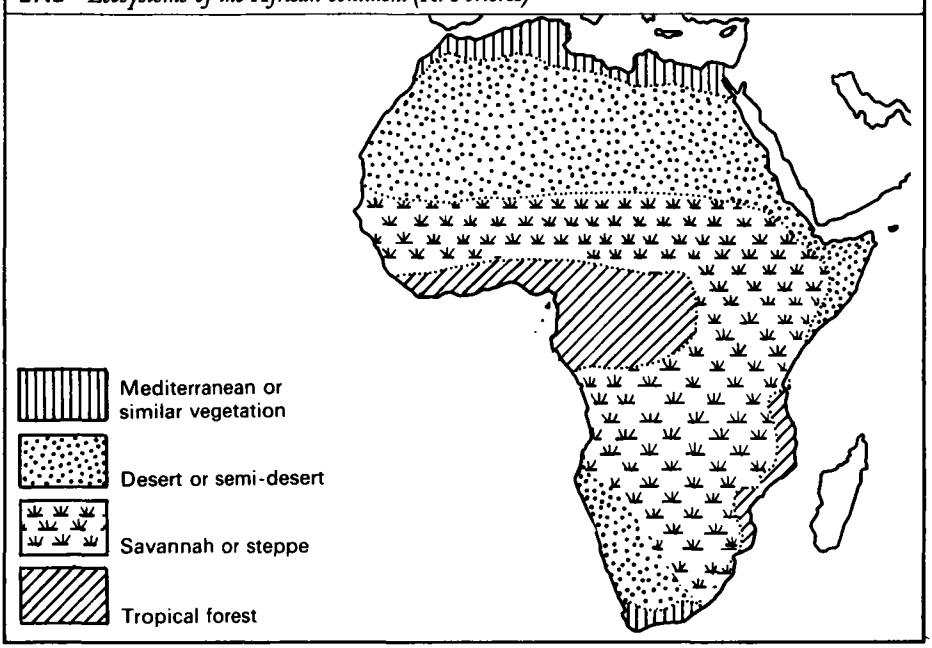
The origins and developments of agricultural techniques and of cultivated plants are directly related to the natural conditions prevailing in a particular region, such as the soils, the climate, the water resources and the original vegetation. However, the development of agriculture and of animal husbandry also depends on the factors that go to make up the cultures and civilizations of different peoples, so that their agricultural and stock-raising practices may vary considerably, even though the environments in which they live are almost identical. That is why population movements are of such importance in the dissemination and adoption of new behaviour patterns and hitherto unknown techniques, and indeed of original conceptions about relationships with nature, the use of space, and so on. Thus, at a time when Europe was barely emerging from the Palaeolithic, agriculture and stock-raising were already flourishing in the Near East, whence technological innovations and their attendant ideologies radiated

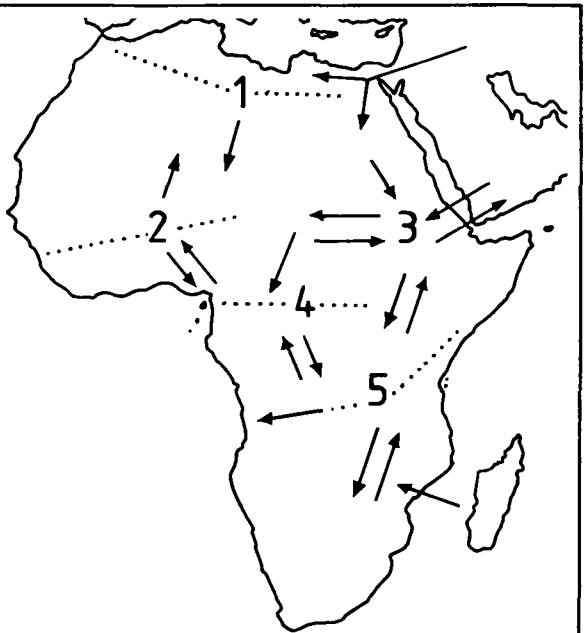
1. N. I. Vavilov, 1951, *Chronica Botanica*, 13: 1–6.



27.1 *Latitudinal zoning of the African continent (R. Portères)*

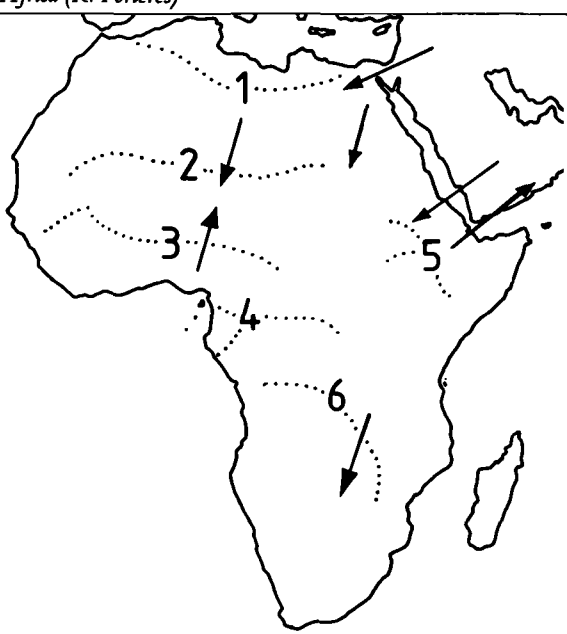
27.2 *Ecosystems of the African continent (R. Portères)*





1 Mediterranean African
2 West African
3 Nilotic Abyssinian
4 Central African
5 East African

27.3 *Cradles of African agriculture (R. Portères)*
27.4 *Geo-cultural sketch map of Africa (R. Portères)*



1 Mediterranean agriculture
2 Saharan cultivation systems
3 Cereal agriculture
4 Forest horticulture
5 Ethiopian agriculture
6 Savannah and steppe

northwards across the Mediterranean and were instrumental in triggering off the European Neolithic revolution. Africa, too, was affected by these flows of commodities and men, and by the ideas they brought with them.

However, it must not be thought that all this was accomplished in a flash. It was a long drawn out process in which Man passed from the appropriation stage of gathering and hunting to the production stage involving cultivation and stock-breeding via such intermediate phases as the taming of wild animals and the cultivation of plants by trial and error. During the process, Man was gradually freed of the uncertainty and risk inherent in his failure to control the natural elements. Even so, the conditioning influence of the environment was never entirely absent, especially during the prehistorical period.

In Africa, for instance, the existence of symmetrical climatic and ecological belts on either side of the Equator created a set of zonal patterns, which tended to influence agricultural development. Some of the zones, such as the Sahara, the equatorial rain forest, the Tanzanian steppe and the Kalahari desert, formed barriers to north–south population movements, although none of these barriers was ever completely impenetrable. Other zones, such as the open grasslands and the savannahs of the tropical regions, represented spaces that were conducive to the spread of new ideas.

Besides latitude, altitude and geographical relief were also instrumental in demarcating specific ecological zones. Some of these zones were frankly uninviting, whereas others were more attractive: for example, the highlands fringing the Rift Valley, which formed a corridor facilitating a variety of population movements across the Equator, or the mountain heartland of Ethiopia.

All things considered, Africa can be regarded as consisting of a rather inhospitable core of equatorial forest, hemmed in by a vast swath of savannah-land and steppe to the north, east and south. Still further north and south, there are two arid belts, the Sahara in the north and the much narrower Kalahari in the south. Finally, at the two extremities of the continent, Mediterranean-type environments prevail. The deserts were not always arid as they are now, and they too may have been cradles of agriculture or animal husbandry at one time. At the outset, the forest presumably provided Man with an ideal environment for food-gathering and hunting, affording the rather sparse population a means of subsistence without undue effort or anxiety.

This elementary way of life led by the hunting and gathering peoples presumably also existed in the arid environments, as can still be seen today from the Kung San civilization in the Kalahari. In the arid environments, however, food resources are less varied and more restricted, and are confined, for example, to the areas around the very occasional waterholes.

Between – 5500 and – 2500, there was a wet phase known as the Makalian, which greatly facilitated contacts between the Mediterranean region and the equatorial forest south of the Sahara and made it possible to exploit the lakes and rivers containing vast numbers of fish, thereby prompting the population to settle in one place and to change over gradually to agricultural production. In point of fact, well before this period, dating from – 9000 to – 5000, a number of population concentrations had already formed in the belt running between the desert and the forest, on the East African plateau grasslands, round lakeshores and along major rivers such as the Niger and the Nile, as well as on the Mediterranean seaboard and at the southern tip of the continent.

It is quite natural, therefore, that these earliest areas of settlement from the Nile valley to the plateaux of Mwenemutapa, and including the Niger bend, the bottom reaches of the Senegal river, the great lakes, the lower Congo and the highlands of Shaba, should become the cradles of the most outstanding civilizations.

The African origin of some cultivated plants

Vavilov identified eight regions where cultivated plants first emerged. Only one of these, the *Abyssinian* centre, was situated on the African landmass, although another centre, the *Mediterranean*, bordered the Near Eastern centre, with which it had close affinities.

Vavilov's method gave considerable impetus to research into the origins of agriculture, in that he showed that it was necessary to distinguish between centres of primary mutation, where a particular plant might occur in a wide variety of forms, but where the dominant characteristics continue to be observed, and centres of secondary mutation, where many recessive characteristics still exist. A cradle of agriculture can be said to exist in instances where those two centres are found in very close association, since this means that Man has engaged in the extremely long drawn out task of selection and transformation reflected in the successive characteristics of the different plant varieties. Even then, it should be noted that the area where a particular plant is domesticated may be geographically remote from the botanical place of origin of the wild parent, which may have been disseminated by population movements.

The research conducted by Portères has made it possible to fill out the picture as regards centres of agriculture in Africa by demonstrating that, in addition to the Abyssinian centre and the African portion of the Mediterranean centre, there were also a West African centre and an East African centre, the last mentioned being possibly an extension of the Abyssinian centre. In addition, the Central African region displays features of its own.

The cradles of agricultural development in Africa can accordingly be summarized as follows:

1. *The Afro-Mediterranean cradle*, stretching from Egypt to Morocco, which acted as a channel for exchanges with the Near Eastern cradle. This was the starting-point for cereals such as wheat and barley, for leguminous plants with edible seeds such as lentils, for olive trees, and so on.
2. *The Nile–Abyssinian cradle*, which had wheat, barley and leguminous plants, as well as sorghum and cultivated species peculiar to the region, such as the coffee shrub (*Coffea arabica* L.) and the Abyssinian banana tree.
3. *The West African cradle*, with its original plants such as sorghum, penicilliary and finger millet, *fonio* (*Digitaria excilis* Stapf.), rice and tubers, its oleaginous plants such as the shea tree (*Elaeis guineensis*), and its stimulants such as the kola nut.
4. *The Central African cradle*, which appears to be the prolongation of the former and has fewer cereals, but more tubers and more leguminous plants such as the earth-pea or groundnut (*Voandzeia subterranea* Thon.).
5. *The East African cradle*, spreading as far west as Angola, with sorghum, several varieties of millet, and sesame.

27.5 *Top-soil firing, Futa Jallon; Pita, Timbi-Madina (R. Portères)*

27.6 *Cultivation of land, Kadyendo, by the Dyula of Oussouye (Casamance) in preparation for the re-planting of the rice beds (R. Portères)*

27.7 and 27.8 *Two methods of rice cultivation (R. Portères)*

It would be wrong, however, to imagine that agriculture originally developed in Africa in self-contained compartments. There was, in fact, a great deal of inter-communication, and the picture can be simplified somewhat if the central core formed by the equatorial forest is thought of as a 'centre of horticulture', although it had a less wide range of plants than the wet tropical forest centres of Asia or America. It is a region where the method of cultivation was based on garden orchards (*hortus* in Latin) rather than on fields (*ager*).

Round this core, a centre of agriculture corresponding to the savannah regions grew up and specialized in the cultivation of cereals. Farther away, the peripheral Afro-Mediterranean and Nile–Abyssinian cradles were those most in communication with the world outside Africa, and it was via Egypt and Ethiopia that the swing-plough made its way into part of the cereal-producing centre of agriculture.

It was in this same area that the mass cultivation of sorghum and rice – as opposed to the cultivation of individual plants current in the centre of horticulture – gradually made it possible for settlements to be established on the forest fringes. This hastened the process whereby they were turned into savannah, although, in a reverse process, there was often some adaptation to the forest environment in that tubers and other plants, which had originally been gathered for subsistence purposes, were also cultivated. Even so, the typical crop in this savannah environment is cereal sorghum, a specifically African creation, the different varieties of which have independent points of origin in both the eastern and western parts of the continent and in the Horn of Africa. One of these sorghums is distributed over a vast area extending as far as Iran and India. There is no doubt that some of the sorghum varieties domesticated in Africa were subsequently disseminated to other regions of the world.

However, the originality of agriculture in Africa lies primarily in the cultivation of rice developed from the indigenous varieties found in the West African cradle. In classical times, Strabo had referred to the cultivation of rice in Africa and in the fourteenth century of the Christian era Ibn Baṭṭūṭa mentioned that rice was grown on the banks of the Niger. It was long believed that the rice was of Asian origin (*Oryza sativa* R.), but it eventually came to be acknowledged that it was a specifically African variety (*Oryza glaberrima* Steudel).

African rice is, in fact, a good illustration of the conditions that, according to Vavilov, have to exist for a cradle of agriculture to be identified: a very extensive territory for the wild parent plant; maximum variation with a preponderance of dominant characteristics in the middle delta of the Niger (the primary centre) and a variety of species with recessive characteristics in upper Gambia and in Casamance (the secondary centre). From the middle reaches of the Niger, therefore, cultivated varieties of African rice spread into West Africa as far as the Guinea coast. Asian rice varieties were only introduced into Africa from the eighth century onwards, and did not reach the coast of West Africa until the sixteenth century of the Christian era.

Similarly, specifically African food plants are found all over the continent, even in the peripheral regions of Ethiopia, the Nile valley and North Africa.

Relations between Africa and Asia

Africa supplied Asia with a number of domesticated plant species, such as the different varieties of sorghum. In exchange, it received other cereals, like wheat and barley, from the Near East, and bananas, the greater yam and the taro from southern Arabia via the East African coast.

It also seems that Africa was indebted to Asia for a good number of domestic animals whose wild ancestors are not represented in the record of fauna in Africa south of the Sahara. However, the domestication of such animals could well have taken place in the Neolithic Sahara or the Nile valley.

Conclusion

It is important to realize that the development of agriculture in prehistoric times was a process in which the different regions of the continent were very closely associated. Wheat, sorghum and millet, for example, are found growing side by side in oases. Ethiopia is at the centre of a pattern of exchanges radiating out in all directions.

Of all these centres of African agricultural development, historically the most significant is that formed of the savannahs and steppes, especially those close to the forest and to large rivers and lakes.

It is extremely difficult to date the beginning of this process precisely, but the decisive period appears to have been between – 9000 and – 5000, in other words, a period that was contemporaneous with similar innovations in the Near East.

28

Discovery and diffusion of metals and the development of social systems until the fifth century before the Christian era

The Nile valley is probably the region where the progression of Neolithic human groups can be followed most clearly up to historical times. Over its 6500 kilometre-long course from the heart of Africa to the Mediterranean, the Nile follows the line of the great lakes and the Rift Valley to form a privileged north–south axis running through the continent. Almost midway on its journey to the sea, at a crossing-point that has no equivalent elsewhere in Africa, the river meets the great east–west route that joins the Red Sea to the Atlantic, crossing the plains fringing the Ethiopian mountain ranges and the wide open spaces of Darfur and Kordofan to stretch through the valleys and depressions of the Niger and Lake Chad.

Unfortunately, unlike the lower Nile valley, whose archaeology is quite well known, the middle valley between the Second and Sixth Cataracts, the Upper Valley from Khartoum to the great lakes, and especially the semi-desert basins of the Nile tributaries have scarcely been explored.

From the Neolithic to the third millennium before the Christian era

The dissemination of metals in the Nile valley and the appearance of the first ordered social groupings took place in the period from about – 5000 to – 3000. This was a decisive turning-point in the history of mankind, but it should not be looked upon as representing a sudden sharp break with the past. It was more in the nature of a gradual movement during which the respective features of the Neolithic and the 'Metal Age' were for a long time inextricably entwined: the tools used and many of the features of society go to show that the first monarch of the Theban dynasty was the rightful heir of the last chiefs of the Neolithic ethnic groups.

The lower Nile valley

The social structure built up from the third millennium before the Christian era onwards arose out of the development of the valley through the introduction of irrigation, a process that started in the Neolithic age. There can be few instances where geography has so obviously been the midwife of history as in this region at this particular point in time. As Herodotus said, 'Egypt is the gift of the Nile'. Had the river

waters not spread over the land every year, the encroachment of the Libyan desert to the west and the Negev to the east would not have been halted by the green strip represented by the valley.

However, if the annual flood was not to assume catastrophic proportions, it had to be tamed, and this meant building embankments both parallel and perpendicular to the river so as to create reservoirs designed to hold back the water and to channel it further afield.

This system, which implied the existence of an agreement between the riverside populations over considerable distances, called for a very complex and strictly ordered community organization. If there was not enough water, or if too much was withheld further upstream, the downstream populations were liable to suffer the consequences. This was at the origin of the creation of provincial groupings and of their subsequent merging into two large entities centred on the north and the south and, eventually, the unification of these two kingdoms to form Pharaonic Egypt. These historical developments were in keeping with the imperative need to domesticate the Nile. Underlying the emergence of the historical period in Egypt from a particularly outstanding African Neolithic past was not so much the introduction of metal as the ceaseless work done by the peasants to control and spread the beneficial effects of the river, and this quite naturally prompted the need to exercise social and political control over ever-longer stretches of the valley.

The Neolithic

Chapter 25 above describes in detail the material features of the different Neolithic cultures. The purpose of this chapter is to single out their attendant social and political developments. In point of fact, there is no break in continuity between the Neolithic and predynastic periods. The Badarian, for instance, which is analysed in detail in Chapter 25, is only one stage in the development of a culture that started out from the Tasian and culminated in Nagada II and the pre-Thinite societies.

Unfortunately, the Neolithic period in Egypt is known only from a few sites, which are often not even contemporary with one another. The oldest known site is in Middle Egypt, west of the river, at Fayum. However, there are also sites at Merimde-Beni-Salame in the western delta, in Middle and Upper Egypt at Deir Tasa near Asyut, and in the region of Thebes. The fact is that, from -4000 to -3300 – that is, for seven centuries – we know virtually nothing about the evolution of the Egyptian Neolithic. It is also true that at the end of the sixth millennium there was a pause in the process of desiccation in north-eastern Africa, as a result of the last wet phase known as the 'humid interval'.

The many gaps in our knowledge of the sites in the eastern part of the delta as far as Memphis make it impossible for us to subscribe wholeheartedly to the hypothesis that the Egyptian Neolithic was of Mesopotamian and Palestinian origin. On the other hand, there is more reliable evidence for the relationship between the Egyptian Neolithic and the Saharo–Sudanic proto-Neolithic, as represented by the Amekni site in the Ahaggar. It is becoming increasingly clear that the Saharan Neolithic emerged at a significantly earlier date. Pottery, for example, appeared earlier in Nubia than it did in

Egypt. Even so, it should not be forgotten that the Egyptian delta was always a crossroads and a focal point of influence.

However, as soon as the Neolithic appeared in the lower Nile valley, the cultures of the north and the south of the region began to diverge. In the north, the houses were grouped more tightly together and the dead were buried within the precincts of the villages, whereas in the south dwellings were more scattered and more family-based, and the grave areas were located on the edge of the desert. As far as craftsmanship was concerned, the north was more skilled in stone-working, and especially in the manufacture of the celebrated stone vases typical of Pharaonic sculpture, whereas the south excelled more in pottery-making.

Thus characteristic cultural traits emerge that differentiate the Memphis–Fayum region and the north-western tip of the delta in the north from the region between Asyut and Thebes in Middle and Upper Egypt in the south. These differences heralded the period immediately prior to the emergence of the Pharoahs.

The Predynastic period

It has to be repeated that the appearance of metal in this period is not a striking or spectacular occurrence representing a complete break with what went before. The transition from stone to metal was very slow and long drawn out and, reversing the pattern in other areas, copper appeared before gold, first in the southern group on the Badari site and later in the Fayum.

Opinions differ as to whether the technology was introduced from abroad, and in particular from the Near East. It may have been invented in both places at the same time. However that may be, it was at the same period that the Badarian peoples discovered the blue enamel or 'Egyptian faience', which started off the manufacture of beads. The enamel was produced by heating malachite, a copper ore that was used for eye make-up. Yet, stone tools continued to be much more common.

The Early Predynastic phase

The Predynastic period, from about – 4000 to – 3000, can be divided into four phases. The Early Predynastic phase is represented by the Badarian and the Fayumian. The former is still close to the Tasian Neolithic as found at the Deir Tasa site. The huts are still oval, although the furnishings are of rather better standard, consisting of woven mats, leather cushions and wooden beds. To judge from the everyday objects, vases and foodstuffs found among the grave goods, the cult of the dead was starting to develop. Cultivated flax, together with hides, was used to make clothing. This points to the existence of a mixed economy based on hunting, as in the past, but already combined with agriculture and animal husbandry. Features representative of this culture include red pottery edged in black, bright blue beads, decorated cosmetics palettes and artistically embellished ivory combs.

The *Fayumian* is noteworthy for its use of flint rather than metal, and the manufacture of magnificent black shale vases.

During this period, the population groups in both south and north seem to have lived in a very egalitarian society in which no privileges were accorded on account of sex or age.

The Ancient Predynastic phase

This phase, which is also known as the Amratian, from the El Amrah site near Abydos, is located further south than the Badarian. However, it is an offshoot of the latter, as witnessed by its pottery, which displays remarkable inventiveness of shape and geometrical and naturalistic design. Statuettes of bearded men wearing penis sheaths, women dancing and a variety of animals also started to appear. One striking feature of the Amratian was the use of stone clubs with a truncated cone-like shape. Although this type of club was subsequently to disappear completely, it is found as a hieroglyphic symbol, which suggests that the emergence of that style of writing dated from this period. Furthermore, there appear to have been some links between the Amratian and the delta region, since the stone vases from that region have also been found in the south, and there still seems to have been very little social gradation.

The Middle Predynastic phase

This phase, which is known as the Gerzean, after the Gerzeh site in Lower Egypt, is more distinct in the north than in the south, where it is combined with features representative of the Amratian. In the north, the pottery includes buff-coloured vases decorated with naturalistic scenes of mountains, birds or boats, as well as vases of harder stone, such as basalt and diorite. The typical Gerzean weapon was an oval-headed club. Burial rites became more complex: the dead were placed in rectangular tombs, their heads pointing north and their faces turned towards the east instead of the west.

The boat drawings on the pottery bear insignia that may represent the banners of regional groups. There was an increase in the number of metal tools and weapons, such as chisels, axes, harpoons and daggers. Grave jewellery included objects containing gold and semi-precious stones. Statues representing effigies of Horus the Falcon and Hathor the Cow started to appear.

Society thus seems to have been more complex and to have been composed of larger groups, with the northern and southern cultures increasingly merging.

The Late Predynastic phase

The merging process went even further in the Late Predynastic, or Late Gerzean, phase, when the culture came to be dominated by the worship of the falcon god, while the south had originally venerated the god Seth, variously identified as a jackal or giraffe. References to the contest between these two divinities should be construed as reflecting a conflict between two confederations that already had a highly developed structural organization, with chiefs who enjoyed unlimited powers deriving their authority from magical practices, but who could be ritually put to death by their subjects, if ever their powers seemed to be on the wane.

In the initial stages, the north is thought to have gained the upper hand and to have unified the valley, probably under the aegis of Heliopolis, which would account for the influence the Gerzean culture exerted over the Middle Predynastic Amratian.

However, during the Late Predynastic phase, the main cities of the two regions were moved further north and south respectively, which suggests an attitude of confrontation. Here again, the goddesses who were to prevail through the Pharaonic period appeared: the cobra in the north and the female vulture in the south. Even so, the

worship of deities such as Horus became widespread, while the human figure became a frequent subject for artists. Hierakonpolis, henceforward the capital of the south, took up the struggle against the north in about – 3000 and, emerging victorious, permanently unified the two kingdoms and the valley under the authority of the southern kings from the region of This near Abydos, whence the name Thinite, used to designate the first two Pharaonic dynasties.

The pre-Thinite period of the Late Predynastic has been identified at Hierakonpolis in the shape of large cosmetics palettes and massive limestone club-heads. Population groups were centred on the worship of a particular divinity and were organized into provinces or *nomes*, each with a distinctive emblem that accompanied the chief on ceremonial occasions.

The ranking social order, which was rooted in economic and religious factors, and, slightly later, in the army and administration, offered a clear foretaste of historical times. Against this background, the unification of the valley was a political enterprise that plainly had economic motivations and consequences.

The upper Nile valley

South of El Kab, the population groups differed from those in the middle stretch of the valley, but less and less is known about them as we move away from Aswan and towards the great lakes. There are few archaeological records enabling us to gauge the evolution of this vast region, the importance of which should not be underestimated.

The Khartoumian Neolithic (from – 5000 to – 3800)

This culture is also known as the Shaheinabian, from the name of the main site at Es-Shaheinab. Both at this site and at the earlier Khartoum site, a considerable amount of material relating to a population of hunters and fishermen has been discovered, including polished axes, clubs that were forerunners of the Amratian type, wooden tools, fabric and skins. The pottery of the region shows that the Shaheinab culture spread far and wide, from the Blue Nile in the east and the White Nile in the south to Tibesti in the west.

However, at Abka, at the level of the Second Cataract, evidence has been found of stone-tool and pottery industries that point to the existence of a population of hunters and fishermen who lived in a drier environment and installed huge permanent traps damming the channels of the cataract so as to hold back the fish. These imposing barrier walls clearly suggest that social organization had reached a fairly advanced stage. It is not very clear what links the Abkian Neolithic could have had with the Khartoumian, but it was certainly the direct forerunner of the Nubian Predynastic.

The Nubian Predynastic (from – 3800 to – 2800)

In its earliest stage, represented by the early Group A until – 3200, the evidence in Sudanese Nubia shows that agriculture and stock-raising were practised, whereas they were unknown in the Abkian, and that a system of dams was used to curb the streamflow and thus foster the deposition of silt. The cattle and goat bones found in graves suggest that the people were semi-nomadic, which is understandable considering the steppe-like nature of the region.

The discovery of copper objects such as needles made by the Badarian techniques raises the issue of the dissemination of the metal in the upper Nile valley. However, since there were copper-ore deposits in Nubia that had been mined from a very early date, there is reason to believe that this type of metallurgy was of local origin. The pottery-making techniques were outstanding, and only the stone vases made of alabaster and slate seem to have originated in the north.

In the subsequent or Classical Group A phase, researchers have been struck by two factors: first, by what might be termed a population explosion, as evidenced by the greatly increased number of tombs and necropolises; and secondly, by the fairly large-scale importing of goods from the lower Nile valley, which suggests that trade flows were stepped up between Upper and Lower Egypt, with the ivory of the south being traded for oil from the north.

Subsequently, in a third stage, this mixed culture disappeared, giving way to a very impoverished civilization, which was presumably a reflection of the brutal colonization of this region by the northern dynasty.

The historical period from – 3000 to the fifth century before the Christian era

Development of social systems

Since so few legal documents have survived, the writings of Herodotus and Strabo on the existence of castes or classes of priests, slaves and so on should not be taken too literally. In point of fact, the Egyptian social system was fairly flexible and was based on exploitation of the land rather than on the rights of the individual. The fact that there was no money meant that priority was given to goods in kind, such as food, clothing and shelter, which the individual acquired by belonging to a social group, either a family that enjoyed the right to work an estate whose ultimate owner was the Pharaoh, or a group attached to a religious or royal estate.

A person's remuneration depended on his status. For example, scribes received larger allocations of rations than peasants or craftsmen, and this made it possible for the more privileged members of the community to expand their own estates. The only way of opting out of the system was to flee into the desert. The keystone of the edifice was the Pharaoh, from whom all authority flowed. From – 1580 onwards, the soldiers he recruited to expel the Hyksos from the valley gradually came to form a professional army whose officers were richly rewarded with lands they could hand down to their heirs. By the close of the period, this naturally led to the formation of a military caste.

In the upper Nile valley, the social fabric was less closely knit and consisted of settled communities and nomadic pastoralists.

The dissemination of metals

Copper, together with gold and silver, and the techniques involved in working them, appeared from the beginning of the historical period. Bronze, an alloy of copper and tin,

was developed in the second millennium, but the existence of iron-forging is disputed.[1]

The gold from the mines of Egypt and Nubia always contained a high proportion of silver, and this is why a distinction was made between white gold (that is, gold mixed with silver) and yellow gold, which was called *noub*. Gold that had been stolen from graves over thousands of years was lavishly used in the Nile delta and Upper Egypt for burial furnishings, personal adornment, architectural decoration and so on.

Although bronze is stronger than copper and easier to melt, it never entirely took the place of copper. The latter can be hardened by hammering and was used to make toilet articles (especially mirrors), weapons, tools, vases, jewellery and inlaid work on furniture.

Virtually all the known objects of this type were found at the Kerma site in Upper Egypt. They show that this region must have played a leading role in the dissemination of copper and iron metallurgy, both through the Nile valley and over Africa as a whole, in particular from the kingdoms of Napata and Meroe.

1. See Volume II.

Conclusion: from nature in the raw to liberated humanity

The preceding chapters amply illustrate the leading role Africa played at the early stages in the story of mankind. Although they now stand on the periphery of the technically developed world, Africa and Asia were in the forefront of progress for the first million and a half years of world history, from the time of *Australopithecus* and *Pithecanthropus*. As we now know, Africa was the main setting both for Man's emergence as the sovereign species of the planet and for the development of a political society. But the pre-eminent role it played in prehistoric times was followed during the historical period of the past 2000 years by a pattern of development marked by exploitation, which reduced the entire continent to a mere tool in the hands of others.

Africa as the homeland of mankind

Although archaeological investigations in Africa have not yet advanced very far, all the evidence suggests that the continent was the first – and indeed the principal – centre of human development. This was already true some 14 million years ago, at the time of *Kenyapithecus*, which appears to have been the initial stock from which our species evolved. There can be no doubt at all that *Australopithecus (Australopithecus africanus)* was the first hominid that can be defined as such by its brain structure. It was followed by the Zinjanthrope – from the word Zinj or East Africa – who was the first direct ancestor of modern Man. Next came the Palaeanthrope or *Homo erectus*, and lastly the *Homo sapiens* type, whose features at the height of the period, even in Europe, were often negroid. Thus all the links in the chain relating us to the earliest hominids and pre-hominians are to be found in Africa. According to W. W. Howells, the apes of Africa, the gorilla and the chimpanzee are more closely related to Man than is any of the three to the orang-utan of Indonesia.

The reason for this preferential development is that the bulk of Africa extends so far southwards into the tropical and lower latitudes. At the time when Man started to emerge, it enjoyed a temperate climate that was conducive to the proliferation of animal life. Moreover, during the 200 000 years or so of the Kageran pluvial, the stone-tool industry was making consistent progress in Africa at a time when Europe was still buried under an immense layer of ice and had not revealed the slightest trace of a human presence.

Adaptation to the environment

The physical features of Africans, with their brown, burnished or black hair-free skin and their expanded nostrils and lips, evolved during this decisive period of prehistory. In point of fact, the black colouring and frizzy hair offered them protection from the sun. In the view of some authors, the erect stance that the first hominids gradually adopted as a result of the progressive adaptation of the pelvic bones, was bound up with the life they led in the African savannah, where they constantly had to peer over the high grasses when stalking their prey or fleeing from predators. Other scholars, however, see more significance in the role played by the waters of the great lakes and the oceans in accounting both for the origins of life and for hominization and the formation of the human sexual organs.

The adaptation of human inventiveness to the materials at hand also goes to explain the style and indeed the nature of certain tools.

The technological environment

In addition to the natural setting, the technological environment created by Man enabled him to exert control over nature, after first freeing himself from its domination. Indeed, it was because Man began producing things that he became increasingly intelligent. Once his hands were free to perform the ever more complex tasks of which he alone is capable, his jaw system no longer had to perform the tasks that equated him with the other animals, and his brain accordingly started to grow. He learnt to observe, to exercise judgement, to understand, to reason things out. Man is endowed with intelligence because he has a pair of hands.

For instance, when we look at the stone-tool workshops discovered beneath the ground surface, such as those in the vicinity of Kinshasa, and see the different stages involved in manufacturing a tool, including the whole series of increasingly elaborate rejects, we realize that prehistoric craftsmen had, right from the outset, a clear picture of what they wanted to produce and the means they had to use in order to achieve their goal. Man's early progress is clearly identified with this growing ability to find increasingly complex means of attaining nobler and more varied ends. Thus, the all-purpose handaxe of the earliest times was superseded by the flake industries, and then by lighter and more refined shapes for specialized purposes, before culminating in the Neolithic precision tools manufactured out of a wide range of materials such as stone, bone, horn, leather, straw, wood, earth and so on. However, this pattern cannot be broken down into clear-cut sections like the chapters of a book: the entire process edged gradually forward, as one stage merged imperceptibly into the next, and indeed tools of differing ages existed side by side for extremely long periods. For example, the Sangoan industry, named after Sango Bay on Lake Victoria, started in the Early Stone Age and survived until the Neolithic.

The process was also marked by a spate of exchanges and borrowings, the end product of which was the development of the techniques of agriculture, of animal husbandry and of pottery-making.

Wheat, barley, textile fibres such as the flax of Fayum, sorghum, millet, certain rice varieties, sesame, *fonio* and, further south, yams, *dâ*, oil palms, kola nuts, possibly a

type of cotton, coffee and other plants were all domesticated in Africa.[1] From about 6000 before the Christian era, three centres of agricultural selection and development – in the Nile valley, the middle reaches of the Niger, and Ethiopia – started to expand and extend their influence. They were linked by exchanges with each other and with the world beyond, especially with the Mesopotamian centre, with its wheat, lentils, onions and pulses, and the Far Eastern centre, which was the source of rice, bananas and domestic animals.

These Neolithic discoveries were revolutionary, in that the positive effects they had on the size and nature of the African population encouraged the progressive creation of fixed and stable settlements, failing which no civilization can forge ahead. The Neolithic of the Sahara and the Nile valley started some 3000 years before the equivalent period in Europe. Pottery appears to have been brought to the Khartoumian culture of Sudan and subsequently to the Sahara and Egypt from the highlands of East Africa. This was a decisive human innovation that stepped up the pace of early capital accumulation, as did the spread of cattle-raising. Pottery was also instrumental in fostering the art of cooking, which sets man completely apart from all the other animals.

Qualitative changes in society

However, in addition to Man's links with nature and with the objects he produced, there were even more significant exchanges – those involving human relationships – which propelled mankind into the random occurrences and risks of history. Indeed, the social factor played a major role in the conflicts that arose from Man's innate aggressiveness and led to the elimination of the weakest. It was presumably through this process that *Homo sapiens* eliminated Neanderthal Man in a 'world war' that must have lasted for several tens of thousands of years.

The social factor also played a more constructive role, in that the human brain gradually acquired the functions bound up with purposeful labour and speech, and with the regulation of the individual's behaviour within the group. The need for social contact played a key part in the acquisition of language, which evolved from the audible signals and cries inherited from Man's animal ancestors to articulated utterances, and in the development of the relevant anatomical and physiological characteristics such as a longer jaw, stronger throat organs and a lower point of attachment of the tongue.

Yet, without a partner echoing his sounds, an opposite number as it were, Man would have remained speechless. Because speech makes it possible to bring influence to bear on others, it has been elevated to the status of an independent force capable of acting on objects. In Africa – and not only in Africa, for that matter – the Word is part of the creative process. What is more, speech is the vector of progress. It is the vehicle for the transmission of knowledge and tradition, of the oral heritage. It is also a means of capitalizing on knowledge, so that Man is released forever from the endless treadmill of instinct. Finally, speech was the point of departure of social authority – in other words, of leadership and power.

1. *Fonio*: a very fine grain. *Dâ*: a plant with acid leaves and flowers used in the preparation of a sauce; the fibre is also used.

The emergence of political societies

If *Homo sapiens* can be said to be a political animal, it was in prehistoric times that he became one, and production techniques and social relationships played a major part in the process.

Technological developments

Prehistoric Africans started out by living in roving bands before forming teams to carry out tasks that were essential to their survival or enhanced well-being, but were too difficult for the individual to perform on his own. The framework was a community that served as a rallying-point and a place of rest, replenishment and defence, and was to become equipped quite early on with fire, around which its members assembled to seek protection from wild animals and assurance from the fear of darkness.

In the Omo valley in Ethiopia, stones that have clearly been deliberately set in place form the outline ground plan of the 'huts' occupied by the earliest hominids. Designs and techniques gradually improved and eventually resulted in the formation of Neolithic villages of the type found at Tichitt Walata in Mauritania, which were perched on the top of cliffs near to a source of water supply and enjoyed the twofold advantage of being out of the reach of both flooding and surprise attack.

Our prehistoric ancestors were adept at organizing themselves to hunt down wild animals; some of them drove the animals over cliffs and into ravines. But, to finish off the prey, dismember it and carry back the pieces, some division of labour was plainly needed, and this became the regular practice in Neolithic times.

During the Early Stone Age, there had been little choice of occupation between food-gathering, hunting and fishing, but, from the Neolithic onwards, that choice was widened to embrace agriculture, stock-raising and a variety of crafts, including the working of stone, leather, wood, horn and bone, pottery-making and, shortly afterwards, metal-working.

Social relationships

It was the growing efficiency of the tools they used that made it possible for Africans to accumulate stocks of food and goods, thereby generating surpluses, which enabled some of them to stop being producers and to devote themselves instead to furnishing services. Social relationships became more diversified and hinged on the existence of different-ranking social orders.

This was also the time when 'races' came to be formed and geographically circumscribed; the earliest to emerge were the Khoisan and the Pygmies. The tall Sudanic or Bantu Negro, of the type represented by the Asselar Man of Mali, did not appear until later. Negroes had originally settled over an area straddling several continents, but in Europe they were to give way to races that were better adapted to the climate, and in Asia they were driven back into the Dravidian heartland and the Papuan archipelago. Intermingling of the races from remotest times on the fringes of this black world accounts for the existence of peoples with less distinctive negroid features, such as the Fulani, Ethiopians, Somalis, Nilotics, Songhay and so on.

Likewise during this period, Africans gave a striking demonstration of their creative skills in the prehistoric rock and plastic art they produced. Since Man first evolved in Africa, it is not surprising that African prehistoric art should be the richest in the world, especially in the Sahara, in South and East Africa, in Egypt, and on the high plateaux of the Atlas. It is true that this art reproduces the myriad omnipresent animal life of the time, but it is also a social record, and recounts the everyday life of the community, its occupations and pastimes, its clashes with predators or hostile clans, its fears and phobias, and its rituals and recreations. In short, these works of art are an illustration of the gradual evolution towards a political society as the priesthood gave way to the rule of chiefs.

The growth of productive forces in the Neolithic presumably gave rise to a *sharp increase in population*, setting off a wave of *migrations*, as can be seen from the prehistoric 'workshops' located at considerable distances from one another, but containing closely related stone-tool types. Such population movements became increasingly feasible as the weight of tools and weapons decreased and their effectiveness improved.

People have always travelled to and fro across Africa's vast, wide open spaces, prompted by the successes or failures they may have encountered in their home environments. This explains the at times jigsaw-like appearance of present-day ethnic maps. All the evidence points to the first movements having originated among the peoples living in the east and northeast of the continent, who pushed out towards the west and north. Then, from the Neolithic onwards, the general thrust seems to have been eastwards towards the Nile valley, and southwards, probably because of the deterrent effect of the Sahara. This wholesale southward movement of the Sudanic, Nilotic and Bantu peoples took place on a time-scale covering thousands of years and continued right through the historical period until the nineteenth century when it reached the tablelands of Southern Africa that had been occupied by the Khoisan since the earliest prehistoric times.

Weighing the prospects of finding a better life against the risks of aimless wandering, the amulet-covered leaders of these human caravans came to be regarded as the ancestors of their group and, as such, were long commemorated in the collective memory. Yet the final outcome of these migrations might be said to be double-edged. Where the population is spread too thin, the environment regains the upper hand.

The historical movement

One of the striking things about Africa is the fact that many communities have pursued the same way of life, without interruption, since the very earliest times. For example, even now in the late twentieth century, the hunting techniques of the Pygmies are the very ones used by their ancestors thousands of years ago. In spite of the dazzling heights scaled by Egyptian civilization and the glorious achievements of so many African kingdoms and empires, this fact is plain, and it accounts for the singular line along which African societies have developed.

What is the general sense of the history of mankind? This is a question thinkers like Marx and Teilhard de Chardin have endeavoured to answer. With St Augustine (354–430), himself an African, history took a giant step forward from the previous

cyclical concept to a concept where world history was situated on a line extending from the Creation to the Last Judgement, from the earthly city to the City of God.

Another African, Ibn Khaldūn (1332–1406), though attributing power over the destiny of the individual to Allah, nevertheless laid the foundations of history as a science by basing it on evidence verified by reasoned argument. Instead of treating history as a mere string of events, he set about analysing modes of production and life-styles, and production relations generally – in short, civilization (*al-umran al-Bashari*). He even developed an ingenious theory to account for the mechanisms underlying the forward march of history.

When he claimed that the differences in the customs and institutions of different peoples depended on the manner in which they provided for their subsistence, Ibn Khaldūn was, in fact, already formulating one of the tenets of historical materialism that was to be propounded by Karl Marx several centuries later. Marx embarked on a penetrating analysis of the overall pattern of development in Western Europe and then, as something of a sideline, looked into modes of production outside Europe. He identified the 'Asian mode of production'. However, the archaeological and anthropological facts that have come to light since Marx's time suggest that some societies did not go through all the stages he attributed to the peoples of Europe. This is true of the Africans, at least as far as it is possible to tell from the existing data.

In early African communities, for example, communal property was not superseded by private ownership along the lines observed by Marx in antiquity and ancient Germanic society. Similarly, the main features of the Asian mode of production were not found in African communities, where the state, the supreme authority, could no more claim to own the land than could the individual. Moreover, such state authorities were not 'despotic', nor did they embark on major public works. In black Africa, the power of the monarchy was always held in check through the workings of traditionally appointed bodies and by custom, which, as a rule, avoided the taint of despotism. Furthermore, domination on the Oriental model was inhibited by the fact that writing was not very widespread and facilities for travel were not highly developed. In addition, the production surpluses of the grassroots communities in Africa appear to have been limited, even in cases where there was a state monopoly of valuable commodities, such as gold in Ghana and Asante, ivory, salt and so on. It has to be borne in mind that a good proportion of the taxes and other royalties levied were redistributed by the nobles, who not only respected the existing land tenure system, but also assumed responsibility for a number of common services such as security, justice and the organization of markets.

The slave mode of production, too, played until recently only a very subsidiary role in the historical development of Africa. The fact of being a captive did not reduce a person's status to that of a mere chattel, in the Roman sense of the term. In fact, African slaves often enjoyed some property rights. In cases where prisoners of war were not ritually sacrificed, they were integrated into the family until such time as they were freed. When captives were conscripted into the army, they soon became a social force to be reckoned with and were represented at the highest levels of government. In pre-colonial Asante, in an effort to ensure the unity of the nation, it was strictly forbidden to refer to a person's slave origins. In other words, in Africa 'the fact of being a captive

. . . did not imply a given role in production characteristic of a social class'.[2] In places where slavery took on an altogether different and large-scale character, as in Dahomey, Asante and Zanzibar in the eighteenth and nineteenth centuries, the social structures were brought into being by capitalism, the then dominant mode of production.

Nor is it easy to identify the feudal mode of production in Africa, where, as a rule, there was no appropriation or private allocation of land, and hence no fief. In fact, conquerors often left the responsibility for communal land to the indigenous controllers, the land-priests, as distinct from the political chiefs. This is why the noble classes in Africa did not engage in trade. Nobility was a birthright and, as such, could not be negotiated or revoked.

Finally, allowance has to be made for structures like the matrilineal family system, which has for so long been a feature of African society and through which women have played a notable role in both the inheritance of material wealth and the rights to royal succession. Kinship through the female line seems to have come from prehistoric times, when the trend towards fixed settlements in the Neolithic period gave such prominence to the domestic functions of women that they became the key figures in the community. A great many social practices have their origin in this development, such as 'joking relationships', brother–sister marriages, the bride-price paid to the parents of the future wife, and so on.

What, then, can be regarded as the characteristic development pattern of prehistoric African societies? Here, it has to be emphasized that prehistoric Africa was the mainspring of technological innovation and that its inventions were disseminated far and wide through the adjoining continents. The movement was soon to be reversed, however, and for thousands of years the continent was stripped of its resources. First, during antiquity, after Egypt had gone into decline, the Nile valley and the Roman provinces of North Africa were exploited as the bread basket of the empire and as purveyors of wild animals, slaves and gladiators for the army, the nobility and the arena with its bloodsports. Secondly, in the sixteenth century of the Christian era, the devastating drain on the population caused by the slave trade began. Finally, in the nineteenth century, systematic colonial domination began to take place over entire territories. Capital accumulation in Europe and the rise of the industrial revolution would have been inconceivable without the price paid by Asia, the Americas and, above all, Africa.

At the same time, development in Africa was held back by a number of technical and social impediments which, however, failed to generate forces in society that were sufficiently dominant either to permit a real accumulation of wealth or to lead to actual social revolution. In particular, the fact that the land was very seldom privately owned deprived Africa of one of the most powerful ingredients of class conflict and social advancement. Similarly, the low level of technological accomplishment and the weakness of the productive forces were both the cause and the consequence of the fact that the population was so thinly scattered over the available living space.

Because of the continent's natural barriers, trade never became very far flung or

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intensive, and was often confined to luxury goods for the nobility. On the other hand, in regions where those barriers were less impenetrable – the Nile valley, the Sahel, the plains bordering the Mediterranean, the high plateaux of Shaba, and the furrow occupied by the great lakes of East Africa – dynamic social change gathered momentum as a result of the sharp increase in both population and private property.

Thus, there was never a slave stage nor a feudal stage of the European type in (black) Africa. However, this does not mean that human development in Africa took a different path, unlike any other. Productive forces in Africa had as direct a bearing on social relationships as they did anywhere else, and African societies have evolved like others from classless structures to socialized forms of the class struggle. There can be no question of forcing African history at any price into a doctrinal straitjacket tailored from experience gained in other circumstances. Borrowing Marx's methodology is a much more profitable exercise than harking back to Marxist dogma.

In short, for a much longer period than any other continent, Africa evolved outside the confines of private or state ownership, and this conferred on it a quite distinct physiognomy of its own.

The colonial capitalist state became the administrator of African wealth, which was increasingly appropriated to serve the interests of the metropolitan powers and then finally gave way to capitalist or socialist-type states proper.

Yet the fact that the productive forces had ground to a standstill for a variety of domestic and external reasons did not prevent an extraordinary blossoming of artistic expression and of refinement and subtlety in human relationships.

In a nutshell, material civilization originated in the tropical latitudes of Africa and Asia in prehistoric times, and then shifted to the more northerly latitudes of Europe where, as a result of its enhanced technology and the amassing of capital, its performance has been outstanding. Only history can tell whether the transformation of this worldwide system will start in its heartland in the West or be brought about by the peoples on its periphery, in the same way as the fate of the Roman Empire was sealed by the barbarians. Whatever the outcome, the prehistory of Africa is the story of how an advanced species of ape evolved into Man and of how Man, as the driving force behind all progress, put his stamp on nature.

However, the more the productive forces gain in strength, the sharper the conflicts generated by self-interest and the will to power. The struggles for national liberation and social emancipation being waged all over the continent epitomize its rejection of attempts to keep it shackled in the fetters imposed so long ago. It is this struggle for liberation, this unquenchable desire for higher things, free from the constraints of alienation, that have characterized human beings ever since the time when, no longer animals, they stood upright and took their first steps.

In Africa, the creation of Man by Man, which began so many thousands of millennia ago, is still continuing. In one sense, African prehistory has still not come to an end.

Bibliography

The publishers wish to point out that although every effort has been made to ensure that the details in this Bibliography are correct, some errors may occur as a result of the complexity and the international nature of this work.

Abbreviations and List of Periodicals

AATA *Art Archaeological and Technical Abstracts*, New York
Actes II Congr. PPEQ *Acts of the Second Pan African Congress of Prehistory and Quaternary Study*, Algiers, September–October 1952
Actes IV Congr. PPEQ *Actes du IV Congrès Panafricain de Préhistoire et de l'Etude du Quaternaire*, Leopoldville, 1959, Tervuren, Belgium, 1962, AMRAC 40
Actes VII Congr. PPEQ *Actes du VII Congrès Panafricain de Préhistoire et de l'Etude du Quaternaire*, Addis Ababa, 1971
Acts IX INQUA Congr. *Acts of the 9th International Association Congress for Quaternal Research*, Christchurch, New Zealand
ALS *African Language Studies*, School of Oriental and African Studies, London University
Ann. Rev. Anthropol. *Annual Review of Anthropology*, Palo Alto, California
ASAE *Annales du Service des Antiquités de l'Egypte*, Cairo
BASEQUA *Bulletin de l'Association Sénégalaise pour l'étude du Quaternaire de l'Ouest africain*, Dakar Fann, Senegal
BGSA *Bulletin of the Geological Society of America*, New York
BIFAN *Bulletin de l'Institut Français* (later renamed *Fondamental*) *d'Afrique Noire*, Dakar
BSL *Bulletin de la Société Linguistique de Paris*, Paris
Coll. CNRS *Colloques internationaux du Centre National de la Recherche Scientifique*, Paris
CORSTOM *Cahiers de l'Office de la Recherche Scientifique et Technique d'Outre-Mer*, série sciences humaines, Paris
CRAS *Compte Rendu hebdomadaire des séances de l'Académie des Sciences*, Paris
GJ *Geographical Journal*, London
GSAM *Geological Society of America Memoir*, Boulder, USA
HT *Hesperis-Tamuda*, Université Mohammed V, Faculté de Lettres et des Sciences humaines, Rabat, Morocco
ICOMOS International Council on Monuments and Sites
JAH *Journal of African History*, Cambridge University Press, London, New York
Mem. CRAPE *Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques*, Institut Français des Sciences Humaines en Algérie
MN *Masca Newsletter*, University Museum, Philadelphia
OJS *Ohio Journal of Science*, Ohio Academy of Science, Columbus, USA
PPP *Palaeogeography, Palaeoclimatology, Palaeoecology*
Proc. II PCPQS Proceedings II, Panafrican Congress of Prehistory for quaternal Studies
Proc. Norwich, WMO Proceedings of the World Meteorological Organization, Norwich
PTRS *Philosophical Transactions of the Royal Society of London*, A: Mathematics and Physical Sciences, London
TGSSA *Transactions of the Geological Society of South Africa*, Johannesburg
WAAN *West African Archaeological Newsletter*, Ibadan
ZES *Zeitschrift für Eingeboren in Spracchen*, Berlin

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