**Stories of Stones and Bones: disciplinarity, narrative and practice in British popular prehistory, 1911-1935**

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**Abstract:**

This paper explores how three central figures in the field of British prehistory – Sir Arthur Keith, Sir Grafton Elliot Smit and Louis Leakey – deployed different disciplinary practices and narrative devices in the popular accounts of human bio-cultural evolution that they produced during the early decades of the twentieth century. It shows how they used a variety of strategies, ranging from virtual witness through personal testimony to tactile demonstration, to ground their authority to interpret the increasingly wide range of fossil material available and to answer the bewildering variety of questions that could be asked about them. It investigates the way in which they positioned their own professional expertise in relation to fossil interpretation, particularly with regard to the – sometimes controversial – use they made of concepts, evidence and practices drawn from other disciplines. In doing so, they made claims that went beyond their original disciplinary boundaries. The paper argues that while none of these writers were able, ultimately, to support the wider claims they made regarding human prehistory, the nature of these claims deserves much closer attention, particularly with respect to the public role that historians of science can and should play in relation to present-day calls for greater interdisciplinarity.

**Introduction**

In 1934, Louis Leakey published *Adam’s Ancestors*.[[1]](#endnote-1) While he had previously produced technical accounts of his expeditions, along with many newspaper articles, this was his first book-length foray into popular prehistory.[[2]](#endnote-2) In it, he promised to ‘bring together all the latest discoveries concerning the Stone Age, and to present an up to date account of what is at present known about our ancient ancestors and cousins’, an account which naturally included Leakey’s own finds from his own East African Archaeological Expeditions, organised between 1926 and 1932.[[3]](#endnote-3) Leakey’s habit of providing *The Times* of London with regular updates on his adventures meant that the British public was already largely familiar with his activities. This book, however, set out to place his excavations in their proper prehistoric and intellectual context. Kanam Man, the key discovery from his 1928 season in Kenya, was, he insisted, ‘the oldest fragment of a real ancestor yet discovered, a real *Homo*, … the approximate contemporary of the various side branches of the human stem represented by Piltdown man, Pekin [sic] man and the Java ape-man’.[[4]](#endnote-4) But Kanam Man did not only represent the physical ancestor of *Homo sapiens*: Leakey claimed to have found evidence in East Africa for the origins of both European culture and of civilisation itself. These were, it is fair to say, quite unusual assertions to make – but equally unexpected were the kinds of strategies that Leakey used to bolster his capacity to make these surprising claims about prehistory authoritative.

As with other popular accounts of prehistory, rhetoric and the power of a narrative structure were important elements in Leakey’s account.[[5]](#endnote-5) Equally significant, however, was the strong tang of practical and pragmatic experiment that flavoured the book, along with its semi-autobiographical content and construction.[[6]](#endnote-6) Leakey made it clear to his readers that his authority for interpreting the fossil record was firmly rooted in his own field experiences – sometimes exhilarating, sometimes dangerous, often tedious. This was unusual. *Adam’s Ancestors* sat in what was by then an extensive tradition of public lectures, popular articles, books and public broadcasts discussing the characteristics and implications of the ever-increasing number of human-like fossils.[[7]](#endnote-7) But Leakey was unusual amongst popular archaeologists in being not only the narrator but also the excavator of prehistory.[[8]](#endnote-8) Most popular accounts were written by authors whose expertise derived from the laboratory or the dissecting room: few could say, as Leakey did, that they had personally dug up the bones and stones that anchored these accounts of human prehistory, or that they had themselves tried the experiment of butchering a modern antelope with prehistoric tools. Leakey’s practical pragmatism was reminiscent of John Evans’ earlier demonstrations that the flakes and axes found in the drift were the product of human hand unaided by metal tools.[[9]](#endnote-9) Evans, however, made few references in his own writings to his flint knapping abilities, perhaps out of fear that the acquisition of primitive skills would encourage opponents to label him a savage – or simply because he was wary of providing flint forgers with information that could be turned to a nefarious purpose.[[10]](#endnote-10) In contrast, Leakey left his readers in no doubt that his ability to speak for the human past was grounded in his lived experience of a prehistoric landscape and lifestyle.

What *Adam’s Ancestors* did share with its predecessors, however, was a tendency to pull on many different types of threads as it wove together its narrative of human prehistory. Like them, it drew on different – and sometimes contingent – notions of geography and genealogy as well as of chronology, trying to identify when, why, where and how humankind had begun. In order to answer this problem, the authors of these accounts had to deal with a bewildering range of issues. When, they asked, had primates first emerged from mammalian ancestors and what characteristics distinguished them? Where, chronologically and geographically, could one pinpoint the appearance of neanthropic (modern) man? What defined a particular bone (fragment) as simian, hominid or *Homo sapiens*? Were these fossils cousins or ancestors of modern humanity? Did different hominid species co-exist? Might a coeval species still be ancestral to *sapiens*? How did fossils relate to the succession of developmentally ever-more-complex stone tool cultures that had been identified? Did cultural evolution map on to biological evolution, and could tool-complexes be treated as diagnostic of the presence of particular species, even if fossils were absent? Or did different species make the same kind of tools? And, how did they relate to modern day populations of peoples? While later commentators unquestionably understood the relationships between different fossil types to be evolutionary, rather than racial in nature, the concept of race and its relationship to human identity still infused the discussions of these stones and bone.[[11]](#endnote-11)

It was impossible to answer these questions from within the framework of a single discipline.[[12]](#endnote-12) In order to provide their lay audiences with a comprehensive – and comprehensible – account of human origins, scholars had to reach outside their own specialisms. They grounded their accounts in a range of specific field- and laboratory-based methodologies, such as anthropometrics, scientific excavation, the comparative method, craniometry, cave diving, dissection and ethnography. They drew on established and emerging disciplines, from anthropology, anatomy, and geology to neuroscience, palaeontology, archaeology and endocrinology – although with the notable absence of genetics – in accounting for the human past and speculating about the human future. But of course, in producing popular accounts of material outside their own professional remit (anatomists pronouncing on matters ethnographical, palaeontologists interpreting skull structures), they ran the risk of attracting criticism, even censure. So, on what authority did the authors of such accounts make such judgements? And how did they convey that sense of legitimate authority to their audiences?

This paper will examine how these questions surrounding human origins were publicly explored over the period 1911 to 1935. It will concentrate on the work of three men – Sir Arthur Keith, Sir Grafton Elliot Smith and Louis Seymour Bazett Leakey – who had an immense influence on the development and public perception of British prehistory over the course of the twentieth century. Although Leakey has been the subject of a number of studies, neither Keith nor Smith has yet received the sustained attention he deserves from historians of science, not least because their involvement in the Piltdown affair cast such a serious shadow over their posterity.[[13]](#endnote-13) Piltdown is often treated as a tragedy for British palaeoanthropology, perverting the understanding of human ancestry for a generation of scholars.[[14]](#endnote-14) But the shock of that affair – the evidence of direct scientific fraud and the unsolved nature of the crime – has also impacted our understanding of how British prehistory was shaped and understood by practitioners and the public at the beginning of the twentieth century. Smith and Keith might have played prominent roles in Piltdown, but Piltdown had a relatively minor role in their careers. Anatomists by training and professional experience, both strove to use their anatomical knowledge to account for the structure of both bodies and societies, past and present. As did Leakey, they directed their attention explicitly to the examination of the evidence for, and the relationship between, physical and cultural evolution, and did their utmost to convey that understanding to their students and to the wider public. The three of them made disinterred bones and stones meaningful, both for the interpretation of the past and in that past’s implications for present and future society. In order to do so – particularly given the fragmented, and frequently hypothetical, nature of the material with which they worked – they had to draw on resources outside their own specialisms. This paper will examine the techniques and methodologies they used to make their often controversial accounts authoritative and convincing to their publics, and their efforts to enrol their colleagues in their interpretations of human origins. It will conclude by considering what implications the study of these early efforts at crossing disciplinary boundaries might have for present projects of interdisciplinarity, particularly where such schemes touch on issues perceived as pivotal to human identity.

**Part 1: The (Biological) Antiquity of Man, 1911-1921**

Late nineteenth and early twentieth accounts of human fossils had tended to be grounded in race: in particular, in efforts to find in fossil bones the ancestors of modern population groups.[[15]](#endnote-15) But the discovery of Eugène Dubois’s Java Man in 1895, and even more importantly, the flurry of further Neanderthal excavations in the first decade of the twentieth century, provided a range of remains which showed consistent and systematic differences from modern populations.[[16]](#endnote-16) Triangulating these ever-more-pithecoid (apelike) fossils in chronological time and genealogical space seemed increasingly to demand an explanation of human biological evolution.[[17]](#endnote-17) Arthur Keith, appointed in 1908 as Conservator at the Museum of the Royal College of Surgeons, was well placed to provide such an account, as was Grafton Elliot Smith, who returned from the Cairo School of Medicine to a Chair in Anatomy in Manchester in 1909.[[18]](#endnote-18)

In 1911, books by both Keith (*Ancient Types of Man*) and Smith (*Ancient Egyptians and the Origins of Civilisation*) appeared in Harper’s ‘Library of Living Thought’.[[19]](#endnote-19) Both sought ‘to stimulate public interest in the remote history of mankind’, but while Keith focused on the origin of modern (neanthropic) man and the relationships of the extant fossils, Smith developed his theory of the dissemination of civilisation from its Egyptian origins to other Mediterranean and Western European shores by an anatomically distinctive (‘Egyptian’) race. [[20]](#endnote-20) A few months later, Smith’s presidential address to the Anthropology section of the British Association tied his account of the origins of civilisation to the earliest origin of all – the primitive mammal ancestral to all primates – through an account of fossil man that ended with the invention of agriculture.[[21]](#endnote-21) In little over a year, when looked at in combination, the two anatomists had separately contributed to the development of a public narrative which identified and accounted for the evolutionary origins of the hominid line, of the species *Homo sapiens* and of civilisation itself – the three key points around which lay accounts of prehistory were to coalesce.

While both men, unlike their predecessors, organised their accounts around evolutionary, rather than racial, conceptions, their work did show structural similarities with their forerunners. Scholars like Sir John Lubbock and Sir William Boyd Dawkins had structured their narratives of prehistory around a series of steps backwards through time. Keith adopted this technique, beginning his 1911 account with the youngest fossils and leading his audience back from the almost-familiar to the strikingly strange. In his case, however, this chronological passage was conceptualised as a physical expedition, making it possible for his audience to bear virtual witness to the sites of key fossil finds through his situation of each discovery within a detailed geographical context[[22]](#endnote-22). His account of Tilbury man, for example, required the reader to leave the east coast of Essex and travel with him to the valley of the Thames. His use of the present tense and focus on the details of geographic location provided his reader with a sense of physical immediacy, a sense accentuated by his comparison of Tilbury Man with the bones of the infamous ‘Thief-taker General’, Jonathan Wild, available for inspection in the Hunterian Museum. This both gave his audience a familiar reference point with which to visualise the ‘man’ and began to lay the groundwork for the controversial ‘presapiens’ notion that the modern human form was extremely ancient.[[23]](#endnote-23) The comparison to Wild made it abundantly clear that Tilbury man, despite his great age, was of the modern type. This point was hammered home throughout the short book: two hundred thousand years ago, man was ‘so modern in build that we might meet him on the streets of London today and pass him by unnoted’.[[24]](#endnote-24)

Using skulls and skeletons as stepping stones, extrapolating from one to the other in relation to both age and relatedness and using the river Thames as an external clock-like check, laying down strata in steady sequence, Keith took his audience back in time. Travelling from Tilbury through Dartford and Galley Hill, he brought his audience face to face with the ‘men’ of Brunn, Combe Capelle and Grimaldi. But as he dealt with ever-older fossils, his emphasis also moved from the claim that he was tracing the same *kind* of man back through the years and came, again controversially, to challenge a set of assumptions about the regular progression of human evolution. The commonly held expectations that man would become ‘more primitive in mind and body as his history was traced into the past’ were not being met, he argued: the Cro-Magnon discoveries demonstrated that ‘the evolution of human types was not an orderly one’.[[25]](#endnote-25) More archaic types appeared in the fossil record *after*, not *before* the emergence of anatomically modern man – and individual fossils could show a surprising combination of modern and archaic characters, as the anatomies of Neanderthal and Java man showed. Keith’s central message for his first essay in popular prehistory was clear and potentially provocative – the evidence from anatomy demonstrated that human evolution was not linear, but surprisingly uneven, and that modern man was in fact exceedingly ancient.[[26]](#endnote-26)

Grafton Elliot Smith’s account mapped human origins – if not *Homo sapiens* itself – even further back into the far geological past. Like Keith, he did so specifically in relation to his own speciality – the structure and function of the brain.[[27]](#endnote-27) His 1912 address represented an account of human cultural and biological evolution that audaciously tied the origins of civilisation together with those of the hominid line, locating both in key changes in brain structure and physical locomotion. His argument was clear: the previous generation of anthropologists and biologists had unjustly neglected the role of brain anatomy in understanding evolution, ‘due to the discredit cast upon this branch of knowledge by the singularly futile pretensions of some of the foremost anatomists who opposed Darwin’s views in the discussions which took place … more than forty years ago’.[[28]](#endnote-28) Smith’s work in comparative neuroanatomy, however, enabled him to trace the ‘broad lines of man’s pedigree right back to the most primitive mammals’, a phylogenetic mirror of Keith’s reverse-chronological ordering of the extant fossils, to pinpoint the beginnings of human distinctiveness in the earliest of tree-shrew-like mammals.[[29]](#endnote-29) The development of cortical structures such as the neopallium and changes in the temporal-parietal areas and the visual cortex enabled him, he argued, to identify the likely pattern of human ancestry in extant species, and to reconstruct the environment that had, through the mediation of hand-eye coordination, encouraged their production.[[30]](#endnote-30) On this neuroanatomical foundation, Smith began to build his account of a human (‘Egyptian’) civilisation orientated towards the pursuit of individual immortality through the accumulation of cultural and economic resources.

Smith and Keith treated neuroanatomy as both the critical site for the identification of evolutionary trends and the fundamental element in the art of fossil interpretation, since judgements about brain size and structure – which both men considered essential to the assessment of a putative human fossil – derived directly from the knowledge and experience necessary to accurately reconstruct and interpret skull and jaw fragments. It is no surprise, then, that Keith began his 1915 account of the *Antiquity of Man* by emphasising the importance of anatomical training at the expense of geology, archaeology and palaeontology. Consciously positioning himself in the tradition of Dawkins, Geikie and (lately) Sollas, he was clear that his anatomical expertise outranked their specialities. Anatomy, he stressed, was the only discipline that ‘gives ancient man the centre of the stage’: ‘the geologist and the archaeologist provide him with the scenery and the stage accessories’.[[31]](#endnote-31) But he immediately deployed these back-stage disciplines to facilitate his adoption of the same strategies of virtual witness and emotional identification that he had used to such effect in his earlier account. As his account opens, he is walking with his reader down ‘the road from London to Maidstone’ on the way to the ‘great stone monument at Coldrum’ (a long barrow in Kent), using the present tense and focusing on the immediate sensory environment:

As we proceed northwards, we see the same valley of the Medway opening out before us as it did before [ancient man], except that the smoke which sweeps towards us from the cement works … was unknown in his time… We pass the farm and … climb the slope that takes us to the main or central chamber situated on the eastern side of the monument[[32]](#endnote-32)

Similar vignettes introduce each new fossil, their importance emphasised by his insistence that, wherever possible, they were based on his personal examination of the site of fossil discovery.[[33]](#endnote-33) This personal witness, demonstrated through mastery of geological and archaeological detail, is deployed alongside his anatomical expertise to underpin Keith’s two controversial claims about human prehistory: that the course of human evolution was not linear, but distinctly uneven, and that the modern human form was decidedly ancient.[[34]](#endnote-34) Neither claim was solidly supported by anatomical evidence, particularly given his conclusion that the extant fossil record, in combination with stone tools (which he treated as cultural fossils of particular biological groups), represented cousins, not ancestors, of *Homo sapiens.*[[35]](#endnote-35)

So, as Smith was doing with respect to the increasingly global wanderings of his ‘Egyptian’ race, in order to provide a basis for his speculations concerning this ancestor, Keith consciously moved outside his own specialisation to draw on a range of different evidential sources. Stepping out from anatomy to anthropology, he argued that it was possible to extrapolate backward from the distribution of the modern races to estimate the *latest* point by which modern man must have come into existence – from his calculations, the end of the Pliocene. With that as the base point, archaeological evidence – material culture as encapsulated in the eoliths (possible flint tools) of Reid Moir – suggested that the ‘period at which the brain of man had reached a human level or standard’ could have occurred as early as the beginning of that era.[[36]](#endnote-36) If that were the case, then given the enormous variety in extant hominid fossils, which must themselves have had time to evolve, humans in their modern form must at a minimum have existed for over a million years. In the absence of any fossils for anatomical study, and despite his earlier relegation of the other disciplines to a secondary role, his belief in the extreme antiquity of the human form was justified to his audience by reference to a combination of geological, archaeological and anthropological evidence.

This willingness to widen their intellectual casts and to deploy evidence and knowledge drawn from different disciplinary sources became increasingly characteristic of both Smith and Keith in the inter-war period. To return to Keith’s metaphor, their pre-war writings had given centre-stage to their anatomical work, using other specialisms as scenery and props. But after the war-time hiatus, both became increasingly concerned with the wider intellectual and political implications of their interpretations of the anatomy of prehistory. The conclusions that they had drawn from their anatomical investigations could not be fully supported by anatomical evidence – as a result, their accounts began to depend ever more explicitly on the resources (conceptual and methodological) of other disciplines.

**Part Two: Tracing Culture Through Contour, 1921-1931**

In those years immediately following the Great War, new fossil discoveries jostled with work at established sites for scholarly attention; familiar fossils were estranged by novel material, and the various iterations of the human family tree became so numerous that Keith devoted an entire volume of the ‘Forum’ series to an investigation of their different histories.[[37]](#endnote-37) In 1921, the Broken Hill skull was found in a Rhodesian mine: sent to London for evaluation, Arthur Smith Woodward classified it as *Homo rhodesiensis*, and it was placed between Piltdown and Neanderthal in terms of its affiliation with modern humanity.[[38]](#endnote-38) In the same year, J Gunnar Anderssen, then advisor to the Chinese Geological Survey, moved his paleontological survey to the quarry at Chou Kou Tien, where the first traces of Peking Man were found.[[39]](#endnote-39) In 1922, Henry Fairfield Osborn proclaimed the (short) existence of Nebraska Man.[[40]](#endnote-40) 1925 was a particularly fertile year for such discoveries: the Taung fossil was reported from South Africa, Francis Turville-Petre and Dorothy Garrod discovered both anatomically modern and Neanderthal specimens in Palestine, and the London skull was found in the old East India House site.[[41]](#endnote-41) The new edition of Keith’s *Antiquity of Man*, first published only ten years previously, now ran to two volumes.[[42]](#endnote-42)

Other excavations – specifically, the work of Carter and Caernarvon in Egypt – fired public interest in Egyptology, causing Smith to remark that the two men had ‘accomplished in one winter what we have been striving in vain to do at the British Association’ for years.[[43]](#endnote-43) Smith’s *Ancient Egyptians,* in which he explained his theory of cultural diffusion, was also by now in its second edition. Inspired by the racial resemblances he’d noted in skulls collected by explorers from the Mediterranean to the Pacific, and drawing heavily on ethnographic material, the new edition argued that the highly individual ‘Egyptian’ cultural complex, previously associated with specifically Eurasian mummification and megaliths, was actually global in distribution. With William Perry’s help, he was also able to explain this wanderlust: these ‘men of old were doing precisely what their modern successors are doing in California, Klondyke, Johannesburg ... searching for … materials which had some definite economic or magical value’.[[44]](#endnote-44) Egyptian explorers ventured around the world in pursuit of resources that would assure them better lives, in this world and the next.

Later in 1923, Smith elaborated on this theme during an evening lecture to the British Association in Liverpool. He used it to frame both his account of human origins and his reiterated call for the development of a ‘science of the humane’, more scientific than the humanities and more human than the sciences – and which would ultimately provide the resources for the wise government of empire.[[45]](#endnote-45) He proposed that a merger of physical and cultural anthropology would provide the vital empirical and methodological linkages (between brain architecture and behaviour) upon which such a science could be based. Only on such a science, he argued, could the wise and humane administration of empire would derive: an ironic aspiration, given his quasi-imperial conscription of other disciplines in the service of that claim. In support, his accounts immediately deployed comparative anatomy, embryology and palaeontology.

These disciplines linked together into a narrative of primate ancestry that now focused tightly on the specific changes in the brain that had made humanity unique, and which could be visibly traced on the skulls of prehistoric man, through a series of key changes to cranial structure and brain anatomy. Crucially, Smith emphasised that these changes were driven by context: it was the interaction between hand, eye and brain within a particular environmental setting that produced an animal capable of making fine visual, tactile and (finally) auditory discriminations. This last made the accumulation and intra-generational transmission of knowledge possible, thus enabling Smith to link cultural with biological evolution, the ability both to manipulate the natural world and to pass on the knowledge of how to do it. In this, Smith was trying to give his audience a clear empirical demonstration of the extraordinary explanatory and intellectual power that would be harnessed through fusing the natural and the human sciences, which he believed was essential to both an understanding of the human past and the hope for humanity’s future.[[46]](#endnote-46) Culture could be accounted for by brain contour if disciplines and scholars would cooperate, and would result in a new level of understanding of human behaviour that could revolutionise the political administration of empire.[[47]](#endnote-47)

The imperial theme was maintained through Smith’s later work: in, for example, his Conway Lecture of 1927, where he argued that civilisation and private property had disrupted the innately peaceful and gentle nature of man, and that the only hope for future harmony was that found in paternalistic Empire.[[48]](#endnote-48) These rallying calls for interdisciplinary cooperation in pursuit of the *Pax Britannica* were, however, slightly dulled by his confrontational approach to his intellectual (and particularly his anthropological) opponents. Comparing them to flat-earthers and Darwin-deniers, he claimed that they had fundamentally misunderstood the nature of evolution by denying cultural diffusion, preferring to speculate instead about parallel evolution/independent invention.[[49]](#endnote-49) His ire was not confined to one group: even those who, like Keith, agreed with the need to amalgamate the human and natural sciences – but who suggested different strategies – were castigated.[[50]](#endnote-50) Smith wanted to create a ‘science of the humane’, but this seems to have been a science in which the methodological practices of other disciplines (anthropology in particular) were to run on a neuroanatomical leading rein.

During the same period, Keith had been beating a cautious and reluctant retreat from his belief in the deep antiquity of the modern human form, while remaining utterly committed to the notions of the uneven progression of human evolution and the coexistence of biologically distinct hominid groups in prehistory.[[51]](#endnote-51) But while Smith focused on phylogenetic adaptations, Keith’s accounts concentrated on proximate mechanisms. Here, the anatomist found his answer in another emergent speciality – endocrinology. The RCS Museum held the skeletal remains of a number of individuals who had been affected by growth disorders and Keith had realised as far back as 1911 that the anatomical structures affected by these hormonal disorders were those thought particularly characteristic of Neanderthal or other ‘primitive’ remains. From this, he theorised that it was hormonal activity that produced the physical differences between human races – and eventually, human species. This was one of the reasons he had initially believed Neanderthals to be human ancestors: inhibit glandular action and Neanderthal would be indistinguishable from modern man. While he had long abandoned this particular position, he saw no problem in reworking it in the context of his increasing fascination with the role that race played in human evolution. Fundamentally, he believed that racial difference was the physical manifestation of a species-wide tendency to cultural isolationism based on in-group cooperation and out-group hostility. Cultural differences would encourage individuals to mate with familiars, and as a result, between-group physical distinctiveness would increase, creating something like the modern pattern of racial distribution.

This focus on the individual body was reflected in Keith’s broader interpretation of evolutionary theory and its application to human social and physical development. His perspective was becoming increasingly dependent on a series of socio-somatic metaphors through which he developed his account of the specific relationship between capitalism and evolution. In a 1927 essay, for example, he drew parallels between the womb and placenta on the one hand and the Carnegie Trust and the Royal Institution on the other: the first capitalists were, he suggested, the female reproductive cells. His later work – particularly in the later 1930s and the post-war years – dealt more concretely with the manner in which human evolution could be understood as a process of transforming these thrifty reproductive cells into full blown industrial capitalism.[[52]](#endnote-52) Importantly, for him, this turned on the role of race, particularly inter-group competition, as the driving factor in social, economic and technical development. Race was treated as an effect and cause of both cultural and biological evolution. But notably, race was also a key factor – as Keith himself acknowledged – in his own interpretation of the fossil record. Calling on all prehistorians to reflect on the influence their own assumptions had over their interpretations, he was absolutely clear that his own racial prejudices had affected his accounts. Fundamentally, he did not believe that Africans had the capacity to innovate.[[53]](#endnote-53)

**Part Three: African Prehistory in Public, 1927-1935**

 By the early 1930s, Africa was increasingly becoming the focus of prehistoric discovery and speculation. Keith’s *New Discoveries Relating to the Antiquity of Man* (1931) was dominated by the new African work, and in particular, by his analysis of Raymond Dart’s Taung skull. As before, he opened with the now tried-and-tested technique of virtual witness, although rather than walking with the reader down the valley of the Thames, he now rode the railway from Kimberly to Bulawayo with them. Stopping at Vryburg, ‘in order that we may examine … the scene of the discovery of the Taung skull’, the location and history of the infant skull are described in detail before assessing the likely adult brain shape and size – and thus its location on the human family tree.[[54]](#endnote-54) Anatomically speaking, he concluded, ’of all the fossil apes yet discovered *Australopithecus* comes nearer to our expectations of what our fossil ancestor should be like than any which has come to light so far’.[[55]](#endnote-55) Geology, not anatomy, denies the Taung skull human status: it was found, Keith declared, in strata that were much too recent to have contained human ancestors. Other African discoveries caused him greater concern, especially in relation to neuroanatomy: Boskop and Fish Hoek Man appeared to have unexpectedly large brains. On the one hand, this confirmed Keith’s belief in the uneven and non-linear nature of human evolution: the cranially well-developed Boskop race had apparently ‘degenerated into its modern representative, the modern Bushman’. This implied that brain evolution was contingent, rather than progressive.[[56]](#endnote-56)

But on the other hand, as Keith was well aware, his own prejudices and presumptions regarding the relationship between biology and cultural innovation underpinned this model of neuro-degeneration. A few pages later he made them explicit in his assessment of Louis Leakey’s claim to have discovered at Kanam the biological, cultural and social origins of humanity.[[57]](#endnote-57) Keith was deeply sceptical of Leakey’s interpretation of the material culture he had discovered, but also wary of his own position. As he argued,

 All of us approach such issues as are now being raised by Mr Leakey with certain biases and preferences … One particular prejudice stands between me and a ready acceptance of the antiquity ascribed by Mr Leakey to the stone cultures of East Africa. In our brief experience of the world, we have never found that negro or negroid peoples are gifted with inventiveness or have ever manifested a strong desire to improve their material culture … I have difficulty even supposing that the native peoples of Africa were ever pioneers in advancing the cultures of the world. And yet, as I write, the big-brained Boskopoids of South Africa raise a warning finger![[58]](#endnote-58)

Keith’s scepticism about Leakey’s claims rested on his firm belief that biological heritage limited the capacity for cultural innovation. But in contrast to his relative weighting of anatomy and geology in the case of the Taung skull, here his commitment to the anatomical significance of brain size meant that the archaeological evidence, present or absent, was relegated to secondary importance.

By the early 1930s, Leakey was (not quite literally) leaving no stone unturned in his efforts to bring East Africa and the achievements of its prehistoric inhabitants to the centre of British prehistory, both popular and professional – even as he himself continued to insist that these vanished inhabitants were not, in fact, anatomically ‘negroes’. In 1926, he had organised and led the first East African Archaeological Expedition, which discovered an entire fossil skeleton at Elmenteita, as well as evidence that – he felt – justified the creation of a relative dating scheme for both Kenyan and European finds. This meant that developments on one continent could be directly compared to contemporaneous discoveries on the other.[[59]](#endnote-59) For Leakey, this was crucially important, since by summer 1928, he was passionately defending Kenya’s claims to be the ‘cradle of modern man’ in the London *Times*, arguing that *Homo sapiens* in Africa had been both contemporary with the Neanderthal occupation of Europe, and in possession of a sophisticated stone tool culture*.*[[60]](#endnote-60) Further discoveries were confidently expected, Leakey asserted, as the second Expedition set sail in August of that year.[[61]](#endnote-61) By 1931 Leakey had publicly identified Kenya as the earliest known point of origin for human biological and cultural origin, and was eagerly organising his third expedition, which was to link the Kenyan excavations with the work done by Hans Reck in Oldoway Gorge, Tanzania before the Great War.[[62]](#endnote-62)

 As the *Times* announced, Leakey, accompanied by Reck and Arthur Hopwood, a mammal palaeontologist, left England in June 1931.[[63]](#endnote-63) By December, the *Times* was reporting that under ‘unpleasant and difficult’ conditions, the expedition had established that ‘*homo sapiens* [sic] goes back in East Africa to an age in the evolution of modern man far more remote than the evidence found anywhere in the world suggests’.[[64]](#endnote-64) Indeed, the arduous and difficult nature of the fieldwork – including being ‘charged by a rhinoceros’ – was a recurring theme in the accounts of Leakey’s activities.[[65]](#endnote-65) His discoveries were received with both scepticism and support.[[66]](#endnote-66) Leakey’s own belief in his fossil was such that in March 1932 he ghoulishly told *The Times* that the evidence of fire found in association with hominid bones at Chou Kou Tien suggested that the bones of Peking Man were merely ‘the relics of [Oldoway man’s] meat feasts’.[[67]](#endnote-67) This expedition’s discovery of the Kanam jaw raised the stakes further, since this fossil – as *Nature* dryly noted – ‘carries back *Homo sapiens* to Pre-Chellean, a stage further removed than Oldoway man’.[[68]](#endnote-68) Later that summer, Leakey proudly told the *Times* that he had now excavated a complete sequence of Paleaolithic Stone Age cultures, correlated them with the Tanganyikan beds, and linked them to the bones of the men of Kanam, Kanjera and Oldoway.[[69]](#endnote-69) Bones and stones, in Leakey’s hands, were finally being made to march in step: the geologists, anatomists and archaeologists who gathered at Cambridge in 1933 to investigate his claims could find no reason to dispute them.[[70]](#endnote-70) Later that year, Elliot Smith was a supportive chair of the Royal Anthropological Institute meeting where the formal announcement of the oldest man, *Homo kanamensis,* was made, identified both as the source of pebble-tool culture and the ancestor of Kanjera (modern) man. Kanjera man was identified with the Aurignacian culture, and as the prehistoric victor over the ‘beetle browed rivals’ exemplified by Peking and Neanderthal man.[[71]](#endnote-71) Notably, Leakey continued to insist that despite their geographical origin, neither Kenyan specimen showed ‘negroid’ anatomical characters.

 In the following year, *Adam’s Ancestors* tied these claims for Kenyan primacy in human evolution into an account of fossil discoveries that emphasised again and again the practical and methodological aspects of the study of human prehistory. As Keith and Smith had done many times, Leakey described for his readers what had been found, where and when, and how these finds had been interpreted. Like Keith and Smith, he found himself faced with the problem of distinguishing – or not – between biological categories (species/race) and cultural ones (tools), as well as the problem of determining age (relative and absolute) of fossils and artefacts. But what made his book different was the emphasis he laid on methodology, on the process and problems of excavation and on his personal experiences. He was less interested in explaining *why* humans had evolved as they did, and far more intent on demonstrating the correct relationships *between* and *within* fossil remains, both biological and cultural. In order to do that, he argued, close attention to the process of scientific excavation was essential: the disaster of the Broken Hill skull showed the consequences of ignoring these principles.[[72]](#endnote-72) In contrast, his own discovery of Kanam man had begun, he claimed, with careful identification of the areas in which fossils were likely to occur, followed with detailed, exemplary, professional excavations. Leakey’s authority lay not in the laboratory or within disciplinary specialisation: it was grounded in his ability to read and navigate the African field.

The scientific excavator, Leakey explained, needed imaginative flair and the capacity to identify emotionally with prehistoric man. Leakey urged on his readers the importance of envisaging how a hunter might have used a landscape, not just in order to predict where his tools and fossils might be found, but in order to help reconstruct the circumstances surrounding his death and to work out how to use the tools he left behind. Such creative excursions should then, he argued, be tested by immediate practical experiment, in a manner that directly recalled the work of John Evans in the previous century.[[73]](#endnote-73) But unlike Evans, Leakey gloried in his reconstructions, describing his past efforts at translating fantasy into reality:

In my study at Cambridge I have the skin of an African antelope which I myself treated this way, using as my only tools actual convex scrapers belonging to the Stone Age. They served the purpose so well that the skin is nearly as soft and supple as if it had been prepared by a modern tanning process.[[74]](#endnote-74)

Bubbling with enthusiasm, he outlined his future plans to his readers:

I am not aware that the experiments were ever carried so far as to test the killing power of a hand-axe so hafted. I hope to carry out such an experiment myself when I am next in Africa.[[75]](#endnote-75)

He urged his audience to emulate his example, using his book as a text through which to interpret the British landscape. He firmly believed that there were many fossils still to be found, many critically endangered by road and brickwork building. ‘Any reader of this book’, he claimed, with the time ‘to visit such commercial undertakings might have the honour of finding one of the many links that are missing in the chain of evidence concerning the evolution of man’.[[76]](#endnote-76) Even more intriguingly, he tried to encourage them to use his book as an interactive tool through which to produce visual aids that would improve their understanding of prehistoric cultures:

It is very easy to demonstrate the Levalloisan technique with the aid of a large sized potato (to represent a nodule of flint) but it is much less easy to describe it in words … readers who are interested will find they can appreciate the method better … if they follow my description with the aid of a large potato and a knife.[[77]](#endnote-77)

This exhortation to immediate physical imitation was undoubtedly a step beyond Keith’s efforts at virtual witness when it came to inspiring and enlisting the public imagination in support of prehistoric studies. Again, however, it grounds authority in physical and practical skill, rather than disciplinary specialisation – within the context of discussion of the capacity of the amateur to contribute to the emerging profession of palaeoanthropology.

Unfortunately, Leakey’s claims to have identified the earliest known human biological and cultural remains, based on his methodological and practical proficiency, were about to be very publicly obliterated. According to *Nature*, despite the ‘close and expert scrutiny’ to which Leakey’s ‘evidence for the early occurrence of man in Kenya has been subjected’, it was still ‘eminently desirable that no means of verifying and substantiating the data should be neglected’.[[78]](#endnote-78) Despite the positive conclusions of the interdisciplinary Cambridge conference, *Nature* at least still clearly regarded the fossils with a dubious eye. Thus, the geologist Professor Boswell was to accompany Leakey on the fourth East African Archaeological Expedition. His expertise at assessing the age and relationships between the different geological strata at the key sites would provide ‘final and decisive verdicts’ on the chronological status of Leakey’s discoveries. Unfortunately for Leakey, in his absence local people had removed the iron pegs that he had set in concrete to mark the location of the Kanam jaw’s discovery.[[79]](#endnote-79) Further problems exacerbated the situation: the jaw had originally been found by a local assistant, not by a credentialed excavator, and Boswell was not inclined to accept the local’s unsupported word. Finally, heavy rain had eroded the local landscape, making it hard for the returning Westerners to orientate themselves in the area. Boswell’s letter to *Nature*, reprinted in the *Times* was brutal:

It has not proved possible to find the exact site of either discovery, since the earlier expedition neither marked the localities on the ground nor recorded the sites on a map. Moreover the photography of the site where the mandible was found … was, through some error, that of a different locality … it is regrettable that the records are not more precise.[[80]](#endnote-80)

In his judgement, the Kanam bone beds were so geologically complex that only ‘careful investigation of the deposits by an experienced geologist at the time of discovery’ could have reliably dated the human remains. Since no geologist had been included in the earlier expeditions, Boswell concluded that their age was now ‘uncertain’, and that the evidence brought before the Cambridge conference for both the stones and bones of Kenya had been ‘unintentionally misleading’.[[81]](#endnote-81) Leakey’s claims to have identified the biological and cultural origins of humanity were in shreds. His claimed possession of exemplary methodological and practical skills had been spectacularly blown out of the water: what was left of his ship shattered fatally against his lack of geological expertise.

**Conclusion**

Following Boswell’s damning conclusions, Leakey found himself cast into the outer darkness of academic prehistory for some time.[[82]](#endnote-82) In later years, he often claimed he had been a lone voice in support of the ancient and African model of human origins, surrounded by scholars blinded by their belief in Piltdown. It seems more likely, however, that it was Leakey’s own actions that made scholars wary of his favoured continent: it was in the immediate aftermath of Boswell’s public demolition of Leakey’s reputation that Arthur Smith Woodward, for example, was able to push forward the geographic interpretation of biological evolution that favoured Asia.[[83]](#endnote-83) Controversy continued to characterise Leakey’s life and work throughout the years that followed, but the skilful use he made of the abiding public interest in human origins was at least partially responsible for his ability to attract and retain funding for the many studies of human origins that he initiated.

In contrast, Keith and Smith have largely disappeared from both public and professional consciousness. Smith’s cultural ‘hyper-diffusionism’ and Keith’s identification of race as both the product of, and the motivating factor in, cultural innovation made it easy for their work to be caricatured and marginalised by their successors. Both used their popular accounts of human prehistory to promote (potentially) controversial hypotheses regarding the nature of humanity, hypotheses that might have been inspired by anatomical studies, but which required for support the intellectual resources of many disciplines. Keith and Smith extrapolated from their understandings of current and prehistoric primate/hominid anatomy to accounts of human culture and potential human futures, drawing on geological, anthropological, ethnological and palaeontological resources (among others) to support and sustain their cases. However, their calls for interdisciplinary cooperation – or the creation of a ‘science of the humane’ – were somewhat disengenous: other disciplines, ultimately, were to be anatomy’s handmaidens in this project. Like many later scholars who tried to unite the subjects of the human and natural sciences, their calls for interdisciplinary cooperation foundered on their failure to respect, understand and assimilate the languages and practices of different specialisms.

In contrast, Leakey’s accounts focused less on disciplinary authority and more on his own practical (and tactical) skill. The astonishing claims he made were grounded in the fact that he had himself excavated the evidence: his archaeological knowledge combined with his extensive field experience in Africa enabled him to identify the best places to look for fossils and the right way to bring them forth. Unfortunately, on closer examination, that methodological expertise was – very publicly – found wanting. But as the public appetite for popular accounts of human origins continued unabated through the latter twentieth century, increasingly it was Leakey’s model of personal, first-person accounts that prevailed. These accounts, as with Leakey, often stressed the compelling, stubborn endurance of physical and emotional distress that accompanied the drama and tedium of fieldwork. Keith had figuratively led his readers over the landscape to the key fossil sites: later writers accounted for their own lived experience.

Finally, however, the work of all three men is of abiding intellectual potential, both more generally for present-day efforts at interdisciplinarity, and more specifically in relation to the intellectual project of ‘Deep History’.[[84]](#endnote-84) Much of what they wrote looks problematic to modern eyes, especially the slippage between categories of ‘race’, ‘culture’ and ‘species’ in their writings. But the equal value they placed on the significance of cultural and biological evolution and, in particular, their focus on the critical importance of understanding human evolution in environmental (physical and social) context is extremely important, and is something that has often been lost in public accounts of human origins and evolution in the later twentieth century. Further and closer study of their work within its own wider context could well pay dividends. As regards interdisciplinarity, it is important to remember that historians and sociologists of science are actually the individuals with most expertise in moving between disciplines. As we can see and show, historically such projects have usually foundered either on an explicitly colonising effort (‘science of the humane’, various versions of sociobiology) or, more interestingly, on the tendency of participants to assume that a word that sounds similar, or a practice that looks familiar, is the same. More than most members of the academy, we know that successful cooperation between disciplines depends on learning the language and skills of the other: the history of research into human origins and identity makes this extraordinarily explicit.

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1. Louis Leakey, *Adam’s Ancestors: An Up-To-Date Outline of What is Known About the Origin of Man*, London: Methuen, 1934. The book went through four editions by the late 1950s, as Leakey tried to keep up with rapid palaeoanthropological developments - see his correspondence with Kenneth Oakley (Natural History Museum Archives DF 140/211). [↑](#endnote-ref-1)
2. Louis Leakey, *The* *Stone Age Cultures of Kenya Colony*, Cambridge: Cambridge University Press, 1931, and *The Stone Age Races of Kenya*, Cambridge: Cambridge University Press, 1935. Most of his later popular work appeared in *National Geographic* and the *Illustrated London News* (Virginia Morell, *Ancestral Passions: the Leakey Family and the Quest for Humankind’s Beginnings*, New York: Simon and Schuster, 1995), and his last popular book appeared in 1969 (Louis Leakey & Vanne Goodall, *Unveiling Man’s Origins: Ten Decades of Thought about Human* *Origins,* Cambridge MA: Schenkman). [↑](#endnote-ref-2)
3. Leakey, op. cit. (1), p. xi. [↑](#endnote-ref-3)
4. Leakey, op. cit. (1), p.2. Note that the authors of the texts discussed in this article commonly used what would now be regarded as sexist or racist language. When quoting or paraphrasing their work, I have followed their usage. I do so without either condoning or accepting their implications. [↑](#endnote-ref-4)
5. Peter Bowler, *Theories of Human Evolution: a Century of Debate, 1844-1944*, Oxford: Blackwell, 1986; Misiau Landau, *Narratives of Human Evolution*, New Haven CT: Yale University Press, 1991. [↑](#endnote-ref-5)
6. Amongst his family and protégées, Leakey inaugurated a ‘hobby’ of producing semi-autobiographical popular science books (Mary Leakey, *Disclosing the Past*, London: Weidenfeld and Nicolson, 1984). Leakey wrote two volumes of autobiography (*White African: an Early Autobiography*, London: Hodder and Stoughton, 1937, and *By the Evidence: Memoirs, 1932-1951*, New York: Harcourt Brace, 1974)*.* Mary also published a popular account of the discoveries at Olduvai Gorge (*Olduvai Gorge: My Search for Early Man*, London: Collins, 1979). Their son, Richard Leakey has followed this example, as have Leakey’s ‘trimates’, Jane Goodall, Dian Fossey and Birute Galdikas. [↑](#endnote-ref-6)
7. Series such as the ‘Thinker’s Library’ and the ‘Forum’ series, both produced by the commercial publishers Watts and Co. frequently included volumes devoted to both human prehistory and human evolution, while the ten volume ‘Corridors of Time’ series written by Harold Peake and Herbert John Fleure for the Clarendon Press (1926-57) took the ‘serious student’ from the origin of life to the Iron Age. See also Peter Bowler, ‘Experts and publishers: writing popular science in early twentieth-century Britain, writing popular history of science now’, *British Journal for the History of Science* (2006) 39, pp. 159-187. [↑](#endnote-ref-7)
8. Austin Henry Layard, *A Popular Account of Discoveries at Nineveh*, London: John Murray & Sons, 1856; Heinreich Schleimann, *Mycenae*, London: John Murray & Sons, 1878. For commentary, Susanne Duesterberg, *Popular Receptions of Archaeology: Fiction and Factual Texts in Ninteenth and Early Twentieth Century Britain*, Bielefeld: transcript Verlag, 2015. Leonard Woolley (*Spadework: Adventures in Archaeology*, London: Lutterworth Press, 1953) and Mortimer Wheeler (*Still Digging: Interleaves from an Antiquary’s Notebook*, London: Michael Joseph, 1955) dominated the public face of archaeology in the mid-twentieth century. [↑](#endnote-ref-8)
9. Jenny Bulstrode, ‘The industrial archaeology of deep time’, *British Journal for the History of Science* (2016) 49 (1), pp. 1-25. [↑](#endnote-ref-9)
10. Hugo Lamdin-Whymark, ‘Sir John Evans: experimental flint knapping and the origins of lithic research’, *Lithics* (2009) 30, pp. 45-52; Joan Evans, *Time and Chance: The Story of Arthur Evans and His Forebears*, London and New York: Longmans and Co., 1943. [↑](#endnote-ref-10)
11. Figures such as Lubbock and William Boyd Dawkins had often interpreted the relationships between fossil and extant humanity racially, identifying direct descendants of fossil forms both ‘civilised’ and ‘savage’. See Matthew Goodrum, ‘The idea of prehistory: the natural sciences, the human sciences and the problem of human origins in Victorian Britain’, *History and Philosophy of the Life Sciences* (2012) 34, pp. 117-146 and ‘Crafting a new science: defining palaeoanthropology and its relationship to prehistoric archaeology, 1860-1890’, *Isis* (2014)105, pp. 706-733, on the relationships between the concepts of evolution, prehistory and race in this context. See Marianne Sommer, ‘Ancient hunters and their modern representatives: William Sollas’ (1849-1936) anthropology’, *Journal of the History of Biology* (2005) 38 (2), pp. 327-365 for a discussion of a later effort in the same tradition. [↑](#endnote-ref-11)
12. Chris Manias, ‘*Sinanthropus* in Britain: human origins and international science, 1920-39’, *British Journal for the History of Science* (2015) 48(2), pp. 289-319; Matthew Goodrum, ‘The history of human origins research and its place in the history of science: research problems and historiography’, *History of Science* (2009) 47, pp. 337-357. [↑](#endnote-ref-12)
13. For Leakey, see Thomas Ofcansky, ‘L.S.B. Leakey: a biobibilographical study’, *History in Africa* (1985) 12, pp. 211-224; Morell op. cit. (2); Mary Bowman-Kruhm, *The Leakeys: a Biography*, Westport CT: Greenwood Press, 2005. On Keith and Smith, see relevant chapters in Landau and Bowler, op cit. (5), and Manias, op. cit. (12) discusses both men in the context of the British reception of *Sinanthropus*. Warren Dawson edited *Sir Grafton Elliot Smith: a Biographical Record by His Colleagues*, London: Jonathan Cape Dawson, 1938, and also see A P Elkin & Neil Macintosh’s *Grafton Elliot Smith: the Fan and His Work* (Sydney: Sydney University Press, 1974). Paul Crook, *Grafton Elliot Smith, Egyptology and the Diffusion of Culture*, Brighton: Sussex Academic Press, 2012. Sommer (op. cit. 11) provides a short discussion of Smith’s approach to cultural diffusion. Aside from Keith’s own autobiography (*An Autobiography*, London: Watts & Co., 1950), little has appeared on his career, although Marianne Sommer has discussed his work in relation to other palaeoanthropological contributors – see ‘Human tools of the European Tertiary? Artefacts, brains and minds in evolutionist reasoning’, *Notes and records of the Royal Society of London* (2011), 65 (1), pp. 65-82, *Bones and Ochre*: *the Curious Afterlife of the Red Lady of Paviland*, Cambridge MA: Harvard University Press, 2007. See also Rhodri Hayward, ‘The biopolitics of Arthur Keith and Morley Roberts’, in Christopher Laurence & Anna-K Mayer, *Regenerating England: Science, Medicine and Culture in Inter-War England*, Amsterdam: Editions Rodopi B.V., 2000. [↑](#endnote-ref-13)
14. Many studies of Piltdown have appeared. For a personal account, see Joseph Weiner, *The Piltdown Forgery*, Oxford: Oxford University Press, 1980. Frank Spencer, *The Piltdown Fapers*, Oxford: Oxford University Press, 1990, seeks to identify the ‘culprit’, while Murray Goulden ‘Bringing bones to life: how science made Piltdown man human’, *Science as Culture* (2007) 16, pp. 333-337 adopts an STS perspective. [↑](#endnote-ref-14)
15. Goodrum, op. cit. (11). William Boyd Dawkins, *Cave Hunting: Researches on the Evidence of Caves Respecting the Early Inhabitants of Europe*, London: Macmillan and Co., 1874, Bertram Windle, *Remains of the Prehistoric Age in England*, London: Methuen and Co, 1904; John Lubbock, *Prehistoric times, as illustrated by ancient remains and the customs and manners of modern savages,* London: Williams & Norgate, 1865. [↑](#endnote-ref-15)
16. In 1899, Neanderthal fossils were found at Krapina (Croatia), the Mauer jaw was found at Heidelberg in 1907, and Le Moustier and La Chapelle-aux-Saints were both excavated in 1908 by Otto Hauser and the Abbes Jean and Amedee Bouyssonie respectively. In 1909, Hauser was working on Combe Capelle and the La Ferrassie ‘burial’ was found. Further bones were retrieved at La Quina in 1911. [↑](#endnote-ref-16)
17. See Goodrum, op. cit. (11). [↑](#endnote-ref-17)
18. Keith, op. cit. (13); Dawson, op. cit. (13). [↑](#endnote-ref-18)
19. Arthur Keith, *Ancient Types of Man*, London: Harper & Bros, 1911; Grafton Elliot Smith, *The Ancient Egyptians and their Influence Upon the Civilisation of Europe*, London: Harper & Bros, 1911. [↑](#endnote-ref-19)
20. Keith, op. cit. (13), p.320. [↑](#endnote-ref-20)
21. Grafton Elliot Smith, ‘The evolution of man’, *Nature*, (1912) 90 (2239), pp. 118-126. [↑](#endnote-ref-21)
22. Steven Shapin, ‘Pump and circumstance: Robert Boyle's literary technology’, *Social Studies of Science*, 1984 14(4), pp. 481-520; Steven Shapin & Simon Schaffer, *Leviathan and the Air Pump: Hobbes, Boyle and the Experimental Life*, Princeton: Princeton University Press, 1985; Steven Shapin, *A Social History of Truth*: *Civility and Science in Seventeenth Century England*, Chicago: University of Chicago Press, 1994. [↑](#endnote-ref-22)
23. Henri Vallois, ‘Neanderthals and praesapiens: the Huxley memorial lecture’, *Journal of the Royal Anthropological Institute of Great Britain and Northern Ireland*, (1954) 84 (1/2)L, pp. 111-130. [↑](#endnote-ref-23)
24. Keith, op. cit. (19), p. 32. [↑](#endnote-ref-24)
25. Keith, op. cit. (19), p. 66. [↑](#endnote-ref-25)
26. Particularly in relation to his discussion of Java Man, Keith is at this very early stage supporting a branching, rather than a linear model of human evolution. See Sommer, op. cit. (11) for a discussion of this conceptual shift. [↑](#endnote-ref-26)
27. Landau, op. cit (5). [↑](#endnote-ref-27)
28. Smith, op. cit. (21), p. 120. [↑](#endnote-ref-28)
29. Smith, op. cit. (21), p. 120. [↑](#endnote-ref-29)
30. Grafton Elliott Smith, ‘The natural subdivision of the cerebral hemisphere’, *Journal of Anatomy and Physiology* (1901) 35, pp.431-454. Smith saw the interaction between eye, hand and environment as central to neuroanatomical development, with arboreal locomotion as fundamental, since it enabled forelimbs to remain unspecialised and prioritised sight/touch/sound over scent. [↑](#endnote-ref-30)
31. Arthur Keith, *The Antiquity of Man*, 2nd edn London: Williams and Norgate, (1915), p. vi. [↑](#endnote-ref-31)
32. Keith, op. cit., (31) p. 1, p. 5. [↑](#endnote-ref-32)
33. His *Autobiography* notes ‘I never felt satisfied about a discovery until I had examined the scene in which it was made’, op. cit. (13) p. 318. Sommer, op. cit. (11), makes a similar point in relation to Fairfield Osborn. [↑](#endnote-ref-33)
34. An unpublished (possibly unposted) letter in the University of Manchester archives gives context to Keith’s potential isolation: with respect to the Piltdown skull reconstruction controversy, he wrote ‘I have repeatedly had quite reasonable people say ‘We would take Keith’s word for it, if we were sure he was not trying to bolster up [the antiquity of the] Galley Hill and Ipswich’’ fossils (John Rylands University Library Archives, GB 133 GES). [↑](#endnote-ref-34)
35. Michael Hammond, ‘The shadow man paradigm in palaeoanthropology: 1911-1945’, in George W Stocking (ed.) *Bones, Bodies, Behaviour: Essays on Biological Anthropology*, Wisconsin: University of Wisconsin Press, 1988. [↑](#endnote-ref-35)
36. Keith, op. cit. (31), p. 510. [↑](#endnote-ref-36)
37. Arthur Keith, *The Construction of Man’s Family Tree*, London: Watts and Co., 1934. [↑](#endnote-ref-37)
38. Arthur Smith Woodward, ‘A new cave man from Rhodesia, South Africa’, *Nature* (1921) 108, pp. 371-2. [↑](#endnote-ref-38)
39. Arthur Keith, ‘Recent discoveries of fossil man’, *Nature*, supplement to No. 3164, June 21, 1930; Grafton Elliot Smith, *The Search For Man’s Ancestors*, London: Watts and Co., 1931; Sigrid Schmalzer, *The People’s Peking Man: Popular Science and Human Identity in Twentieth Century China*, Chicago: University of Chicago Press, 2008. [↑](#endnote-ref-39)
40. Henry Fairfield Osborn, ‘Hesperopithecus, the first anthropoid primate found in North America’, *Science* (1922) 55 (1427), pp. 463–6; William K Gregory, ‘Hesperopithecus apparently not an ape nor a man’, *Science* (1927)66 (1720), pp. 579–81. [↑](#endnote-ref-40)
41. Raymond Dart, *Adventures With the Missing Link*, New York: Harper Bros., 1959; Dawson, op. cit. (13); Matthew Young, ‘The London skull’, *Biometrika*, (1938) 29 (3-4), pp. 277-321. [↑](#endnote-ref-41)
42. Keith, *The Antiquity of Man,* 2nd ed., 2 vols., London: Williams and Norgate, 1925. [↑](#endnote-ref-42)
43. Grafton Elliot Smith, ‘The study of man’, *Nature* (1923) 112, pp. 440-4, p. 440. [↑](#endnote-ref-43)
44. Grafton Elliot Smith, *The Ancient Egyptians and the Origin of Civilisation*, London: Harper & Brothers, 1923, p. x. [↑](#endnote-ref-44)
45. Smith, op. cit. (44). See also A. C. Seward, *Science and the Nation*, Cambridge: Cambridge University Press, 1917. [↑](#endnote-ref-45)
46. It is interesting to compare this with the perspectives examined in Don Leggett & Charlotte Sleigh, ‘Scientific governance: an introduction’, in Don Leggett & Charlotte Sleigh (eds), *Scientific Governance in Britain, 1914-79*, Manchester: Manchester University Press, 2016, pp. 1-24 [↑](#endnote-ref-46)
47. Smith, op. cit. (44). [↑](#endnote-ref-47)
48. Grafton Elliot Smith, *Human Nature*, London: Watts and Co., 1927 [↑](#endnote-ref-48)
49. Grafton Elliot Smith, *In the Beginning*, London: Watts and Co., 1932; Grafton Elliot Smith, *Diffusion of Culture*, London: Watts and Co., 1933. [↑](#endnote-ref-49)
50. Grafton Elliot Smith, ‘The question of race and hormones’, *Nature* (1925) 116 (2928): 855-6. [↑](#endnote-ref-50)
51. Arthur Keith, *Concerning Man’s Origin*, London: Watts and Co., 1927. [↑](#endnote-ref-51)
52. Arthur Keith. *Essays on Human Evolution*, London: Watts and Co., 1946; Arthur Keith, *A New Theory of Human Evolution*, London: Watts and Co., 1948 [↑](#endnote-ref-52)
53. Keith, op. cit. (37); Arthur Keith, *New Discoveries Relating to the Antiquity of Man*, New York: Norton and Co, 1931. [↑](#endnote-ref-53)
54. Keith, op. cit. (53), p. 38. [↑](#endnote-ref-54)
55. Keith, op. cit. (53), p. 116. [↑](#endnote-ref-55)
56. Keith, op. cit. (53), p. 139. [↑](#endnote-ref-56)
57. But see a later discussion for a clarification of this argument: Louis Leakey and Arthur Keith, ‘Prehistoric man in Kenya’, *Nature*, (1931) 127 (3213), pp. 814-815 [↑](#endnote-ref-57)
58. Keith, op. cit. (53), p. 170-1. [↑](#endnote-ref-58)
59. Louis Leakey, ‘Stone age man in Kenya colony’, *Nature* (1927) 120 (3011), pp. 85-6 [↑](#endnote-ref-59)
60. Louis Leakey, ‘The cradle of modern man: Kenya’s claim’, *Times*, 1st August 1928, pp. 15-16; Louis Leakey, ‘The cradle of man: more evidence from Kenya’, *Times*, 7th March 1929, pp. 15-16. [↑](#endnote-ref-60)
61. Anon ‘News and views’, *Nature* (1929),123 (3090), p. 104; Anon, ‘News and views’, *Nature* (1929) 123 (3098), p. 4210; Leakey, op. cit. (60); Louis Leakey & J D Solomon, ‘East African archaeology’, *Nature* (1929), 124 (3114), p. 9; Anon ‘Early man in East Africa’, *Nature* (1929) 124 (3124), pp. 413-4 [↑](#endnote-ref-61)
62. Louis Leakey, ‘Prehistoric man in Kenya’, *Nature* (1931) 127 (3213), pp. 814-815; Louis Leakey, Arthur Hopwood & Hans Reck, ‘Age of the Oldoway bone beds, Tanganyika Territory’, *Nature* (1931) 128 (3234), p. 724. [↑](#endnote-ref-62)
63. Anon, ‘Archaeologists in East Africa’, *Times*, 25th June 1931, p. 20. [↑](#endnote-ref-63)
64. Anon, ‘Early man in East Africa: Leakey expedition’s discoveries’, *Times*, 3rd December, 1931, p. 11; Leakey et al, op. cit. (62). [↑](#endnote-ref-64)
65. Henrika Kuklick & Robert Kohler, ‘Science in the field’, *Osiris* (1994) 11; Charlotte Bigg, David Aubin & Philipp Felsch, ‘The laboratory of nature: science in the mountains’, *Science in Context* (2009) 22(3); I S MacLaren, ‘From exploration to publication: evolution of a nineteenth-century Arctic narrative’, *Arctic* (1994) 47 (1), pp. 43-53. [↑](#endnote-ref-65)
66. Anon. ‘News and views’, *Nature* (1931) 128 (3241), p. 995; C Forster Cooper & D M S Watson, ‘The Oldoway human skeleton’, *Nature* (1932) 129 (3252), pp. 312-3; Louis Leakey, ‘The Oldoway human skeleton’, *Nature* (1932) 129 (3263), pp. 721-2; J Reid Moir Moir, ‘The Oldoway human skeleton’, *Nature* (1931)128 (3236), p. 797; E J Wayland, ‘*Homo sapiens* and African prehistory’, *Nature* (1931), 128 (3241), pp. 1003-4. [↑](#endnote-ref-66)
67. Louis Leakey, ‘Earliest man: discoveries in Tanganyika’, *Times*, 9th March, 1932, p. 11. [↑](#endnote-ref-67)
68. Anon, ‘Earliest man: new find in East Africa’, *Times*, 19th April 1932, p. 14; Anon, ‘News and views’, *Nature*, 129 (3263), p. 715. [↑](#endnote-ref-68)
69. Louis Leakey, ‘Earliest man: new finds in E Africa’, *Times*, 19th July 1932, p. 13 [↑](#endnote-ref-69)
70. Anon, ‘Early man: evidence from East Africa’, *Times*, 20th March 1933, p. 9; Anon, ‘News and views’, *Nature* (1933) 131 (3308), p. 427; Anon, ‘News and views’, *Nature* (1933) 131 (3309), pp. 462-3; Anon, ‘Early man in East Africa’, *Nature* (1933) 131 (3309), p. 477-478. [↑](#endnote-ref-70)
71. Anon, ‘Man and his ancestors’, *Times*, 21st October, 1933, p. 11; Anon, ‘*Homo sapiens* and his ancestors’, *Times*, 21st October, 1933, p. 12. [↑](#endnote-ref-71)
72. Leakey, op. cit. (1), p. 12. [↑](#endnote-ref-72)
73. Bulstrode, op. cit. (9). [↑](#endnote-ref-73)
74. Leakey, op. cit. (1), p. 76. [↑](#endnote-ref-74)
75. Leakey, op. cit. (1), p. 77. [↑](#endnote-ref-75)
76. Leakey, op. cit. (1), p. 230. [↑](#endnote-ref-76)
77. Leakey, op. cit. (1), p. 112. [↑](#endnote-ref-77)
78. Anon ‘Early man in East Africa: further investigation’, *Nature* (1934), 134 (3393), pp. 730. [↑](#endnote-ref-78)
79. ‘Presumably, these iron pegs had been converted into spearheads and harpoons for fishing’ (Leakey, *By the Evidence,* op cit, (6) p. 31). [↑](#endnote-ref-79)
80. PGH Boswell, ‘Human remains from Kanam and Kanjera, Kenya colony’, *Nature* (1935) 135 (3410), p. 371, which the *Times* quoted verbatim, (Anon, ‘Dr Leakey’s conclusions challenged’, *Times*, 8th March, 1935, p.22). No space could be found in *Nature* for Leakey’s response (‘Human remains from Kanam and Kanjera, Kenya Colony’, *Nature*, 135 (3425), pp. 1041). [↑](#endnote-ref-80)
81. Boswell, op. cit. (80). [↑](#endnote-ref-81)
82. See Mary Leakey, *Disclosing the Past*, op. cit. (6) and Leakey & Goodall, op. cit. (2). Leakey’s personal life did not help his professional isolation: see Morell op. cit. (2). [↑](#endnote-ref-82)
83. Arthur Smith Woodward, ‘Recent progress in the study of early man’, *Nature* (1935) 136 (3437), pp. 419-423, p. 421. [↑](#endnote-ref-83)
84. Daniel Lord Smail, *On Deep History and the Brain*, Berkeley: University of California Press, 2008; Andrew Shryock, Daniel Lord Smail & Timothy Earle, *Deep History: The Architecture of Past and Present*. Berkeley: University of California Press, 2011; William Reddy ‘Neuroscience and the fallacies of functionalism’, *History and Theory* (2010) 49(3), pp. 412-425. [↑](#endnote-ref-84)