



*Routledge New Critical Thinking in Religion, Theology
and Biblical Studies*

THEOLOGY AND EVOLUTIONARY ANTHROPOLOGY

DIALOGUES IN WISDOM, HUMILITY, AND GRACE

Edited by
Celia Deane-Drummond and Agustín Fuentes



Theology and Evolutionary Anthropology

This book sets out some of the latest scientific findings around the evolutionary development of religion and faith and then explores their theological implications. This unique combination of perspectives raises fascinating questions about the characteristics that are considered integral for a flourishing social and religious life and allows us to start to ask where in the evolutionary record they first show up in a distinctly human manner.

The book builds a case for connecting theology and evolutionary anthropology using both historical and contemporary sources of knowledge to try and understand the origins of wisdom, humility, and grace in ‘deep time’. In the section on wisdom, the book examines the origins of complex decision-making in humans through the archaeological record, recent discoveries in evolutionary anthropology, and the philosophical richness of semiotics. The book then moves to an exploration of the origin of characteristics integral to the social life of small-scale communities, which then points in an indirect way to the disposition of humility. Finally, it investigates the theological dimensions of grace and considers how artefacts left behind in the material record by our human ancestors, and the perspective they reflect, might inform contemporary concepts of grace.

This is a cutting-edge volume that refuses to commit the errors of either too easy a synthesis or too facile a separation between science and religion. As such, it will be of interest to scholars of religious studies and theology – especially those who interact with scientific fields – as well as academics working in anthropology of religion.

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and Agustín Fuentes

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Introduction

Dialogues in theology and evolutionary anthropology

Celia Deane-Drummond and Agustín Fuentes

There is no doubt that many would question why we produced a volume placing philosophical and theological reflections on wisdom, grace, and humility in dialogue with evolutionary anthropological assessments of human evolutionary processes and patterns. Unlike many other efforts that place theology and science in dialogue, this volume seeks a *transdisciplinary* engagement, where views from the disciplines not only present work at the leading edge of their fields, but also enable the companion disciplines in the dialogue to raise new and interesting questions not only engendered by areas of disagreement or compatibility, but also via the friction at the intersection of very different disciplinary boundaries. We have therefore boldly explored those areas where we might anticipate finding both consonance and friction in order to stimulate a lively discussion. This volume was inspired by an intensive advanced symposium supported by the John Templeton Foundation Humble Approach Initiative that was held in January 2017 at the Stellenbosch Institute for Advanced Study, engaging scholars at the forefront of their fields in evolutionary anthropology, philosophy, and theology.

Wisdom, humility, and grace are all characteristics of what makes us human and have intrigued theologians for centuries. Arguably, they are integral to a flourishing social and religious life. But the interesting scientific questions on these topics largely concern where (and how) they first show up in a distinctly human manner in the evolutionary record. Is it even possible to ask such questions with validity? Taking wisdom, humility, and grace in turn we gradually build a case for a fruitful intersection between theologians and anthropologists using both historical and contemporary sources of knowledge in order to try and understand the origins of these characteristics in deep time.

The commentaries at the start of each section serve as mini vignettes in order to guide the reader through the chapters that follow and point out ways in which the chapters can usefully and creatively intersect with each other more clearly. Celia Deane-Drummond offers the commentary on the first section on wisdom along with Wentzel van Huyssteen, who is a leading theological voice in bringing anthropological research to a theological audience. The second commentary by Wendy Black provides an anthropological perspective on discussions about humility. The final commentary by the editors will guide the reader through the final chapters on grace.

We address, in the first instance, the general anthropological quandary about the evolution of complexity as such, since our discourse on what we consider to be socially mediated characteristics such as wisdom or humility does not make sense otherwise. In the section on wisdom, we deal with the philosophical richness of Charles Peirce's semiotics and the ways his theory is fruitful for both anthropologists and theologians. We discuss the special significance of recent discoveries in evolutionary anthropology, with a case study on the particularly advanced burial practices of *Homo naledi* by leading experts in this research. Such work challenges the view that complex characteristics, including a sense of the afterlife, are confined to our own sub-species, *Homo sapiens sapiens*. And if that is the case, what might be the theological implications for those who have habitually identified 'Adam and Eve', and many other human origins figures and narratives, either with individuals or, more likely, with an early *Homo sapiens* community? The third section explores the origin of characteristics that are integral to the social life of small-scale communities: above all, the capacity for humility. But what might that humility mean in its expression in inner and outer worlds? Finding ways in which the inner workings of the human mind leaves traces in external archaeological records leads to some fascinating hints not just about how our ancestors behaved, but also how they related and responded to each other in compassion, gratitude, and generosity. Our discussion in the fourth section of grace, or the sense of the sacred in the world, includes theological dimensions that are equally challenging in terms of their intersection with evolutionary anthropology. Not all theologians agree with each other in how to make sense of such challenges and our book opens up this conversation in an interesting way. We believe that such challenges need to be faced in order to have an honest and fruitful discussion, while refusing to avoid the tensions that such discussion inevitably brings to the surface. While this dialogue becomes aware of its limitations, it is also conscious of the difficulties of entering into a world that is very different from our own. That strangeness is echoed in the strangeness of artefacts left behind in the material record by our human ancestors living many millennia ago.

Overall, this volume will leave the reader with many intriguing questions unanswered, but it will also provide a spur to think creatively and imaginatively about the intellectual importance of working at the boundary between the disciplines. Unlike many other volumes that too easily relate theology and science while avoiding difficulties, we stress again that this book presses for a *transdisciplinary* engagement, where each discipline not only presents work at the leading edge of its field, but also allows the companion disciplines to raise new and interesting questions that arise at the boundaries between subject areas.

Part 1, 'Mapping the Terrain', provides an overview of the evolution of the genus *Homo* across the Pleistocene. This is the frame, the ground on

which to place the evolutionary and theological discussions in all of the subsequent chapters. Agustín Fuentes argues in his opening chapter, ‘Setting the Stage: Developing the Human Niche Across the Pleistocene’, that in assessing the evolution of human beings we need not only explain the development of bodies and human modifications to ecologies, we also must develop a robust description for an evolving system – a human niche. Over time the genus *Homo* engaged in the production of Oldowan stone tools at 2 million years ago, developed more complex stone tool technologies and showed widening geographic spread between 1.75 and 1 million years ago, used and gained control of fire and engaged in complex hunting and materiality by 400,000 years ago, developed art and increasingly complex multi-community social networks by 120,000 years ago, demonstrated patterns of domestication by 15,000–10,000 years ago, and built early cities by 5,000 years ago, eventually leading up to the megacities, global religions, and world economies of today. Fuentes suggests that making, sharing, and navigating meaning is as central to our evolution as are bones, stones, and local ecologies.

One can envision part of this explanation pivoting on the pattern (and ability) of successful complex decision-making in navigating increasingly larger and more complex social networks in the developing niches of human communities. Philosophers and theologians are likely to understand this ability as a form of wisdom, including humility, and even a form of grace, and to view it as a key element in the human perceptual and behavioural toolkit. Anthropologists see this ability as reflecting the behavioural and perceptual (cognitive) processes inherent in the human niche. Regardless of what label we use, we suggest that such capacities/processes for complex decision-making must have an evolutionary history. But assessing evidence for their emergence in the palaeoanthropological record is extremely challenging. Is it possible to identify particular aspects of the material and fossil records that indicate the ways in which human beings, and other hominins in our lineage (*Homo*), expressed aspects of this interactive complexity in their organization and interactions with others?

Rebecca Rogers Ackermann and Lauren Schroeder, in their chapter on ‘The Emergence of Complexity and Novelty in the Human Fossil Record’, believe that outside of possible evidence for more complex social practices (e.g. longevity post-trauma, preserved infant remains) the fossil record of human evolution is limited in its ability to address the transition towards transcendental forms of wisdom. Indeed, they suggest that it is difficult to equate our modern intellectual condition with deep past biological indicators at all. At the same time, they propose that the best and most visible evidence for biological changes that might be precursors to these abilities is in the form of increasing complexity and/or novelty. These can appear suddenly or through more gradual, directional change. Such patterns appear in

the hominin fossil record most strongly at the emergence and diversification of our genus, and in the Middle to Late Pleistocene record with the emergence of our species. Although no evolutionary biologist would frame these changes in the language of ‘progress’, Ackermann and Schroeder prefer to speak of adaptive change that moves in a progressive way towards our current state (e.g. better able to navigate changing environments, more capable of communication).

However, they recognize that there are complexities in coming to such a conclusion. An adaption-centric narrative is problematic once greater attention is paid to how evolution actually works. In particular, the emergence of complexity and novelty through chance and gene exchange make it difficult to point to either as indications of adaptive change in innate human capabilities. This argument might be extended to culture as well. Additionally, the narrative of reticulate (versus branching) evolution, particularly over the past million years, makes it very difficult to point to one place and time when ‘humanness’ appeared. The authors therefore press for the exercise of caution in applying explicit meaning to changes we see in the fossil past, including the emergence of traits we consider surrogates for the remarkable intellectual capabilities of our species.

The second part of the book, entitled ‘Wisdom’, opens with recent work by John Hawks and Lee Berger on *Homo naledi*, a member of the genus *Homo* that challenges many previous assumptions about what it means to be human. This species was discovered in the Rising Star cave system in South Africa and identified by the authors and their collaborators between 2013 and 2014; its significance for evolutionary anthropology is substantive. More than 1,500 fossil remains were unearthed in the Dinaledi chamber, representing a minimum of 15 individuals that were remarkably intact, with further substantial deposits in the Lesedi chamber representing at least three individuals, providing the most substantial data set for an ancient human relative so far discovered in South Africa. *H. naledi* is unusual in sharing some morphological features in common with the ancient *Australopithecus* lineage, including parts of the cranial vault, dentition, shoulder, manual phalanges, pelvis, and proximal femur. However, other parts of the hand, dentition, foot, and lower limb show morphologies similar to *Homo sapiens*, *Homo neanderthalensis*, or *Homo erectus*. Based on morphology alone, many anthropologists assumed that *H. naledi* would have existed more than 1.5 million years ago. Research which dates *H. naledi* in the later Pleistocene (more specifically the South African Middle Stone Age [MSA]), provides the first recorded evidence of small-brained hominins in this period, and has highly significant implications for current understandings of human evolution. It seems likely that *H. naledi* was a branch from the earliest stages of evolution within the *Homo* lineage, rather than a later reversion to a previous morphology. The diversity of the *Homo* lineage in this Middle

Pleistocene period is consistent with that found in other subequatorial species. Given the paucity of remains found near Archeulean or MSA tool industries, the possibility that *Homo naledi* was at least in part responsible for these tools cannot be ruled out. This species is not ‘us’, but they certainly share much of the human niche.

The next chapter by Marc Kissel connects the dots in the processes of ‘becoming wise’ from an evolutionary anthropological approach to the emergence of meaning making in the archaeological record across the Pleistocene. He suggests that in order to understand how the human cultural niche evolved across the Pleistocene – to interrogate how wisdom evolved – we need a better understanding of the actual archaeological data that inform this question. To properly contextualize the data, address these conflicts, and begin to more effectively and systematically answer questions about the emergence of modern human behaviour, he and collaborators created an open-access database resource, the World-wide Instances of Symbolic Data Outlining Modernity (WISDOM). Using these data, he shows how the processes of hominins becoming human occurred significantly earlier than has previously been argued. In fact, many of the behaviours that have been seen as markers of humanity, and solely in the purview of *Homo sapiens*, can be found in *Homo erectus* and other ‘species’ or populations of *Homo* across the latter portion of the Pleistocene. This suggests that either these behaviours are not markers of human behaviour in the strict sense or that the genus *Homo* has been acting, or had the capacity to act, ‘modern’ for far longer than previously believed.

The final chapter in this part of the book, ‘On the Origin of Symbols’, by theologian and medical scientist Andrew Robinson, probes philosophical arguments about this process of becoming modern humans and about the creation of symbols and their connection to possibilities of self-transcendence. He sets out to explore what Charles Peirce’s semiotic theory can contribute to investigating the evolutionary origins of human distinctiveness (for which ‘wisdom’ and ‘self-transcendence’, he argues, are necessary, and closely related, prerequisites). He argues that although archaeology recognizes (at least sometimes) that it cannot manage without semiotics in some form, the strategy of looking for ‘symbols’ in the archaeological record is often a confused and unproductive one. He demonstrates how, in Peirce’s logic, diagrammatic reasoning gives rise to the possibility of sign-based thought experiments and related mental manipulations, while hypostatic abstraction is the process of turning a thought into a thing (which likewise depends on the use of signs, especially symbols). Importantly, he suggests that diagrammatic reasoning and hypostatic abstraction operate in a complementary way, and are jointly the basis of self-transcendence. Rather than seeing transcendence as a kind of overflow, he suggests that self-transcendence is the basis of, or even synonymous with, certain kinds of ‘wisdom’: namely,

the wisdom of self-knowledge, the wisdom of discernment, and the wisdom of traditions (folk-wisdom, traditional wisdom, etc.). He proposes a four-fold scheme of grades of evidence for the identification of such wisdom or self-transcendence in the archaeological record, illustrated with reference to archaeological discoveries in the Blombos Cave. His theological reading of this approach to archaeological semiotics draws on Reinhold Niebuhr's theological ethics in pressing the case for a synthetic Christian Semiotic Realism.

Part Three, 'Humility', opens with an overview of the archaeological evidence for particular patterns of social learning and complex sociality in the MSA of South Africa that may set the stage for the consideration of patterns and processes related to intimations of humility. In Jayne Wilkins' contribution, 'Archaeological Evidence for Human Social Learning and Sociality in the Middle Stone Age of South Africa', she is prepared to suggest that humility and wisdom are qualities that help humans navigate complex social relationships. She argues that the MSA record of southern Africa provides evidence for the origins and evolution of these complex social relationships. She points out that while there are anatomical changes that mark the speciation of *Homo sapiens*, the first appearance of our species is not associated with major technological or behavioural changes. Instead, the archaeological evidence documents spatially and temporally discontinuous variation in social learning mechanisms and sociality. Her review of recent evidence for early human social learning and sociality in the MSA of southern Africa, between ~500,000 and ~50,000 years ago, derives from studies on how stone tools are manufactured, how far stone raw material is moved across the landscape, and the material evidence for symbolising, such as brightly coloured ochre and incised objects. Stone tool technologies during some periods in the MSA are consistent with an increased emphasis on imitative social learning, which could be associated with the need to communicate group membership by replicating the behaviours of others, and/or with increased self-regulation. For other periods in the MSA, variation in stone tool manufacturing strategies suggest more emphasis on emulative, rather than imitative, social learning, which may be linked to behavioural plasticity and individualism. She points out that stone raw material is sometimes transported long distances, which could be indicative of inter-group interaction. At many sites, however, evidence for the long-distance transfer of stone raw materials is lacking. Ochre and incised objects are common in some MSA contexts, but rare in others. Wilkins suggests that the nature of human social learning and sociality changed through the MSA, often in a seemingly erratic manner. The archaeological record to date suggests that at least some human capacities for social learning and sociality may have been present at the onset of the MSA before the origins of *Homo sapiens*.

Jan-Olav Henriksen's chapter, 'An Animal in Need of Wisdom: Theological Anthropology and the Origins of Humility and Wisdom', is a theological

anthropology arguing for processes and patterns in the origins of humility and wisdom in our lineage. He acknowledges, like Wilkins, that humility emerges out of interaction with others. Thus, it presupposes the same abilities for cooperation and communication as other features that shape early human (and pre-human) development. Social interaction also contributes to the development of a sense of self. Henrikson explores Heinz Kohut's theory of the development of the self in order to infer (although speculatively) that relatively similar conditions were at work in the original development of the human self and its relation to the world and to others. As Kohut analyses the conditions for narcissism in failed interactions, Henrikson suggests that its opposite, humility, is the result of successful relationships with others. He also suggests that this understanding of the development of the self furthermore allows for identifying the development of two other features that are crucial for the role of early religion in deep time: the need for developing modes of subjectivity that require orientation and the need for contemplating necessary transformation. This perspective sheds light on ritual and other modes of cooperation, and allows for the conditions that humans need for living humbly with wisdom and grace. Accordingly, religions can be seen as the result of interactive processes shaped by humility and aimed at living wisely.

In the next chapter, 'The Loss of Innocence in the Deep Past: Wisdom, Humility, and Grace within a Developing Understanding of the Emergence of Human Moral Emotions', Penny Spikins explores the human deep past, in materials and bodies, for clues of the emergence of compassion and morality, keystones for the capacity for humility. Like Wilkins and Henrikson, Spikins is concerned with the rise of social complexity. However, she resists common theoretical approaches which typically paint a picture of unemotional and selfish competition amongst ape-like early humans. At some point in our deep past, our distant ancestors must have begun to develop the type of moral instincts and understanding which we would recognize as fundamentally like our own, including losing their innocence of another's suffering. What does new evidence imply for the role of social and moral emotions in deep ancestry? How can we relate social behaviour to humility, wisdom, and grace? Moreover, how can we develop new perspectives which engage with the importance of moral emotions to human evolutionary success? Here she reviews evidence for emotional complexity in the furthest depths of the deep past, reconsiders the driving factors behind human social evolution, and asks how far back in the distant past we can recognize human morality. She argues that however intangible they might seem, complex moral characteristics including wisdom, humility, and grace played a key role in our evolutionary story.

This section concludes with Celia Deane-Drummond's chapter, 'Searching for the Soul of *Homo*: The Virtue of Humility in Deep Evolutionary Time', which explores the different theological elements of the virtue of humility in order to probe more precisely what it means to speak about humility in

archaic humans. In the early hominin community, she speculates, humility was likely to have been much more important than the mirror companion virtue of magnanimity, often celebrated in contemporary modern societies. Both involve the exercise of reason over the inner psychological world in a way that is distinctly human and not characteristic of other animals. She explores ancient theological concepts of humility proposed by medieval theologian and philosopher Thomas Aquinas as a way of probing the dawn of consciousness of self in relation to others and as a necessary step towards second-person personal and collective social relationships. She also touches on the idea of self-transcendence raised in Robinson's chapter. In this case, theological discussion of the experience of *infused* humility could be understood as theological enhancement of that self-awareness by imagining that humility as directly infused by God. This implies, further, that not all humility is necessarily tied into explicit reasoning capacities, but is more likely to be, as Spikins suggests, part of our developing emotional repertoire. What is rather more challenging is finding ways of mapping explicit traces that show humility or experiences of the transcendent.

In this volume, our discussion of grace focuses on the sense of the sacred in the world and brings theological dimensions that are challenging in terms of their intersection with evolutionary anthropology. We intentionally bring such challenges to the surface in this volume because raising such questions is fruitful for the dialogue between anthropology and theology. This is a dialogue that shines light on the limitations of different perspectives on humans, and one that demonstrates that these difficulties might create fruitful new insights or at least avenues of inquiry into core aspects of being human that lie at the heart of all the disciplines involved.

'Grace' is the title of Part Four, with chapters examining grace in the theological anthropology of Karl Rahner, the intricate connectivity between evolutionary histories, neuroscience, and the concept of grace, and, finally, a careful assessment of the importance of continuities and discontinuities in thinking about human evolution.

Karen Kilby and Matthew Ashley's chapter, 'What Difference Does Grace Make? An Exploration of the Concept of Grace in the Theological Anthropology of Karl Rahner', begins by pointing out that it is typical of much theology in the Catholic tradition to frame an understanding of humanity, and of the human being's relationship to both the world and God, with the help of categories of nature and grace. While in Protestant thought, grace is characteristically conceived as a response to sin, in Catholic thought it is more fundamentally understood as an 'elevation' of nature. How more precisely to understand the relationship of grace to nature, however, has itself been a point of contestation within Catholic theology, especially in the last century. The chapter offers a two-fold argument. First, it endeavours to show that Rahner's theology makes clear how *difficult* it is, though not necessarily impossible, to find in a specifically theological concept of grace something which might be fruitful when engaging with any kind of

empirical work. Second, it will suggest a *different* way in which a concept of grace and evolutionary anthropology might come together, even though the authors acknowledge that Rahner's analysis has a somewhat dated quality.

Oliver Davies' chapter, 'Grace in Evolution', offers a very different approach from the perspective of a philosophically informed theological stance. The theological term 'grace' identifies an opposition between 'nature' and 'grace', where 'nature' is understood to operate outside any theistic or revelatory framework. In this chapter, in contrast to Kilby and Ashley's argument, he suggests that this stark separation has to be called into question philosophically by the 'freedom' of grace: its gratuitousness. If the actualization of grace is utterly free, then what does an opposition between graceless 'nature' and 'grace' actually mean? Where no rules contain, there can be no set boundary. The traditional semantic extensions of 'grace' (*gratia*, *charis*) into the 'natural' registers of harmony, beauty, and the arts link aesthetic grace with natural spontaneity and freedom and so already undermine any such sharp separation. And so the question of the nature of the distinction between 'grace' and 'nature' can seem central to theology's self-definition. The more we look to 'grace' as a divinely configured 'free' eventuality, the more difficult it is to explain why some people 'receive grace' and others do not. Davies asks: why would a free and loving God not want to give us all grace? Alternatively, positing grace *within nature* or, more precisely, within our human evolution, might seem to subordinate grace to causal dynamics which undermine the claim that grace is most fundamentally grounded in divine initiative. And so we seem to be confronted with an opposition between the truth of our evolved state, with its implied naturalistic determinism, and the truth of grace, with its non-negotiable status as divine freedom speaking to human freedom. The title of this chapter, 'Grace in Evolution', points to a fresh look at these questions in the light of contemporary scientific insights, both cosmological and anthropological. Here Davies uses different fields of science in order to cast light on how we are in the world, as self-aware, embodied, and evolved beings. It is in this question of how we are part of the world as human beings that scientific advances can most productively intersect with issues concerning our own humanistic and theological self-understanding, allowing us to explore a dynamic, contemporary account of the grace-nature distinction for today.

The final chapter by Jon Marks, entitled 'Continuities and Discontinuities in Human Evolution', begins to draw the different threads of this volume together by an exploration of the patterns of continuity and discontinuity that have resulted from human evolution. These patterns coexist, but are either overemphasized or underemphasized in different intellectual traditions, serving different rhetorical purposes. His chapter begins with culture and kinship, the two earliest concepts in anthropology, and discuss their different usages in ethology, which emphasizes continuity with the apes. He then distinguishes intelligence (as rational problem-solving capabilities), which is continuous with the mentality of apes, from wisdom, which

incorporates features like insight and profundity and whose adaptive value is more indirect. He also differentiates primate submissiveness from humility in social behaviour, and altruism from grace. Like kinship, he suggests that the emergence of behaviours or states of humility, grace, and wisdom involved forms and properties of knowledge that are not immediately utilitarian or adaptive. He ends with the provocative conclusion that their gradual emergence in human evolution was intellectual, emotional, social, and largely fictive.

This book explores the evolution of distinctly human ways of being in the world, raising fascinating questions about what wisdom means, the origins of practices that encouraged humility, and age-old debates about the relationship between nature and grace. It will fire the imagination, challenge those working at the intersection of theology and science, and leave the reader with new questions to explore and contemplate. This volume refuses to commit the errors of either too easy a synthesis or too facile a separation between science and religion, but takes up the debate in a new and innovative way through a specific focus on core characteristics relevant to the origins of a distinctly human nature via our lineage's evolution extending over the course of the Pleistocene. This volume will leave the reader with many intriguing questions unanswered, but it will also inspire many to think creatively about the intellectual importance of working at, and across, the boundaries between disciplines.

Part I

Mapping the terrain



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1 Setting the stage

Developing the human niche across the Pleistocene

Agustín Fuentes

When thinking about humanity from a biological perspective we can identify certain patterns. We give birth to live young with extended childhoods and are characterized by hyper-complex learning systems. We have large, energetically expensive brains which are associated with the emergence of a dynamic and multifaceted cognitive system. We also have particularly vibrant and interconnected social lives and societies. However, none of these patterns are uniquely human. They are all also characteristic of many primates, cetaceans, elephants, and a range of other social mammals. These biological patterns and processes, while central to understanding aspects of humanity, are not our lineage defining patterns.

Much of what we humans see as particularly ‘human’ aspects of our lives are in fact rooted in our shared heritage with the other primates. The centrality of social groups, the importance of social dynamics and relationships, a significant devotion to infants, and their concomitant slow maturation period with so much of their time spent learning, exploring, and socializing with others, is part of being a primate. We are primates and we belong to a particular lineage called hominoids, more commonly known as ‘apes’. The superfamily Hominoidea had their heyday about 16 to 10 million years ago when a diverse array of lineages spread across much of Africa and Eurasia.

In most evolutionary approaches, we place humans, initially, in the context of the group of hominoids generally called ‘the great apes’, who currently exist in Southeast Asia and sub-Saharan Africa. Of the great apes in the Asian group, which had substantive geographic spread and diversity into the early Pliocene, only one of the orangutan remains. Today, there are two species of orangutan with extremely limited ranges. African hominoids had a Plio-Pleistocene (the last 6 million years or so) diversity restricted to three lineages – the gorillas, the chimpanzees, and the hominins – and all have representatives extant today. The chimpanzees and gorillas, however, are limited largely to the equatorial band across the African continent, whereas the third lineage, humans, is globally distributed.¹ Now there are very few hominoids, and all but one lineage (us) are either threatened or endangered.²

The story of the hominoids over the past 6 million years is one of decline in diversity and range. Except for us. Our lineage, the ‘hominins’, undergoes

its radiation in the Pliocene (~5–2.5 million years ago) and one branch, the genus *Homo*, expands during the Pleistocene (2.5 million to about 10,000 years ago).³ We are by far the most successful, and distinctive, hominoid. So, humans are primates, hominoids, and something else.

Today we are the most successful of the entire primate radiation (numerically and geographically). There is something evolutionarily distinctive about a lineage that departs so dramatically from the pace and pattern of its entire sister lineages. This is one reason why the study of human evolution requires more than a traditional focus on biological changes over time. But this is not to say that what defines humans is what we term, in a general sense, ‘culture’.

Humans are not the only organisms that are socially and ecologically complex, with very large brains relative to their body size that are also neurobiologically dynamic. Apes, cetaceans, and a few other animal lineages have multifaceted social relationships where social traditions (what many call ‘cultural processes’) seem to play substantive roles. If ‘culture’ is defined as behaviour transmitted via social facilitation and learning from others, which endures for long enough to generate customs and traditions, then many species have culture.⁴ In this context, culture and cultural evolution are significant phenomena in that they emerge from processes of biological evolution but can develop such that they supplement genetic transmission with social transmission and can play central roles in shaping the behaviour, ecology, and even biology, of populations⁵. However, for humans, our culture is much more than that.

The patterns and processes that characterize human behaviour and society include many processes that are significantly different in scale and impact than in most other species that we can say have ‘culture’. For humans, cultural elements involve massive extrasomatic (beyond the body) material creation, manipulation, and use (tools, weapons, clothes, buildings, towns, etc.) and extensive ratcheting – expansion and augmentation of cultural processes based on accumulation and innovation – on scales and with a level of structural and material complexity greater than in any organism. The particulars of perception and action involved in creating, deploying, and navigating human culture are rooted in the linguistically mediated beliefs, institutions, histories, and practices of human groups.

Chimpanzees and orcas have amazingly complex and dynamic cultures, but they do not have cash economies and political institutions. Neither do they arrest and deport people, change planet-wide ecosystems, build cities and airplanes, or drive thousands of other species towards extinction. But we humans do.

In humans, the development of the body and mind has evolved as a system where physiology and neurobiology are always in concert with, and mutually co-constitutive of, the linguistic, socially mediated and constructed structures, institutions, and beliefs that make up key aspects of the human experience.⁶ This process is one characterized by a distinctively human

culture and is reflective of a particular set of complex and dynamic processes that we see in the human *umwelt*, our ‘niche’, our way of being in the world.⁷

Because of the particular evolutionary histories and processes in the human niche, there has been distinctive development and expansion of human neurobiology and cognitive processes. This enables humans to develop extensive detached mental representations, hyper-creativity, linguistic and symbolic communication, and a particularly powerful capacity for imagining. Due to these processes, the shape of, and boundaries to, the human niche (our experienced, perceived, and created ecology) are not always material or circumscribed by direct and cued representation. Humans are thus open to influence, with potentially evolutionarily relevant implications, from transcendent experiences in addition to specifically cued or materially experienced ones.⁸ This cognitive, social, perceptual, and experiential complexity and diversity in our social and ecological milieus enables humans to experience, create, and develop skills in perception and awareness that are highly diverse and not contingent on material reality. These may include transcendent experiences, such as religious sensations, beliefs, and practices, as a central process in the navigation, and construction, of the human niche.⁹ In such a case the human niche – and potentially evolutionarily relevant human experience – is not necessarily bounded by material borders. Thus, integration across multiple modes of inquiry, especially those that engage with some transcendental components as a core premise, may be particularly beneficial when asking questions about the human.

Humans are animals, mammals, primates, and hominoids. But we are also hominins, specifically genus *Homo*, species *sapiens*. To understand our distinctive evolutionary history is not to understand that we have so much in common with our evolutionary cousins, but rather to grasp what happened over the last 6 million years, or more specifically, what happened the last 2 million years in our own genus.

The challenge of human evolution

In assessing the evolution of human beings we need not only explain the development of bodies and our modifications to ecologies, we also must develop a robust description for an evolving system that facilitates the production of Oldowan stone tools at 2 million years ago; more complex stone tool technologies and widening geographic spread starting ~1.8 million years ago; substantive increases in overall cooperation and specifically the coordination of caretaking activities, the use and control of fire, and complex hunting and materiality by 400,000 years ago; art and increasingly complex multi-community social networks by ~120,000 years ago; domestication by 15,000–10,000 years ago; early cities by 5,000 years ago; and the megacities, global religions, and world economies of today. See Figure 1.1 for a summary of this history.