



Universiteit
Leiden

The Netherlands

Homo habilis's humanness: Phillip Tobias as a philosopher

Corbey, R.H.A.

Citation

Corbey, R. H. A. (2012). Homo habilis's humanness: Phillip Tobias as a philosopher. *History And Philosophy Of The Life Sciences*, 2012(34), 103-116. Retrieved from <https://hdl.handle.net/1887/43104>

Version: Not Applicable (or Unknown)

License: [Leiden University Non-exclusive license](#)

Downloaded from: <https://hdl.handle.net/1887/43104>

Note: To cite this publication please use the final published version (if applicable).

Homo habilis's Humanness: Phillip Tobias as a Philosopher

Raymond Corbey

*School of Humanities, Tilburg University, and
Faculty of Archaeology, Leiden University
Reuvensplaats 3, NL 2311 BE Leiden, The Netherlands*

ABSTRACT – A detailed, interdisciplinary reading of Phillip Tobias's publications on *Homo habilis* shows how a philosophical notion of “humanness” has structured his interpretation of the fossils attributed to this species. The role of this notion in his research and its backgrounds in philosophy, disciplinary history, and a widespread mid-20th-century climate of opinion are analyzed and discussed.

KEY WORDS – *Homo habilis*, Phillip Tobias, taxonomy, disciplinary history, metaphysics, narrative

Introduction

The South African Phillip Tobias (born 1925) is one of the most prominent palaeoanthropologists of the twentieth century. He is best known for his authoritative work on *Australopithecus robustus* (Tobias 1967) and, in particular, *Homo habilis* (Tobias 1991), that “twilight creature” (Tobias 1979, 29) at the root of humankind, betwixt and between the ape-like australopithecines and the genus *Homo* to which we ourselves belong. In 1964 the name *Homo habilis* was given to OH (Olduvai Hominid) 4, 6, 7, and 8, as well as other fossils. These had been recovered between 1959 and 1963 in early Pleistocene sediments in Olduvai Gorge (Tanzania) by the Leakey family (Leakey, Tobias, and Napier 1964). Since then, a number of finds from East and South Africa have been added to the hypodigm, the set of fossils attributed to this species.

Was it purely “the weight of the hard evidence” (Tobias 1991, 25), as Tobias himself claims, that guided his perception of pattern in human evolution in general and his research on the beginnings of the genus *Homo* in particular? Was it the fine-grained anatomical analysis of teeth, cranium, feet, hands, the careful weighing of sameness and difference? Perhaps not! A detailed analysis of his publications on *Homo habilis* shows how, throughout his career, a philosophical notion of “human-

ness” has been germane to his interpretation of the available material. For Tobias, *Homo habilis* was not just the beginning of another genus, but was the first human in a different than strictly biological sense.

In the following, the role of the notion of “humanness” in Tobias’s immensely influential palaeoanthropological research and its theoretical and historical backgrounds are clarified. We will explore and contextualize the intersection, in his scientific output, of *hominitas* in the sense of the life sciences (belonging to the genus *Homo*) and *humanitas* in the sense of the humanities, philosophy, and everyday usage (being human). The perspective taken here is epistemological. By epistemology we mean the analysis of processes of knowledge formation; the analysis, that is, not so much *intentione recta* of the data as such but, *intentione obliqua*, of the various, often conflicting ways the – thus perhaps not so “hard” – data are handled conceptually in terms of the researcher’s theoretical assumptions (Clark and Willermet 1997; Corbey and Roebroeks 2001; Stoczkowski 2002). We will also draw upon disciplinary history, metaphysics, and narratology.

A new taxon

The new taxon *Homo habilis* was created after four years of disagreement between Louis Leakey and Phillip Tobias. Were departures from the morphology of the then-known australopithecines, in particular *Australopithecus africanus*, large enough to warrant creation of a new species in the genus *Homo*? Tobias, supported by John Napier, was not convinced this was the case, resisting Leakey’s view. Subsequently however, when more finds became available, they changed their opinion and aligned with Leakey, citing tooth morphology, dexterous hands, feet capable of bipedal stride of the modern human type, and a large cranial capacity compared to the *Australopithecus africanus* material known at the time. There was “a consistency in the occurrence of *Homo*-like departures throughout at least four different character-complexes (brain, teeth, hand and feet);” additionally traits of the dentition were displayed consistently by at least five individuals (Tobias 1991, 24).

In the process, Leakey, Tobias, and Napier proposed a revision of the then almost unanimously accepted definition of the genus *Homo* to include cranial capacities below 750 cc. This controversial move permitted them to incorporate *Homo habilis* into the genus. Its brain volume, in those years estimated between 643 and 723 cc, situated it far below other then known species of *Homo*, but was still, on average, larger than any species in the genus *Australopithecus*. In another disputed move,

they included behavioural criteria, to wit an opposable thumb, the ability to use a power as well as a precision grip, and stone tools. Those two moves caused part of the controversy around the newly created species (cf. Robinson 1965; Stringer 1986).

Ascent to humanness

Given the scarce and fragmentary nature of the skeletal material and its uncertain association with Oldowan technology, Tobias's interpretation of *Homo habilis* is surprisingly explicit and specific. It can be tracked through more than four decades of publications. In a letter to *The Times*, Tobias and Napier (1964) wrote that *Homo habilis*, although anatomically midway between "the most advanced" then known australopithecines and "the lowliest *Homo*" was "the more advanced man [...] the maker of tools of a definite culture and with a definite trend of progressive development." The genus *Australopithecus* itself, they argued, "had not yet attained to the crucial stage of stone toolmaking to a set and regular pattern" (Tobias and Napier 1964). The new species, Tobias wrote, was "a new major breakthrough [...] tool making of the complexity of an Oldowan culture became feasible; new, virtually limitless possibilities opened up. A new kind of man was born [...] with a new set of implemental capacities, achievements and frontiers" (Tobias 1965a, 189). This happened when some australopithecines acquired "the right quantity and/or quality of brain to be able to use a tool to make a tool," instead of just using stone tools, which nevertheless was already a "great step forward of the australopithecines over the apes" (Tobias 1965a, 189).

In the first Abbie Memorial Lecture at the University of Adelaide (Australia) delivered in 1978, Tobias elaborated on this view, sketching the "stages in man's ascent" and the pivotal role of the "cerebral explosion" which was "one of the hallmarks of mankind" (Tobias 1979, 29). This event had been preceded by "humanizing reorganisation in the little brains of the australopithecines," in comparison to whom *Homo habilis* showed "further reorganisation and advancement" (Tobias 1979, 41, 44).

In the human lineage, "thought expressed itself uniquely by the development of a culture," archaeologically visible through "the material products of man's genius and craftsmanship" (Tobias 1979, 45, 46). *Homo erectus* subsequently "carried culture towards a new pinnacle with the first glimmerings of ritual," and was "poised on the brink of one more great step forward," represented by *Homo sapiens* (Tobias 1979,

49). "Through these stages [...] the graph of human cultural versatility and progress [rose] ever more steeply" (Tobias 1979, 49).

Twelve years later, Tobias's writing on *Homo habilis* culminated in his monumental, 850-page *Olduvai Gorge, Vol. 4: The skulls, endocasts and teeth of Homo habilis* (Tobias 1991). For a technical monograph the volume's concluding chapter is uncharacteristically straightforward as to its author's philosophical views. Toolmaking as a cultural tradition, Tobias states, "might have catalysed the further great step which brought the genus *Homo*, true human beings, into existence" (Tobias 1991, 832).

In the 1980s, Tobias focussed more strongly than before on language as a preeminent feature of *Homo habilis* and the genus *Homo*. Language, "the cardinal factor in the evolution of the human brain, intellect and spirit" (Tobias 1991, 841, 842), was given much stress in the 1991 monograph. He based this claim on an analysis of the interior of the neurocranium in which, according to his interpretation, areas responsible for linguistic behaviour in extant humans were present already. Hominids which preceded "articulate, language-bound, and culture dependent" *Homo habilis* "were essentially upright-walking apes behaviourally [...] distanced [...] but little from their animality" (Tobias 1991, 845). *Homo habilis* "was the first culture-bound and language-dependent primate. That duality marked the beginnings of humanity" (Tobias 1991, 840). Language was connected to the differential enlargement of the brain in a positive feedback relationship, which "made over an animal hominid into a human hominid" (Tobias 1991, 842).

Continuously, in the course of his writing, Tobias has thus sharply distinguished between the "hominid ecological adjustments" of the australopithecines and the "human cultural behaviour" in the genus *Homo* (Tobias 1994, 71). The former "animal hominids" were "essentially biological and social in character" lacking the linguistically-based cultural dependence of the latter "human hominid" (Tobias 1994, 71, 72). Speech represented the attainment of "a new level of organisation [...] in the evolution of life on earth" (Tobias 1995, 42). A "diagram of the degrees of hominisation," finally, "shown by various parts of the evolving hominid bodily structure and by phases of material cultural advancement" plots physical and behavioural features attaining "100% at the top of the vertical axis with the appearance of various species of *Homo* plotted on the horizontal axis" (Tobias 1995, 69).

Narrative and metaphor

The primitive/advanced distinction in the passages quoted above

partly fits the technical sense of those terms in taxonomy, in particular cladistics. Primitive (also plesiomorphic) characters are present throughout a monophyletic group of organisms and inherited from their common ancestor. Advanced or derived (also apomorphic) traits are more recent in terms of the evolution of the organisms and only appear in some members of the group. They define clades. Similarly, the concept "human" in Tobias's work partly fits the taxonomical sense of being in the genus *Homo*.

However, even without further analysis it is immediately clear that the concepts "primitive" and "human" as well as others that play a central role in his publications – level, advancement, hominisation, etc. – carry much more weight than that of strictly biological and taxonomic usage. In fact, they are quite philosophical or even metaphysical, although not in a very technical or well-argued way. They testify to a specific view of humans and animals, evolution and history, nature and culture that stretches far beyond the empirical data under consideration.

The concepts Tobias uses are all interrelated, clustering in various ways – logically, metonymically, metaphorically, and narratively. Another look at the cited passages reveals what the semantic field constituted by these interrelated concepts looks like, reordering Tobias's terminology from the citations in the previous sections.

A high/low metaphor permeates every inch of his discourse. Australopithecines are low compared to species of *Homo*, early species of *Homo* low compared to more advanced ones. In between is progressive development, ascent to humanness, with tools, for example, as a great step forward. Culture reaches a new pinnacle in *Homo erectus*. The graph of human cultural versatility and progress rose ever more steeply. With the appearance of speech a new level of organisation in the evolution of life was attained. Degrees of "hominisation" attained 100% in *Homo sapiens*.

The evolution of hominid cognition for Tobias was not just about changes in the brain and cognition but also about the appearance of the human spirit. Relatively quick increases in brain volume constituted a cerebral explosion which, for him, was one of the hallmarks of humankind's genius. The animality of the essentially biological australopithecines which were merely capable of hominid ecological adjustments is left far behind by species of *Homo* in their ascent towards present-day human civilisation.

The tightly wrought semantic field constituted by these interconnected concepts shows up a clear-cut narrative structure, specifically that of a hero story (Landau 1991; Stoczkowski 2002; Corbey 2005). *Homo* are the main protagonists, questing for the holy grail of humanness, cop-

ing with adversarial conditions in a world governed by a more abstract, logical opposition between animality and humanness, low and high, and, reading between the lines, evil and good. The richness and explicitness of the epic itinerary contrasts sharply with the scarcity and ambiguity of the set of palaeoanthropological and archaeological data of which Tobias tries to make sense in terms of his narrative scenario.

Basically, the master narrative germane to Tobias's thinking is the Enlightenment one of an ascent from primeval bestiality to civilisation and reason that fed into nineteenth- and twentieth-century scientific views in manifold ways. This master narrative is as anthropocentrist as the Judeo-Christian conviction that humans are the sole privileged creatures of a transcendent Creator. Both scenarios established a strict, continuously policed and renegotiated categorial boundary between humans and other animals.

The most salient way in which Tobias overplays his handful of data is the teleological structure that his narrative, like any narrative, imposes. As pointed out in mainstream narratology in general and structuralist narratology in particular, any narrative has a structure similar to that of the sentence. Someone is doing, intending, striving to accomplish or obtain something – peace, a bride, the solution to a problem, or civilisation. To reach bipedality, a large brain, language, and technology, the animal-human boundary had to be transgressed heroically, by a primeval, initially humble apish ancestor questing for humanness. In this precise sense, the way Tobias's theoretical discourse casts blind evolutionary processes is anthropomorphic, anthropocentric, teleological and essentialist.

The New Synthesis

Phillip Tobias considers the genus *Homo* to be a large-brained, unilinear, toolmaking and culturally-adapted lineage, and *Homo habilis* as the first of several consecutive chronospecies representing “grades” or adaptive stages. In this, he was strongly influenced by the New or Modern Synthesis in biology and Sherwood Washburn's associated New Physical Anthropology, both from the 1950s (see also Mikels-Carrasco 2012). Taxonomy along these lines takes adaptive features into account, unlike cladistics, which exclusively looks at similarities and differences. Toolmaking and hunting are seen as a “grade,” a key adaptational complex, of bipedal hominids of the genus *Homo* (Washburn 1951). Within this genus, evolution towards modern humans was presumed to be unilinear. No two hominid species could live in the same ecological niche (cf. Delisle 2001, 107 ff.).

In synch with a climate of opinion that pervaded mid twentieth-century interpretations of hominid history, Tobias interpreted the rise of and changes in this lineage as a progressive development to more advanced stages or degrees of hominisation, to “true” humanness. This fits uneasily with most current research paradigms, which assume a diversely and accidentally branching bush with intense speciation and evolutionary experimentation, mapped with the help of cladistics. Cladists in particular have criticized evolutionary taxonomy in terms of “grades” for its tendency towards anthropocentrism, essentialism, and a teleology of progress (e.g., Cartmill 2001; Wildman et al. 2003).

Evolutionary taxonomy was still wrestling to rid itself of the idea of orthogenetic evolution, consistently directed by an inner drive towards a fixed goal along a pre-ordained path, in a pre-determined direction (Le Gros Clark 1934, 288), rather than by Darwinian natural selection. This approach was widespread in the nineteenth and early-twentieth century, and particularly influential in early theories of human evolution. Bipedality, big brains, and manual dexterity in humans were seen as resulting from such predetermined trends of development (Bowler 1986). Progressionist non-Darwinian research programmes claiming unilinear or parallel orthogenesis competed with Darwinian ones postulating multi-linear, haphazard branching through natural selection.

Nowadays the primitive/advanced distinction is often avoided precisely because of the sort of connotations it clearly has in Tobias's work, and replaced by the aforementioned terminology plesiomorphic/apomorphic which is purely technical and neutral. Eyes may be an advanced (derived, apomorphic) feature in some organism, but the same goes for the loss of complex features such as eyes or legs, for example in snakes. Evolutionary taxonomy “has imparted a sense almost of inevitability to the arrival of *Homo sapiens*, for under the dictates of the Synthesis the story of human evolution has been effectively that of a long, dogged, single-minded, trudge from primitiveness to perfection” (Tattersall 2000, 8; see also Tattersall 2012). This critique is in line with various developments in twentieth-century philosophy, away from traditional continental-European metaphysics and the concomitant view of humans as rational beings, essentially different from animals. Present-day philosophy takes the neurosciences and evolutionary biology much more seriously than used to be the case.

The *Homo habilis* brain

Tobias thought that his interpretation of *Homo habilis* as the first hu-

man was boosted by the inner structure of the *Homo habilis* skull, which seemed to reveal the presence of structures corresponding to Broca and Wernicke's speech areas in extant humans. *Homo habilis* must have spoken, he argued (Tobias 1983), and therefore in this respect too, this species had to be much closer to modern humans than to the australopithecines or extant apes. As mentioned already, he thought it improbable that its complex behaviours would have been possible and passed on to new generations without spoken language facilitating cooperation, social cohesion, and cultural transmission of behaviours (Tobias 1995, 26, 31, 32).

Next to the presumed language areas of the neocortex, increases in brain size loom large in Tobias's thinking. But how brain size relates to differentiation and complexity both in the brain and in cultural behaviour still is poorly understood. Correlating brain size or brain complexity with intelligence or information-processing capacity is problematic because of allometric effects at various anatomical levels (Deacon 1990). This contributes to fallacies of progression in interpretations of the evolution of brain size, brain complexity, and intelligence.

Such research, Deacon wrote, reveals "the ubiquitous assumption that human intelligence and human relative brain size together represent an unassailable datum for the start of all comparative analyses of other species' mental abilities." The notion of human intellectual superiority appears to be ineradicable, despite numerous "critiques of methodological assumptions used to demonstrate an intellectual *scala naturae*" (Deacon 1990, 194). Tobias's view of "hominisation" as a linear ascent toward "full" humanness presupposes such an anthropocentric standard.

Home bases and tools

Tobias's notion of "grade" as a key adaptational complex was in line with archaeologist Glyn Isaac's influential interpretation of early Pleistocene archaeological remains in terms of home bases and food sharing, as well as with the "Man the Hunter" paradigm of Sherwood Washburn and his school (see also Sommer 2012). "Hunting, food sharing, division of labour, pair bonding, and operation from a home base or camp", Isaac held, "form a functional complex, the components of which are more likely to have developed in concert than in succession. It is easy to see that tools, language, and social cooperation would fit into the functional complex as well" (Isaac 1972, 174).

Tobias also concurred with the holistic, contextualizing approach to human culture in Boasian North American cultural anthropology, in the wake of Franz Boas and his stress on language and meaning as central

to human cultural behaviour. The tools of “man the toolmaker,” Tobias wrote, are “only a part of the whole” (Tobias 1991, 841), in addition to socially transmitted beliefs, habits, and norms, with spoken language as the mechanism of transmission and key organizing feature.

But no package of interconnected “fully” human behaviours *sensu* Tobias or Isaac – language, tools, etc. – is visible archaeologically for the earliest or even more recent species of *Homo*, as Processual Archaeology has made abundantly clear since. On the contrary, various characteristics seem to appear at different times and with hindsight there now is a consensus that Isaac, a brilliant archaeologist, has read too much modern hunter-gatherer ethnography into the deep past. No convincing empirical evidence of “base camps,” food sharing, or big-game hunting has turned up for the early Pleistocene nor have any traces of much planning depth. But Tobias has stuck to his interpretations.

Part of the complex of functionally intertwined behaviours thought to be typically human was the use of fabricated stone tools. The *Homo habilis* fossils were loosely associated with stone tools of the Oldowan type. Louis Leakey, too, made much of this, as did many archaeologists and anthropologists in the mid-twentieth century. *Homo faber*, Man the Toolmaker, is an old topos in Western tradition. Tools tend to be seen as a mark of human distinctiveness. A catalogue of the prehistory exhibits of the British Museum, for example, was entitled *Man the Tool-Maker* and appeared in six large editions between 1949 and 1972 (Oakley 1949). An American edition of this catalogue even more tellingly was entitled *Man the Tool-Maker: An Up-to-date and Authoritative Account of the Early History of Man's Distinguishing Trait, his Ability to Make Tools* (Oakley, no date). Jane Goodall's – a pupil of Louis Leakey – discovery that chimpanzees make simple tools sparked off a lot of publicity in the same decade of the 1960s precisely because this threatened human distinctiveness.

Metaphysics

The last chapter of Phillip Tobias's monograph on *Homo habilis* leaves little doubt as to the book's philosophical presuppositions. For Tobias the term “human” refers to a novel organisational level in progressive cosmic development, transcending and “not comparable in degree or kind with the [...] lower levels” (Tobias 1991, 844). He cites the concept of *scala naturae* or Chain of Being as used by, among others, Theodosius Dobzhansky, Joseph Needham, Herbert Spencer, and Scholastic metaphysics itself: nature as a hierarchy of essentially different stages with

humans on top (Tobias 1991, 845). *Homo sapiens et loquens*, as a philosophical topos, is paramount.

The statically conceived hierarchy of creation of traditional European metaphysics was cast as a process in the eighteenth century (progress to civilisation) and nineteenth century (evolution as progress). Concomitantly, the widely used concept of “hominisation,” also central in Tobias’s writings, referred to the idiosyncratic “evolutionary development of characteristics, in particular mental or spiritual ones, that are held to distinguish man from other animals” (*Oxford English Dictionary*), not just to the acquisition of characters that happen to characterize modern humans.

Anti-racism

Last, but certainly not least, the way Tobias handled the *Homo habilis* hypodigm is related to the post WW II human rights debates and anti-racism and, more specifically, his longstanding opposition to apartheid in South Africa. From this perspective, all gradations within “humanity,” synchronically and diachronically, were suspect. The evolutionary and population-genetic approach of New Synthesis biology now replaced scientific approaches to races in terms of a hierarchy of fixed types. A strong tendency emerged towards assuming the biological, genetic unity of a humankind which was variable only culturally.

This converged with the sharp distinction between physical and cultural characteristics made by cultural anthropologists, in particular the aforementioned American Boasian school. Biologists and anthropologists from both quarters were involved with the proclamation of the *Universal Declaration on Human Rights* in 1948 (United Nations 1952) and the UNESCO *Statement on Race* in 1950. Article 1 of the Preamble of the *Universal Declaration on Human Rights* states that “[all] human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood” (UNESCO 1950).

While in earlier decades moral and political inequality had been justified in terms of biological differences, the biological homogeneity of *Homo sapiens* now had to justify the moral equality of all humans around the world. Again biological similarities and differences were connected with moral ones, but in a new way. While this post-war humanist, egalitarian, anti-racist climate of opinion and the human rights discourse primarily referred to the extant human species, Tobias, as we have seen, extends homogeneous humanness right back to the very beginnings of the genus *Homo*.

Conclusion

Since the first fossils were found in the late 1950s many more finds have emerged and added to the hypodigm. Tobias has stuck to his interpretation, but there is no strong consensus presently on whether the fossils under consideration really represent one species (Stringer 1986), whether they belong in the genus *Homo* and not in *Australopithecus*, and whether, as Tobias still holds, the species is the best candidate to bridge the two genera. Quite a few workers now think the species is closer to australopithecines in terms of patterns of locomotion, maturation, and dietary range, rather than showing key adaptations associated with the genus *Homo*.

I have argued that Phillip Tobias's allocation of the fossils under consideration to the genus *Homo* was not exclusively steered by the peculiarities of those hard data, "the weight of the hard evidence" (Tobias 1991, 25), as he himself claims. It was also guided by a philosophical notion and moral view of "human" and "humanness." For him, those two terms do not just refer to membership of the biological genus *Homo* but, as we have seen, to a language-bound and culture-dependent being struggling and triumphantly managing to set itself free from Nature, leaving the beastly australopithecines far behind.

Homo habilis was the first being "who made over an animal hominid into a human hominid," "not comparable in degree or kind" to its predecessors (Tobias 1991, 844). This, according to Tobias's master narrative of liberation from animality, was the onset of "humanity's triumph as a global genus" (Tobias 1991, 842, cf. 844). Current research, however, gives less metaphysical weight to empirically sensible distinctions between genera, species, and grades. Wood and Collard (1999) for example, following a (one-)grade-cum-(one-)clade approach for generic attribution, exclude *habilis* from *Homo* and lodge it in the genus *Australopithecus* (similarly, Tattersall and Schwartz 2009).

The *Homo habilis* case is no exception. Empirical work in palaeoanthropology is always influenced by usually implicit theoretical presuppositions. It is hard, perhaps even impossible to escape, even for cladists. Despite the wishful self-awareness of most paleoanthropologists, palaeoanthropology is not an ahistoric encounter between human intellect and hard reality but also, to some degree at least, a convoluted historically and culturally situated human discursive activity.

However, I do not agree with such historians of palaeoanthropology as Misia Landau (1991) or Wiktor Stoczkowski (2002) who see this discipline as predominantly determined by a limited number of presupposed, stereotypical narrative scenarios. In Landau's words, "theories

of human evolution [...] are determined by an apriori set of functions rather than an available set of fossils" (Landau 1991, 14). These authors underestimate the constraints put on interpretation by hard fossil data. An antidote to such extremely constructivist approaches is provided by Richard Delisle's detailed reconstruction of the history of palaeoanthropology as a relentless advance to better knowledge since the mid-nineteenth century, based on ever more and more precise data, on a sustained heeding of "the boundaries [...] set by the known empirical reality at a particular moment" (Delisle 2007, 369 and *passim*; see also Delisle 2012). However, Delisle in his turn, tends to underplay the sort of theoretical and contextual constraints which, overstressed as they may be by Landau and Stoczkowski, show up so clearly in the *Homo habilis* case.

References

- Cartmill M., 1990, "Human Uniqueness and Theoretical Content in Palaeoanthropology," *International Journal of Primatology*, 11: 173-191.
- Cartmill M., 2001, "Taxonomic Revolutions and the Animal-Human Boundary," in: Corbey R., Theunissen B. (eds), *Ape, Man, Apeman: Changing Views since 1600*, Leiden: Department of Prehistory of Leiden University, 97-106.
- Bowler P.J., 1986, *Theories of Human Evolution: A Century of Debate, 1844-1944*, Baltimore: Johns Hopkins University Press.
- Clark G. and Willermet C. (eds), 1997, *Conceptual Issues in Modern Human Origins Research*, New York: Aldine de Gruyter.
- Corbey R., 2005, *The Metaphysics of Apes: Negotiating the Animal-Human Boundary*, Cambridge: Cambridge University Press.
- Corbey R. and Roebroeks W. (eds), 2001, *Studying Human Origins: Disciplinary History and Epistemology*, Amsterdam: Amsterdam University Press.
- Deacon T.W., 1990, "Fallacies of Progression in Theories of Brain-Size Evolution," *International Journal of Primatology*, 11: 193-236.
- Delisle R., 2001, "Adaptation versus Cladism in Human Evolution Studies," in: Corbey R. and Roebroeks W. (eds), *Studying Human Origins: Disciplinary History and Epistemology*, Amsterdam: Amsterdam University Press, 107-121.
- Delisle R., 2007, *Debating Humankind's Place in Nature, 1860-2000: The Nature of Palaeoanthropology*, New Jersey: Pearson Prentice Hall.
- Delisle R., 2012, "The Disciplinary and Epistemological Structure of Palaeoanthropology: One Hundred and Fifty Years of Development," *History and Philosophy of the Life Sciences*, 34: 283-330.
- Isaac G., 1972, "Early Phases of Human Behavior: Models in Lower Paleolithic Archaeology," in: Clark D. (ed.), *Models in Archaeology*, London: Methuen and Company, 167-200.
- Landau M., 1991, *Narratives of Human Evolution*, New Haven and London: Yale

- University Press.
- Leakey L.S.B., Tobias P.V. and Napier J.R., 1964, "A New Species of Genus *Homo* from Olduvai Gorge," *Nature*, 202: 7-9.
- Le Gros Clark W., 1934, *Early Fore-Runners of Man: A Morphological Study of the Evolutionary Origin of the Primates*, London: Ballière, Tindall & Cox.
- Mikels-Carrasco J., 2012, "Sherwood and Washburn's New Physical Anthropology: Rejecting the 'Religion of Taxonomy'," *History and Philosophy of the Life Sciences*, 34: 79-102.
- Oakley K., 1949, *Man the Tool-Maker*, London: British Museum.
- Oakley K., n.d., *Man the Tool-Maker: An Up-to-date and Authoritative Account of the Early History of Man's Distinguishing Trait, his Ability to Make Tools*, Chicago: Phoenix Books.
- Robinson J.T., 1965, "*Homo 'habilis'* and the Australopithecines," *Nature*, 4967: 121-124.
- Sommer M., 2012, "Human Evolution Across the Disciplines: Spotlights on American Anthropology and Genetics," *History and Philosophy of the Life Sciences*, 34: 211-236.
- Stoczkowski W., 2002, *Explaining Human Origins. Myth, Imagination and Conjecture*, Cambridge: Cambridge University Press.
- Stringer C.B., 1986, "The Credibility of *Homo habilis*," in: Wood B., Martin L. and Andrews P. (eds), *Major Topics in Primate and Human Evolution*, Cambridge: Cambridge University Press, 266-294.
- Tattersall I., 2000, "Paleoanthropology: The Last Half-Century," *Evolutionary Anthropology*, 9: 2-16.
- Tattersall I., 2012, "Palaeoanthropology and Evolutionary Theory," *History and Philosophy of the Life Sciences*, 34: 259-282.
- Tattersall I. and Schwartz J.H., 2009, "Evolution of the Genus *Homo*," *Annual Review of Earth and Planetary Science*, 37: 67-92.
- Tobias Ph.V., 1965, "*Australopithecus*, *Homo habilis*, Tool-Using and Tool-Making," *South-African Archaeological Bulletin* 20: 167-192.
- Tobias Ph.V., 1967, *The Cranium and Maxillary Dentition of Australopithecus (Zinjanthropus) boisei*, Olduvai Gorge, vol. 2 Cambridge, UK: Cambridge University Press.
- Tobias Ph.V., 1979, *The Evolution of the Human Brain, Intellect and Spirit*, 1st Abbie Memorial lecture, Adelaide: University of Adelaide, Australia.
- Tobias Ph.V., 1983, "Recent Advances in the Evolution of the Hominids, with Special Reference to Brain and Speech," *Pontifical Academy of Sciences Scripta Varia*, 50: 85-140.
- Tobias Ph.V., 1991, *The Skulls, Endocasts and Teeth of Homo habilis*, Olduvai Gorge, Vol. 4, Cambridge: Cambridge University Press.
- Tobias Ph.V., 1994, "The Evolution of Early Hominds," in: Ingold T. (ed.), *Companion Encyclopedia of Anthropology*, London: Routledge, 33-78.
- Tobias Ph.V., 1995, *The Communication of the Dead: Earliest Vestiges of the Origin of Articulate Language*, Amsterdam: Stichting Nederlands Museum voor Anthropologie en Praehistorie.
- Tobias Ph.V. and Napier, J.R., 1964, letter to *The Times*, 29 May.

- UNESCO 1950, *Statement on Race*, Paris: United Nations Educational, Scientific and Cultural Organisation.
- United Nations, 1952, *Universal Declaration of Human Rights: Final Authorized Text*, New York: United Nations.
- Washburn S.L., 1951, "The New Physical Anthropology," *Transactions of the New York Academy of Science* Series II, 13: 298-304.
- Wildman D.E. et al., 2003, "Implications of Natural Selection in Shaping 99.4% Nonsynonymous DNA Identity Between Humans and Chimpanzees: Enlarging Genus *Homo*," *Proceedings National Academy of Sciences*, 100: 7181-7188.
- Wood B. and Collard M., 1999, "The Human Genus," *Science*, 284: 65-71.