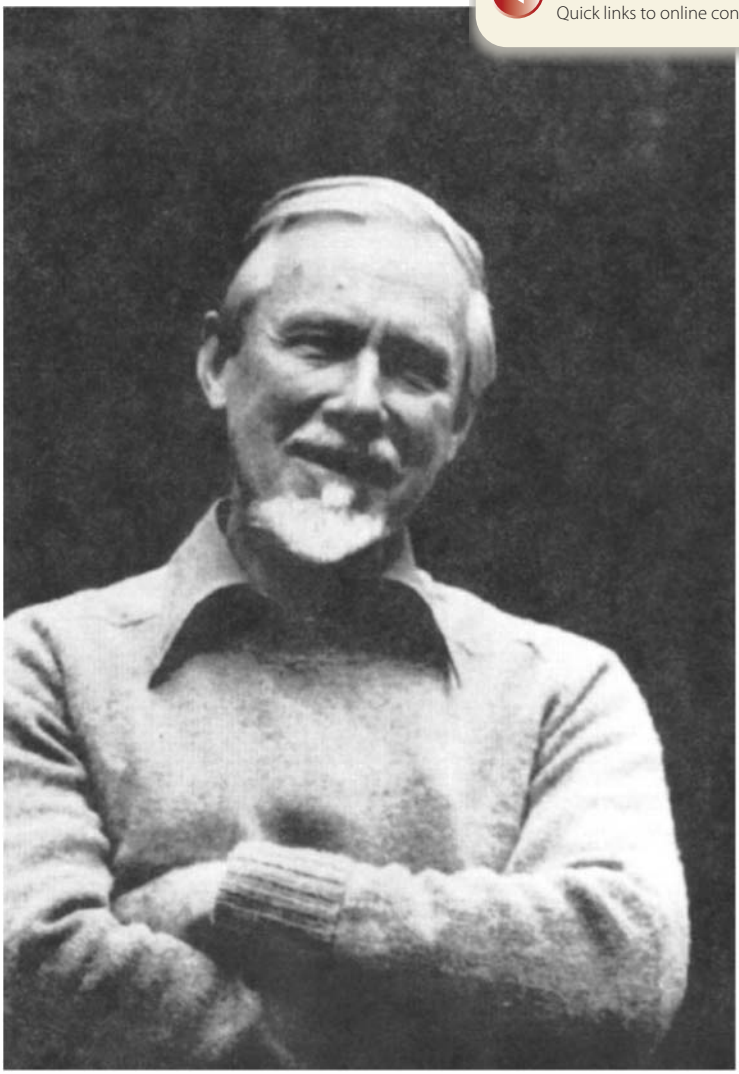

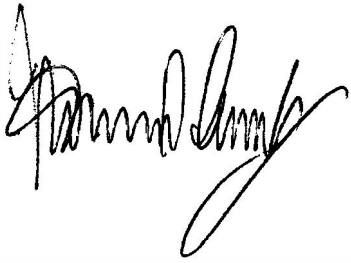

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# DIGGING ON: A Personal Record and Appraisal of Archaeological Research in Africa and Elsewhere

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## INTRODUCTION

I first began working in Africa fifty-six years ago and am lucky enough to have been able to do fieldwork there ever since. My involvement in the better understanding of the past record of human endeavor and achievement there has remained as stimulating and exciting to me today as it was on January 6, 1938, when I first set foot in Livingstone in what was then Northern Rhodesia (now Zambia). It gives me the greatest satisfaction to see how archaeology and the study of African prehistory have developed since those early days before World War II and how the record of the human past in Africa has received the recognition it deserves from not only the international world of paleoanthropologists, archaeologists, and historians, but also from the interested public in many different countries and walks of life. The greater part of the long record of the biological, intellectual, and technological evolution of humankind is to be found in Africa until the movement into Eurasia one million or more years ago. I have found it especially valuable, therefore, to have been privileged to work in parts of Asia—Syria, India, and China. This has allowed a more balanced assessment of Africa's contribution to the historical record. This record shows humankind's pathways to biological and cultural evolution, with its increasingly ingenious intensity in the use of natural resources. Archae-



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ological understanding provides much of the basic source data for writing the early history of the many diverse populations originating in Africa. That I was able to work in Asia as well as in Africa has been mostly the result of accidental and fortuitous circumstances and the generous invitations that have come my way, and not to any particular planning on my part. From the start, circumstances frequently offered new opportunities, some of which I was wise—or foolish—enough to take.

## EARLY DAYS IN PREHISTORY

I became seriously involved with prehistory in my last year at Cambridge when I did the "Arch. and Anth." Tripos (honors exams) and was lucky enough to have two of the best teachers I have known—Miles Burkitt and Grahame (now Sir Grahame) Clark. My abiding interest in archaeology received its focus from the enthusiasm and skills they shared with their students. Miles Burkitt began teaching prehistory at Cambridge in 1919 and was an inspiring teacher for those with the good fortune to attend his lectures and supervisions. The supervisions in particular were a pleasure never to be missed. They were held in his house in Grantchester, about two miles out of Cambridge. After a formal tea around the dining table at which his wife, Peggy, presided, the six or seven of us (in 1937) trooped into Miles' study where we were instructed in the intricacies of the Paleolithic through the Neolithic with the aid of artifacts and photographs passed around for us to handle. Facing Miles, who always sat with his back to the embers, on a high, leather-padded fire screen, we listened to him. He had dug at Castillo with Hugo Obermaier and Henri Breuil and was well acquainted with the French and Spanish *savants,* landowners, antiquarians, and prehistorians, in particular with those working on the Paleolithic. His witty and interesting anecdotes about his colleagues and their discoveries helped us to retain the essential data. In those days it was possible to buy artifacts from amateur collectors and Miles' collection of European and African specimens was an inestimable adjunct to his teaching and to our learning about tools and their manufacture. When he died in the 1960s he left two thirds of his collection to the Museum of Archaeology and Anthropology in Cambridge and one third to me. I was then teaching Old World Prehistory at the University of California, Berkeley, and here and elsewhere we continue to make very good use of the collection.

In Miles' study we learned the difference between a *bec de perroquet* and a *burin busqué,* and much other typology besides, since this was all important in the 1930s. We also tried to understand the sequence of climatic events and technological innovations, as well as the Abbé Breuil's complex interpretations of the sedimentary history in the Somme terraces. I later found that many professionals also had difficulty understanding the Abbé's masterly interpreta-

tions, which were published in his papers in *L'Anthropologie,* and which are still an important part of the European prehistoric archives. The preoccupation with various taxonomic systems remained for a long time in Europe because this was the only way to establish a relative chronology for Lower Paleolithic assemblages in peri-glacial high latitudes. Some thought that the same criteria for estimating age in Europe could equally be applied in Africa and I remember the Abbé saying that he could tell me which stages of the Acheulian (1–7 in the Somme) I was finding in the Zambezi Valley simply by feeling, with eyes shut, the degree of abrasion each biface exhibited. It is hard to realize today that such subjective ordering was possible and acceptable in the 1930s but subjective reasoning was with us—and is still very much alive—until radiometric dating became available to prehistorians.

My other teacher at Cambridge, Grahame Clark, had joined Miles two years earlier to begin the systematic teaching of prehistory, in which Cambridge still leads in Britain. Grahame's speciality was in Mesolithic and Neolithic prehistory—designations that do not mean as much now as they did then. Grahame gave us the depth of understanding and the rigor of the scientific manner that is still so all-important. Grahame has remained an intellectual giant who, stressing human paleo-ecology, has left an indelible record of outstanding research and teaching. He was a close friend of C. W. Phillips, the excavator of Sutton Hoo and a fairly regular visitor at supervisions. Grahame and Miles stressed the overriding importance of rigorous excavation and recording methods, so I was sent to join Sir Mortimer Whecler's excavations at Maiden Castle in Dorset. This huge Iron Age hill camp had fallen to Vespasion's legions during the Roman invasion of Britain in A.D. 43, and the last defenders killed in the storming of the east gate were buried where they fell in the breastworks. The two seasons I spent there gave me the training in field methods that has been the basis for all later refinements. Wheeler was a superb organizer; his excavations were run with almost military precision. This did not suit some people, but it provided the outstanding site report that his volume on Maiden Castle remains (18). I had two excellent site supervisors on this dig, Molly Cotton and John Waechter, who both went on to distinguished careers in archaeology. They shared with us the personal kindness, encouragement, and humor that I have always tried to provide for my own field teams.

I took the Tripos in the spring of 1937 and did better than I had expected. I was also awarded an Honorary Bachelor Scholarship at my college (Christ's). The scholarship carried no financial support, so I looked for a job that would enable me to continue with archaeology. For three or four months I did voluntary work under Mortimer Wheeler at the London Museum (then in Lancaster House). I learned how to draw sections of Iron Age pottery with John Ward-Perkins, later Director of the British School in Rome, and catalogued large numbers of Acheulian bifaces from Thames gravel terraces.

Ward-Perkins taught me to purchase a set-square calibrated in cm and mm from the base—set-squares and rulers with markings that start part way up the edge are a nuisance. This tool has been invaluable ever since and was indispensable last season (November/December 1993) in the Ethiopian Rift.

## JOB PROSPECTS

In 1937 there were only two universities in Britain where prehistory was taught---Cambridge and Edinburgh. There was a position for an Archaeology Officer in the Ordinance Survey, but that was held by O. G. S. Crawford, who was a pioneer of air photography for archaeology. So, one applied for museum positions, which were not easy to come by. Some, like the British Museum, were prestigious and financially adequate but most were county or city/town museums, where the average stipend was 135 pounds (about $540) per year. Archaeologists were thought to be amateurs who did archaeology in their spare time, so these jobs were not expected to provide major financial support. The core of professional archaeologists were highly successful, respected doctors, chemists, lawyers, and farmers, among others, until after the war, when universities began to provide more opportunities for training and appointments in archaeology and prehistory. I applied for a vacancy in the British and Mediaeval Antiquities Department of the British Museum. The only question I can remember having been asked at the interview was how good was my knowledge of Byzantine art and antiquities as the department had quite a lot of Byzantine material. I was not offered the position because my knowledge stretched no further than an interest in the later Byzantine Empire's successful intrigues in stemming Islamic invasion for several hundred years, an interest I acquired while at Cambridge. I have always been grateful that I did not get this or one of the other museum positions for which I applied. Toward the end of 1937 I was offered a position by Sir Hubert Young, the Governor of Northern Rhodesia. He had started a museum and expanded it to include a social-anthropological institute, six miles from the Victoria Falls in Livingstone, almost on the Zambezi River. The town was full of empty houses and other buildings because the government seat had been moved from there in 1935 to the more centrally located Lusaka. So I became Curator of the David Livingstone Memorial Museum and Secretary of the Rhodes-Livingstone Institute for Social Anthropology. What I knew about Northern Rhodesia was limited, but encouraging, mostly concerned with the discovery in 1922 of *Homo rhodesiensis* in the Broken Hill (now Kabwe) mine. They wanted me out there as soon as possible, so I left England on December 17 on an Intermediate Union Castle boat bound for Cape Town via Las Palmas and St. Helena. The journey to Cape Town took about two weeks and from there to Livingstone on the South African and Rhodesia Railways took three and a half days. I arrived in Living-

stone at 8 P.M. during the rains. I experienced for the first time the exotic scents of the tropical vegetation in the humid time of the year—the heady aromas of the *Bauhinias, Cassias,* Flamboyants, and African Violet trees that still bring back good memories of the twenty-three years when Livingstone was our home.

These were the "bad old days" of colonial rule when most people in Zambia, black and white, got by, were assured of the essentials of life, and lived in peace. Colonialism, as we know now, was not good for the indigenous peoples, but it was the best thing at the time, and it was certainly better than what had gone before. I don't know if Northern Rhodesia's colonial administration was better than others, but the men who were appointed to the Provincial Administration were some of the most unbiased, hard working, and concerned people I have known. They were responsible for seeing that the Africans in their districts were looked after fairly with the means at their disposal. Some of these men were fine scholars in their own right—classicists, ornithologists, linguists—and all District Officers had to learn at least one local language so communication could be direct and not just through interpreters. All the younger men spent half of most months on tour in the villages and our first knowledge of likely archaeological sites in the country often came from the records of caves, rock paintings, and engravings they wrote about in the District Notebooks. Many of these men and some of their wives held bachelor's degrees, and Miles Burkitt taught several of them in the post-graduate year the Colonial Office gave them before they were posted overseas. One such man was F. D. Macrae, who had carried out the first archaeological excavation in Northern Rhodesia in the Mumbwa Caves in 1924. Another was Vernon Brelsford, trained at Oxford, and who later went on to write a definitive monograph for the Rhodes-Livingstone Institute on the peoples of the Bangweulu Swamps (2). Vernon had been seconded to Livingstone to write a handbook for the collections that Hubert Young, through the Provincial Administration, had asked District Officers to put together and send down to the Museum. This collection of ethnographic material culture formed an important nucleus for the expanding museum. Vernon's handbook (1) is an invaluable record of everyday life, ceremony and ritual in tribal villages, and a testimonial to the cultural variability of local people who spoke seven main languages and some sixty-three dialects. This book, now long out of print, was a fine compilation based on district notes and firsthand knowledge of the people and objects themselves. When I first arrived in Livingstone I overlapped for three days with Vernon before he left for a long leave in England; I was then on my own.

The Museum and the Institute's offices were housed in what had been the United Services Club. This single story building had an imposing facade and, inside, three main display rooms with smaller ancillary buildings, all of which

had more than their share of termites against which a perpetual war was waged with "dip" to keep them at bay. The Museum also housed a collection of relics connected with David Livingstone, who discovered and named the Victoria Falls in 1855 and whose watercolor sketchbook of his trans-Africa journey was placed on permanent loan by his grandson, Dr. Hubert Wilson, whom I later had the privilege of counting among my highly respected friends.

Hubert Young had also been interested in early African explorers ("first tourists" as some would call them today) and the cartographic development that can be seen in the changing maps of Africa. The Museum had the nucleus of a fine collection of such maps, originally bought and presented by the Governor's friends and acquaintances and to which we later added significantly. I have retained to this day my interest in the early cartographers and historians of Africa—Pigafetta, Senuto, Ogilby, Linschoten, Hondius, d'Almeida. The names and notes on some of these maps provide the first written record of a people, a chieftainship, or a trading center, and the geographic context in which they occurred.

My colleagues at the Rhodes-Livingstone Institute were Godfrey and Monica Wilson, who had recently completed several years' work among the Nyakusa in southern Tanganyika (Tanzania). They were later joined by Max Gluckman, who worked with the Barotse. The Wilsons' friendship and intellectual stimulus were invaluable in my first two years in Livingstone. During my last year at Cambridge I had become engaged to a Modern Languages scholar at Newnham. Betty came out to Livingstone shortly after I arrived there and we were married in April 1938. She has remained a vital linch-pin and support ever since. Those were exciting and enjoyable days even though we had to watch the pennies. My salary was 400 pounds (about $1600) per year—lavish by what a young archaeologist could expect in England but exiguous in Africa. We were still careful, though. A bottle of Scotch cost only 10 shillings (about $2), but we had to make one last a month! The Zambezi and the Victoria Falls were 3–6 miles away and stone artifacts had been found at the Falls since the 1920s. A canal for a hydroelectric scheme had been dug a year before my arrival and the sediments exposed in the canal and in storm drains provided the first evidence of a stratigraphic sequence of artifacts and cultural remains in geological context in the Valley. My first paper was published in 1939, with Basil Cooke, who had been on a visit to the Falls and described the elephant remains I had found in these excavations (5). The survey of this part of the Zambezi Valley up and down stream from the Victoria Falls was extended with invaluable help from the geologist Frank Dixey, who transferred from Nyasaland (Malawi) to Northern Rhodesia to start the Geological Survey in Lusaka. In its upper course above the Victoria Falls, the Zambezi cut through thick expanses of what were, and probably still are, called "Kalahari Sands." These sands represent a record of greatly ex-

tended desertic conditions in the later Tertiary, stretching westward and northward even across the lower reaches of the Congo River, and the subsequent redistributions in later climatic episodes during the Pleistocene. The Zambezi survey and excavation work correlated the fluvial sedimentary geology with the episodes of redeposition of the Kalahari-type sands and the cultural sequence they, and the river terraces, contained.

## ARCHAEOLOGICAL RESEARCH ON THE CONTINENT

I have already written about the state of archaeological research in the Continent when I first started to work in Africa (4), and it can best be understood from *A History of African Archaeology,* edited by Robertshaw (16). I speak here only of those who were valued friends and colleagues for me. These include two of Miles Burkitt's best known students, John Goodwin and Louis Leakey. John, the founder of systematic, archaeological research in South Africa, began teaching prehistory at the University of Cape Town in the 1920s. Another fine colleague and friend was "Peter" Van Riet Lowe in Johannesburg, a civil engineer turned professional archaeologist. He was closely associated with Goodwin in establishing in 1929 the chronological sequence, terminology, and methodology for the Stone Age in South Africa, a framework that was used extensively, and still is more generally, in Africa south of the Sahara (11). Goodwin was the moving force in establishing prehistory as a science in southern Africa as demonstrated by his handbooks, *Method in Prehistory* (9) and *The Loom of Prehistory* (10), his founding of the South African Archaeological Society, his editorship of the society *Bulletin*, and his leading the first systematic excavation of a cave site, Oakhurst Shelter (8). Mary Leakey, coming to South Africa on her way to East Africa in 1935 says she was deeply impressed by John's excavation and recording methods during the weeks she spent digging with him at Oakhurst (15:51).

Goodwin was at the Cape, Van Riet Lowe with Berry Malan in Johannesburg, and the only possible communication was by mail, although after the war we had overseas leave to England when we traveled by sea via the Cape. On our return we would bring back a new car to the Cape and drive it to Northern Rhodesia visiting friends and sites en route. Fortunately, 300 miles to the south was Neville Jones, a Methodist missionary turned professional archaeologist and a Keeper at the National Museum of Southern Rhodesia in Bulawayo. Our all too infrequent visits helped stimulate my investigation of the prehistory of Northern Rhodesia.

My contract with the Institute trustees was for three years, with an option for long-term renewal and overseas leave of six months every three and later every two and a half years. When not on leave I was expected to stay in the country. I was especially lucky in having the Zambezi Valley research at my

doorstep, and because there were no funds for archaeological fieldwork in the Institute, I had to use my own car and equipment. In 1939, wishing to do more work at Mumbwa and in the Lusaka area, I was given 15 pounds (about $60) to help with this new venture. Roads were bad and it took three days by car to get to Mumbwa, but it was an enjoyable trip and there was much to learn and see: new people and cultural behavior, and new terrain—vegetation, animals, and the different habitats to which they were adapted. Mumbwa was a successful dig and enabled me to define the Middle and Later Stone Age assemblages in the Kafue Basin. I was also able to make some suggestions about the seasonal movements of the prehistoric hunter-gatherers because the site was in the ecotone between the grasslands of the Kafue Flats and the savanna woodlands.

The outbreak of World War II put a stop to field research and in January 1941 I joined the Field Ambulance Unit of the Northern Rhodesia Regiment and left for the war against the Italians in Ethiopia and Somalia. I suppose most wars involve times when little or nothing happens and others of more intense, often unpleasant activity. The war in the Horn was no exception, so I was able to do some archaeological surveying, which resulted in the volume, *The Prehistoric Cultures of the Horn of Africa* (3). It was not until the early 1980s that Steven Brandt was able to continue the work in Somalia and to produce the first radiometric dates for the prehistoric cultures there.

I always went to see Louis and Mary Leakey on my way through Nairobi, which was the Headquarters of the British East Africa Command. We would visit their sites in the Kenya Rift and have lively discussions about collections and correlations using fauna and artifacts because radiocarbon dating wasn't yet available. I learned a great deal from these meetings. The opportunity to visit key sites and to handle artifacts provided the basic understanding that, for me, any amount of reading or photographs do not. Because archaeologists are essentially concerned with artifacts of one kind or another and the contexts in which they occur, I have always considered hands-on laboratory and fieldwork the basis for a comprehensive understanding of the archaeology of a region.

In 1946, after two years in the Military Administration of Somalia, I was discharged from the army and returned to the Museum, which my wife had administered during my absence. At this time, the Institute and Museum were separated, with the former moving to Lusaka, the capital. The Museum was renamed The Rhodes-Livingstone Museum and plans were formed for a new building in a new location in town. We were overdue for leave and I had a number of months coming to me from my time in the army, so I was able to spend an academic year back in Cambridge, to add to the two years spent away on fieldwork for my doctorate. We spent the latter part of 1946 and much of 1947 in a rented cottage in Grantchester, while I worked on the collections I had brought back and wrote my dissertation. Returning to Livingstone and to

new prospects for development and a new building, I continued to work in Africa from then until 1961, when I left for a teaching position at the University of California, Berkeley.

In 1947 Louis Leakey organized the first Pan-African Congress on Prehistory and Related Studies in Nairobi. Louis was well aware of the need for dialogue and interaction among the prehistorians, archaeologists, physical anthropologists, and quaternary geologists, and he was able to get most of those working in northern and sub-Saharan Africa to meet in Nairobi. This was the first time that such an international forum on Africa had been possible, and it began what has become an invaluable meeting ground for the exchange of new information and the critical examination of regional collections and sites through organized excursions all followed up by discussions and future planning. There have been nine of these Congresses and it is a pleasure to record that, after a lapse of twelve years, the tenth is expected to meet in Harare, Zimbabwe, in 1995.

Back in Livingstone, the new Museum was built and opened in 1951 and the scientific staff were increased and expanded to include an ethnographer, an archaeologist specializing in the Iron Age (a period that had been largely neglected up to then), and a Technical Officer. A new ordinance was established in 1951, protecting antiquities (sites and relics) and sites of natural significance and beauty, and an inspector was appointed to ensure compliance. My own research had extended beyond the boundaries of Northern Rhodesia to include Malawi as well as Angola, where large open excavations for diamonds exposed great thicknesses of Kalahari Sand and fluvial sequences with large numbers of stone artifacts, notably the fine lanceolates and core-axes of the Middle Stone Age Lupemban Culture Complex. This work was undertaken at the invitation of Diamang, the Portuguese Diamond Company operating in Lunda, Northeast Angola. These were most enjoyable visits, the last in 1968, and resulted in several monographs published by the Company.

After the war, it was easier to attend scientific meetings in South Africa and Zimbabwe. Those of the South African Archaeological Society and the Museums Association of Southern Africa stand out—in particular, one excursion from Windhoek to central and northern Namibia, and especially those to the sites and rock paintings in the Erongo and Brandberg Mountains. Dialogue with colleagues was important to me because archaeology was developing quickly and important new sites were being excavated. There were new findings from the southern African Australopithecine cave sites around Krugersdorp and at Makapan. Revil Mason excavated the Cave of Hearths. Another *Homo rhodesiensis* partial cranium had been found with bifaces in the western Cape. C. K. Cooke carried out important excavations of Later and Middle Stone Age stratified sequences in the Matopos. And a team of Roger Summers, Keith Robinson, and Tony Whitty re-excavated at Great Zimbabwe after

Gertrude Caton Thomson's classic study in 1929. Raymond Inskeep became the first Keeper in Archaeology at the Rhodes-Livingstone Museum, followed by, Brian Fagan, both of them remaining firm friends and esteemed colleagues of mine. With Raymond, Brian, Barrie Reynolds as Keeper of Ethnography, and Clayton Holliday as Technical Officer, we established and ran successfully for several years a Winter School for Archaeology. This was held in July when the climate of Livingstone was superb. Specialists were invited to supplement the talks and hands-on lab and fieldwork. At least a dozen amateurs with archaeological interests, mostly from South Africa and Rhodesia, came to share with us and local Africans a week to ten days of lab and fieldwork on a Stone or Iron Age site in the Livingstone Area. Each year was more enjoyable and rewarding than the preceding one and many professional anthropologists and archaeologists have told me subsequently that they first became interested in the profession through the Winter School.

Until another archaeologist was appointed to the Museum, I had to try covering the full range of prehistoric research in Northern Rhodesia. Unfortunately, I was not able to do this too successfully, especially when it came to the Iron Age, because my training and experience had been almost entirely with the Stone Age and this continued to occupy most of my time available for research. Iron Age archaeology in Zambia made great advances under Inskeep, Fagan, and later, David Phillipson and Joseph Vogel, and it has been of major importance for writing the early history of the Zambian peoples. I am glad to say that I have been able to maintain an interest in both time periods. Today, with the increasing amount of literature produced, it is not always easy to keep up with new discoveries and developments in Iron Age research, though the connections that are evident between the past and the ethnic present make it important to do so. Our overseas leaves were especially important for keeping abreast of recent advances in concepts and methodology as they developed. We would rent a cottage not far from Cambridge, renew old friendships, make new ones, read and generally catch up with current ways of understanding the meaning of archaeological residues.

## POST-WAR PROGRESS

Some major developments took place in the early years after the war. Everything from an excavation was now kept and not simply the *belles pièces*. Prehistorians began to use statistics and associated faunal remains to determine what assemblages meant in terms of ecology, seasonality, hunting abilities, and the importance of change. Artifact assemblages were no longer looked upon primarily as subjects to be categorized taxonomically, with emphasis on the *fossiles directeurs* (type-fossil), nor were the typological and

technological changes seen in a stratigraphic sequence always interpreted as the outcome of population migration. There was a refreshing return to the days when the early antiquarians looked at prehistoric tools as the products of human hands and studied the processes involved in their manufacture, use, and life history. The development of radiocarbon dating in 1950, followed by potassium argon dating not long afterward, encouraged this renewed focus on understanding the behavior behind assemblages. These methods and others released the archaeologist and paleoanthropologist from the confining taxonomic straitjacket and opened up new horizons for recognizing behavioral activities in the archaeological residues. This was epecially important for showing the time-depth for hominid evolution and for the Iron Age in Africa. At the same time, Mary Leakey's pioneering excavations at Olorgesailie and Olduvai in the later 1940s and 1950s showed that old land surfaces with minimally disturbed archaeological assemblages were preserved in long sequences of fine-grained sedimentary strata that contained a unique record of early hominid activities. The context of the finds became much more important for the record they showed of the natural and cultural processes involved in the site formation. Increasingly rigorous methods of excavation, recording, and analysis have developed over the years and input from the natural, earth, and behavioral sciences now provides a sophisticated range of techniques and methods of extracting data from the archaeology in context. These innovations have revolutionized studies of the Paleolithic and have made archaeological fieldwork a team and no longer a one-person project.

A turning point in my career as an archaeologist began in 1955 when we held the Third Pan-African Congress on Prehistory in Livingstone. The conference was well-attended, with participants from most parts of the Continent and from overseas. Some major discoveries were made known, new behavioral scenarios were put forward (e.g. Raymond Dart's Australopithecine osteodontokeratic culture), and the unreliability of the Pluvial/Interpluvial hypothesis was first recognized. There were also three excellent field excursions to sites in Southern Rhodesia, Northern Rhodesia, and in the Katanga (now Shaba) Province of the Belgian Congo (Zaire). These excursions provided an understanding of the regional archaeology not previously possible and laid the basis for interregional collaboration.

It was at this time that I first met Sherwood Washburn and several other American anthropologists who became long-time friends of mine. Sherry was studying the baboons at the Victoria Falls and the Wankie Game Reserve and we both acknowledge our indebtedness to Paul Fejos, the Director of the Wenner-Gren Foundation, for the support we received for our fieldwork. Not often does one get a letter asking, "Would your work benefit from the use of a large American car?"

## BERKELEY DAYS

After taking up a professorship at the University of California at Berkeley, Sherry started a program in paleoanthropology and in 1960 the Anthropology Department asked me if I would like to join them to teach Old World Prehistory with an emphasis on Africa. I was around 45 at the time—an age when one begins to wonder if one should continue to do what one is doing or change to something else—and this invitation seemed to come from out of the blue. Even though I had not done regular teaching before, we decided to move, so in the fall of 1961 we started our new lives in Berkeley. We have never regretted the move even though some of the happiest days of our lives were spent in Livingstone. The important persuasive factor, besides working with Sherry and Ted McCown, was the expectation of obtaining funds for continued fieldwork in Africa. In this I have never been disappointed, and the greatest pleasure of all has been the opportunity Berkeley has given me to help train many excellent students, several of whom are now at the top of their profession. Berkeley was a great place to be from the 1960s until the mid-1980s, when there was special interest in human origins and the evidence being produced in East and South Africa, particularly in the Eastern Rift from southwest Ethiopia to northern Tanzania.

Glynn Isaac joined us in 1966 and we had seventeen superb years together to learn more and to teach about human origins and the biological and cultural evolution of our own species. Glynn was unique in having been trained in part as a natural scientist when at Cape Town. This training resulted in his innovative ways of looking at archaeological assemblages. His scenarios for interpreting a set of residues were the incentive to develop a new kind of data—so-called actualistic data—that provided the basis for comparing and assessing the meaning of missing or misplaced elements in the surviving archaeological record. This new approach has proved important in the way that faunal residues and artifact assemblages are treated and how they are associated today. Many field and lab studies now reveal the taphonomic history of a carcass and the agencies that have worked on it. Similarly, experimental replication, debitage, and refitting studies of flaking waste from stone tool manufacture offer alternative behavioral explanations for a set of artifacts and fossil faunal remains in juxtaposition. By comparing the data recovered from controlled field and lab experiments, it is possible to show how water, wind, or animals can distort the residues on an archaeological horizon/activity area. Many of these new approaches, some developed by ex-Berkeley students, are providing a much more reliable and realistic explanation of the history and behavioral implications of archaeological occurrences. It is a source of great pleasure to have had a chance to share and pass on some of the enjoyment and enthusiasm that I still retain for African prehistory. Our students worked in what Glynn

and I and our wives sought to make a congenial, critical, provoking, and for most, I trust, a companionable and exciting milieu during their preparation for the professional career. We always emphasized the recovery of the hard data by rigorous fieldwork and publication. This is the basis from which new understanding develops and is the material on which hypotheses are made and scenarios constructed. We used a scientific approach for tackling problems—exploration and experimentation, followed by hypothesis and proposition forming, with further testing of the premise.

## FIELDWORK

Most of my own work in Africa has been on the Paleolithic, but there are exceptions. For example, in the 1960s I was involved in Keith Radcliffe Robinson's pioneering studies of the Iron Age in northern and central Malawi. Robinson's eagle eye could see an Iron Age settlement area with unerring accuracy and his publications are the foundation on which the late pre- and protohistoric sequence in Malawi is firmly based. I also worked on team studies at the Kalambo Falls prehistoric site, which was found in 1953 near the southeast end of Lake Tanganyika. The long sequence there from the late Middle Pleistocene (Acheulian) to the later Iron Age indicates almost continuous occupation of this small basin and the significant cultural, climatic, and environmental changes that took place in what was the ecotone between the woodland savanna and the evergreen forest of Equatoria.

Since 1974 our fieldwork in Africa has been mostly in Ethiopia, in Lower and Middle Pleistocene contexts and at late Pleistocene and Holocene localities that were valuable training grounds for graduates. The Ethiopian work continues with increased input from professional Ethiopian paleoanthropologists and archaeologists. Such collaboration between African and expatriate professionals is a reflection of archaeology in most of the African continent today, and it has only been possible with the help of funding agencies like the National Science Foundation, the Wenner-Gren Foundation, and the Leakey Foundation.

I gain much more from examining a site in person and handling the finds than in any other way, and I have been fortunate to be able to work in or visit much of the Continent, thus gaining a broader perspective on African archaeology. A special privilege was spending over a month in the central Sahara with a British expedition to the Air massif and Adrar Bous. We found a rich prehistoric record in the desert, but this work also focused my attention on the importance of the Sahara as the major influence controlling the movement of human and animal populations between sub-Saharan Africa and the Mediterranean. The record of past changes in climate and environment is becoming increasingly well known and dated in the desert and shows the extent to which

the Sahara was at times a major deterrent or barrier to movement. At other times, under increased precipitation when streams and lakes again filled with water, the desert became a welcoming and favored habitat for penetration and settlement by human populations and the large Ethiopian mammalian fauna. Not only could the Sahara have been a controlling factor over movement north and south within the Continent, but also for peoples and animals moving in and out of Africa linked, as Saharan climates must have been, with similar ecological changes in the Arabian peninsula, the Levant, and northwestern India. When more reliable methods for dating and correlating become available, beyond the lower limits of the radiocarbon method, we will have a better understanding of the significance of desertic climatic events and the causes and incentives for movement out of Africa into Eurasia in the earlier Pleistocene and again at the time of the spread of anatomically Modern humans.

It was all the more gratifying, therefore, to have the opportunity to do fieldwork in Syria in 1964 and 1965, in India in 1980–1982, and in China in 1989–1992. This work was immensely valuable for comparative purposes and it allowed me to look at the African field with a more balanced perspective on the similarities, differences, and the *raisons d'etre* behind the prehistoric past in those countries. The distinctiveness of the Acheulian techno-complex has become much more apparent, and the alternative hypotheses explaining its absence from so much of Eurasia, where only the core/chopper and flake complex occurs, have been expanded and now need systematic testing. Much less systematic research has been carried out in Asia, but this is changing. There has been a renewal of research in places that, for one reason or another, have been closed to this kind of work for some time. In some countries, such as India and Pakistan, research has been going on for many years. In others, modern field and laboratory methods and input from the sciences is just getting under way. It will probably be from systematic work in Asia that a number of the key questions and problems in human evolution will be solved.

My time spent with colleagues in many parts of Eurasia, in particular in India and China, as well as with long-time African colleagues and friends, has been more rewarding than I can ever say. It has taught me to appreciate the uniqueness of the cultural diversity, antiquity, and richness of Indian and Chinese civilizations and their evolving village farming antecedents. This is where Africa's contribution to the cultural record is complementary and unequaled, partly for the evolutionary history of the human race preserved there, but more importantly for the continued existence of ecosystems, not necessarily in the same place as they once were, that still preserve the evidence of past landscapes, flora, and fauna. These ecosystems provide us with windows into the past that in many other parts of the world have long since disappeared because of increasing over-use of the land.

Looking back on the naive, subjective interpretations and limited methods of recovery and insight that were available when I began work and the outstanding advances that have been made during the last twenty-five years as the result of science-based archaeology, I am amazed and impressed. This has been an unparalleled time for an archaeologist to have lived and, with the molecular input shortly to become available from DNA through the Human Genome Program, a whole new spectrum of data and pronouncements can be expected. It has been a great privilege and an abiding pleasure to have been able to add my bit to the structure and content of African archaeology and Paleolithic studies.

## AFRICAN ARCHAEOLOGY TODAY

There are still two major divisions in African archaeology today: historic and prehistoric. In those African countries where early literate societies flourished, as in the Nile Valley in Egypt and in the Sudan, prehistory is the Cinderella among national researchers. The emphasis in professional training and finance is on the Dynastic periods and prehistoric research is generally left to overseas professionals—often with outstanding success. There is room for change. Historic archaeology had never had a place in the meetings of the Pan-African Congress on Prehistory and Related Studies until Neville Chittick introduced it at the 9th Congress in Nairobi in 1977. One can hardly believe this, but at the 8th Congress in Addis Ababa in 1971, there were no sessions or papers on the Axumite Civilization nor any excursions arranged to the historic places of Ethiopia. Although historic archaeology today has its foot in the door in connection with the Islamic settlements along the East African coast, the classical colonization of the Mediterranean coast and hinterland, the Axumite civilization of Ethiopia, and the pre-Colonial history of European settlement and interaction with indigenous peoples in South Africa, an expanded forum clearly is needed, where historic archaeologists can interact with prehistorians to great mutual benefit. I think this kind of forum exists only in South Africa; Ethiopia, now that the war is over; and perhaps in the Maghreb.

During the past fifty years, we have been concerned with prehistoric archaeology for obvious reasons. The volume and intensity of research and the number of trained professionals have grown significantly from the pre–World War II days when there were only a few professional archaeologists and huge areas of the African continent remained archaeologically unknown. After World War II and the abandonment of the taxonomic approach to archaeology, a more relativistic approach was taken, in which ideologies were constructed to answer questions about the social, economic, and political meaning of the archaeological data. This approach initially was a product of the founders of so-called New (or Processual) Archaeology, such as Grahame Clark, Gordon

Childe, and Gordon Willey. But it has sometimes been taken to extremes. As Bruce Trigger has said, "Although hyper-relativism is intellectually challenging, its principal effect is to undermine an independent role for archaeology as a source of insight into human history and behavior and to reduce the social sciences to the same level as works of fiction or political advocacy (which lack systematization and verifiability, although they may provide significant insights into human behavior)" (17:309). Fortunately, for the most part, this hyper-relativism is not strong in African archaeology, where most professional researchers recognize that the value of a constructed model is only as good as the data on which it is based.

Since the late 1950s and 1960s, when most African colonial countries became independent, the number of professionals has increased greatly and continues to do so, but in the last decade the number of significant new published works coming from institutions in Sub-Saharan Africa has not shown a similar increase, perhaps for logistical reasons, largely financial.

Studies of human origins and Early *Homo* studies cover more than five million years, and if the Miocene apes are included, it would be fifteen million years. During the past thirty years, research interests have focused on where we all came from—the why, when, and where of biological, behavioral and psychological evolution of the human lineage as shown by the social, economic, and technological changes seen in the archaeological record. Today there is little doubt that our own lineage—the Hominidae---evolved in Africa and that it was somewhere in the dryer, tropical savanna regions that the first tool-makers, the first hominids with enlarged brains, evolved two to two-and-a-half million years ago. The impetus given by natural and earth scientists working with the archaeologists and physical anthropologists has contributed immeasurably to the understanding of when, where, and how this biological and cultural evolution came about, over a time-depth stretching between five million or more to less than half a million years ago. This understanding has been made possible by the development of various dating techniques (e.g. radiometric, isotopic, and paleomagnetic reversal methods) and by increasing amounts of paleoanthropological data. Such data are interpreted in the context of present climates and habitats as well as behavioral changes induced by environmental fluctuations, which are reflected in the geological record, or by human influence on the environment. The so-called actualistic studies that came about as a result of Glynn Isaac's and Lewis Binford's pioneering work introduced the cautionary approaches to the study of site formation and alteration. Taphonomic and archaeological residues are now being identified and interpreted in the light of the controls that these studies of present-day behavior and processes are making available.

Although the hard data are becoming increasingly more abundant, they are still pitifully few and almost every time a significant new find is made—such

as the robust Australopithecine "Black Skull" or the *H. erectus* skeleton from Nariakotome (both in northern Kenya)—new interpretations of the evolutionary model become essential. As a result, possibly the most important advance in archaeological research is the realization that systematic searches are needed to find new and more complete fossil and cultural remains in sealed contexts that can be reliably dated by the methods available today.

Hominidae continued to evolve in Africa until about one million or more years ago when there was an exodus, first into western and tropical Asia, and then into more temperate Eurasia. But an intriguing new development has arisen to make us look more carefully at this scenario. *Homo erectus* remains have been dated to 1.6 to 1.8 million years ago in Africa and to around 1.0 million years ago or less in southeast Asia. This seems to confirm what was expected, but in 1989 a *H. erectus* jaw was found in Georgia that, on the basis of the associated fauna, is thought to be 1.5 million years old. This may not present a problem and the definitive reports are awaited. However, the earliest recognized tool-makers in Africa belong to the grade of *H. habilis,* makers of the Oldowan Industrial Complex, the dates for which are around 2.3 to 1.6 million years ago. This leaves very little or no time for *H. erectus* to have evolved from *H. habilis*. What are the alternatives? The *H. habilis* fossils may represent more than one species and one or none may be a direct ancestor of *H. erectus,* which might again come from another, as yet unrecognized, African ancestor. For many, the African *H. erectus* fossils are sufficiently distinctive to be placed in their own taxon, *Homo ergaster* (19). Or the dates could be unreliable and *H. erectus* may have evolved in Asia and migrated into Africa. These are some of the hypotheses that need to be investigated by paleoanthropologists, again emphasizing the need for ever more systematic fieldwork and the recovery of more hard data.

In 1984 the focus on human origins was readjusted when molecular biologists announced that the mutational clock and history of mitochondrial DNA (the stuff from which genes are made) showed that the first anatomically Modern humans had also evolved in Africa sometime between 200 and 100 thousand years ago. Physical anthropologists and archaeological and human fossil discoveries in sealed and dated contexts supported the geneticists. The original data have now been challenged, so the origin and spread of anatomically Modern humans remains one of the hottest topics in world prehistory today. As a result, emphasis is now placed on a time period that previously had attracted little attention. The Middle Stone Age/Middle Paleolithic, dated by various methods to between ±150,000 and ±35,000 years ago, saw the extinction of the Neanderthals and all other archaic hominid populations and their replacement by anatomically and psychologically Modern humans with regionally diverse technology. This research is being undertaken by African nationals and expatriates collaborating in field and laboratory studies, with

funding coming from outside the Continent, except in South Africa, Kenya, and Ethiopia, where laboratory resources already exist.

Research on Early *Homo* and Modern human origins is pursued actively in those African countries where the record is preserved in sealed contexts: south of the Sahara in Kenya, Tanzania, Uganda, Malawi, Ethiopia, South Africa, Botswana, Namibia, and Angola; and north of the desert in Morocco, Algeria, Tunisia, Egypt, and in the Sahara as well. The work is undertaken by nationals working alone or in teams with expatriates. The preparatory and analysis work in the laboratory generally is carried out in the country concerned, but except in South Africa, much of the specialized technical work (e.g. various kinds of dating and carbon isotope work or comparative studies with DNA research or comparative research on fossil hominids) is done in laboratories overseas. In Sub-Saharan Africa the funding comes essentially from outside the Continent. Whether this support will remain at its present, relatively high level will depend on the continuation and extension of collaborative teamwork for the recovery of new archaeological and paleontological data and the continued field and laboratory studies of animal and plant behavior, cultural residues in ethnoarchaeological contexts, and land formation processes. The interest is world-wide and is also of great practical value for African museums, universities, and individual scientists by providing funding for research.

The knowledge stemming from work on the recent archaeology of the African continent, in particular of those countries south of the Sahara, is probably contributing more to our understanding the antecedents and history of the indigenous peoples there than is any other single source of history. After independence, the support afforded by the new African nations to archaeological research in all its forms was immediate and important. The abundance of remains (in the form of ceramics, metallurgical objects, and evidence of settlements and social and agricultural systems in well-dated contexts) helped extend the history of the peoples of the new states back some two thousand years or, in some regions, infinitely further into the past. Moreover, this past has become visible in the monuments, reconstructed remains, and the interpretations presented in museums and preserved by National Monuments Commissions.

The evidence, and so the approaches and methodology used, are often different from one region to another because protohistory can include studies of the Meroitic Civilization in the Sudan, of the coastal trading centers along the east African coast, or the rise of pre-Islamic urban centers in West Africa. Protohistory is concerned with the interaction between stone-using foragers, Neolithic farmers, and metal-using food-producers as well as the ethnic and economic changes that came about as a result of the movement of Bantu-speaking agriculturalists into the sub-continent. But protohistory is not just the antecedent of history. It covers a wide range of knowledge that varies consid-

erably in time and cultural content from one part of Africa to another. Protohistoric research in Africa began in the early years of this century and since then a great deal of work has been carried out in all regions of the Continent. The development of radiocarbon dating in 1950 gave tremendous new impetus to African protohistoric research. As a result, in southern, western, and eastern Africa, a new interest in the Iron Age began to grow where previously the emphasis had been on the earlier periods.

Researchers began to undertake studies of ceramics, metallurgical practices, the origins and spread of food production, short and long distance exchange systems, and the origins and development of urban centers and markets. By the 1970s Iron Age studies had made considerable progress. The Iron Age has the advantage that the later the time period, the greater and more complete are the surviving archaeological residues and other sources and, therefore, the greater the opportunity for establishing continuity between an extant ethnic population and its past. The input here from ethnoarchaeology is considerable, through the links with ethnography that provide the means of checking the interpretative models presented by archaeological residues. Protohistory can be seen as the product of using documentary, oral, and archaeological sources as well as the resulting insights of cultural and social anthropology to reconstruct the history of indigenous peoples before and after European contact. One of the most successful studies that comes to mind is the reconstruction of the Zulu royal settlements in Natal. Another is the spread of pastoral and mixed farming peoples to Botswana (6, 12:136–138).

Pioneering studies by Lee & DeVore, Silberbauer, Yellen, Teleki, and others on the San foragers in the Kalahari, and studies by French and American researchers on the Efe and other Pygmy groups in forested Equatoria, have developed immeasurably our understanding of the hunter-gatherer way of life in two very different kinds of habitat. At the same time, recent research emphasizing the temporal changes this way of life has undergone as a result of long-time interaction with cultivators and pastoralists provides a cautionary warning against hasty, uncritical use of such analogs in reconstructing the behavior patterns of prehistoric foragers.

Some of the most impressive work on the Neolithic and Iron Age south of the Sahara is that being pursued actively by Francophone and Anglophone archaeologists, paleontologists, and ecologists in northern and western Equatoria. Until about fifteen years ago this region had not been worked in any systematic way. The work done by de Maret and his Cameronian colleagues in that country, the region that linguists accept as having been the heartland of the Bantu language family, is uncovering a chronological and cultural record that goes deep into the later Pleistocene. In Gabon and Congo Brazzaville, the work of Lanfranchi, Clist, Schmidt, and Denbow (in Zaire), is one of the most exciting advances in pre- and protohistoric archaeology today. The volumes

*Paysages Quaternaires de l'Afrique centrale atlantique* and *Aux Origines de l'Afrique central,* edited by Lanfranchi, Schwartz, and Clist, are major reference works and milestones in synthesis and presentation of new data (13, 14)

## FUTURE PROSPECTS

As with human origins research, more hard factual data in well-dated contexts are essential. For example, major research programs are required for understanding the domestication and spread of indigenous food plants of Ethiopia and West Africa south of the Sahara. New stimulus is needed here in identifying and dating cause and effect and in understanding the disappearance of the pastoral Neolithic populations of the Sahara. New, interdisciplinary teams of ecologists, climatologists, botanists, and agronomists as well as linguists, geneticists, and faunal experts working closely with archaeologists in the field can be expected to clarify our understanding of these events, which played such an important part in initiating change in the lifeways of peoples living in tropical Africa. The recent discovery of DNA in human bones at least 5000 years old and claims for DNA from bones as early as Neanderthal fossils opens up a whole new field of research on ethnic relationships between families, clans, and so-called tribal peoples in Africa. As far as I know, genetic studies of this kind have been confined to those of San and Pygmy populations and to Egyptian mummies.

This emphasis on the later time range is understandable because the later prehistory and protohistory are more directly related to the interests of the indigenous African peoples. Archaeology alone can often provide the framework for economic and technological developments that took place in earlier time periods. This framework can be related directly to existing populations, giving them the stability that comes from a long cultural history. This concept was realized by some of the colonial powers through their establishment of museums, research institutes, and antiquities services. But significant expansion only took place after independence and with the pressing need for the training of African professionals. In some countries (e.g. Ghana and Nigeria) training came about through the establishment of universities with archaeology departments. In other cases, archaeology is sometimes taught in a history department. An increasing number of African students have worked or are working toward a degree in archaeology in overseas universities in Europe, America, India, and elsewhere. Those who return to their own country after completion of their studies usually have a hard row to hoe. Many of the Sub-Saharan African countries are weak economically, which means that funding is no longer as adequate as it once was. To counteract the lack of local financial support for research, for expanding facilities at museums, for exhibitions and other visual media, and for adequate documentation of all this, it is

necessary to develop strong public relations to encourage funding from commercial and industrial sources within the country as well as to seek funding and equipment from overseas. But, obtaining overseas funding from domestic and international sources is not easy.

Another problem that strikes at the heart of the matter is the need for contact and interaction with fellow archaeologists and those working in related disciplines. It is not easy for young scientists to leave their own country unless they receive grants to attend a conference or other meeting. Regular interaction and discussions are essential if knowledge of current research is to be maintained and if enthusiasm and enterprise are not to be dampened. This, I believe, is one of the most important problems that exists today in African archaeology. In the past, and still in some parts today, regional association meetings or conferences are held concerning special topics or more general exchange of information and discussion. In other regions the archaeologist or antiquities officer has to go it alone.

Considerable intellectual stimulus comes from joint research programs between African institutions or individuals and research teams from overseas. These researchers often come from universities or museums in America or Europe and they provide the funding and equipment for the programs, which often lead to fellowships for further training overseas and regular visits to the overseas host institution. This, I feel, is the most practical way to help the African national institutions and professionals. Another way, which has varying success, is overseas funding for Africans to attend conferences or seminars. Some will benefit greatly from such attendance, others not at all, and with the increasing number of young professionals being trained and the reduction of research funds in Western nations in general, there is likely to be less money available for attending conferences unless participants have important contributions to make. One way this isolation can be reduced is through regular regional meetings and the establishment of staff exchanges between particular institutions overseas. In Africa, where visiting faculty can teach and undertake fieldwork with local student participants, this can do much to help broaden understanding of recent developments in the host institution and country. Collaborative field projects, which are fairly universal these days, are another way to maintain regular contact and they often result in exchange visits for laboratory and other studies.

Another matter deserving attention is the need for regular and prompt publication of research results, in particular, in international peer review journals. There has not been much of this outside East and South Africa and I do not understand why. Clearly, there are some difficulties in the provision of funds for printing and publication of journals and newsletters in Sub-Saharan Africa, which is frustrating. Publication is, however, the best way to let others know of work being done and it is essential when seeking funds for further

work. Just as a faculty member's publication record in a European or American university is, perhaps, the most important part of a regular promotion and the funding of research proposals, it might be expected to be the case in Africa. Such visibility is an important step in obtaining support for new work.

The Pan-African Congress on Prehistory and Related Studies, or a similar forum for international and interdisciplinary exchange of information and discussion at regular intervals, needs to be revived. All Africanists must explore possibilities and develop ways to diminish the near isolation from on-going research in which so many African archaeologists are working today. Regular interaction and collaborative training programs at institutions of higher learning within the Continent can be the best immediate way to advance the progress of archaeological research in Africa today and to realign its potential for understanding the origins of Africa's ethnic diversity. As T.S.Eliot (7) said:

> Time present and time past
> Are both present in time future
> And time future contained in time past.



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