Theology, Evolution and the Mind

Theology, Evolution and the Mind

Edited by

Neil Spurway

CAMBRIDGE SCHOLARS PUBLISHING

Theology, Evolution and the Mind, Edited by Neil Spurway

This book first published 2009

Cambridge Scholars Publishing

12 Back Chapman Street, Newcastle upon Tyne, NE6 2XX, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN (10): 1-4438-0197-6, ISBN (13): 978-1-4438-0197-3

TABLE OF CONTENTS

The Science and Religion Forum ix

Introduction 1
Neil Spurway

PART 1

Chapter One 10
The Prehistory of the Religious Mind
Stephen Mithen

Chapter Two 31
Whence Comes Religion? Mithen on Prehistory and Mind
Celia Deane-Drummond

Chapter Three 42
Diverging Paths in the Study of the Evolution of Religion
Lluis Oviedo

Chapter Four 53
Darwin's Gifts to Theology
Fraser Watts

Chapter Five 68
Timeo Darwinos et Dona Ferentes: A Response to Fraser Watts
Anthony Freeman

Chapter Six 74
What can Evolved Minds Know of God? Reconsidering Theology
in the Light of Evolutionary Epistemology
Neil Spurway

Chapter Seven 93
Reply to Professor Spurway
Derek Stanesby

Chapter Eight 104
Are We Ghosts or Machines?
Roger Trigg

Chapter Nine 119
The Emergent Threefold Self: A Response to Roger Trigg
Anne L.C. Runehov

Chapter Ten 130
Unfolding Conversation: A theological Reflection on the Evolution of the Brain/Mind in *Homo sapiens*
Jeremy Law

Chapter Eleven 155
Response to Jeremy Law
Roger Knight

Chapter Twelve 161
Theology, Evolution and the Mind
Roger Paul

PART 2

Chapter Thirteen 178
Cosmic Conversation: the Evolving Dialogue in Mathematics between Mind and Reality
Gavin Hitchcock

Chapter Fourteen 189
Are Attitudes to Life Changing? –The Emergence of New Moral Intuitions
R.I. Vane-Wright

Chapter Fifteen 199
Nolitional Freedom and the Neurobiology of Sin
Ron Choong

Chapter Sixteen 206
The Healing Instinct: Functionality, Integrity and Relationship –
Holistic Principles in Evolution
Jeremy Swayne

Chapter Seventeen 213
The Mind in Theological and Scientific Perspective
Sjoerd L. Bonting

Index 238

THE SCIENCE AND RELIGION FORUM: SEEKING BOTH INTELLIGIBILITY AND MEANING

Growing out of informal discussion meetings which began in 1972, around the key figure of Revd Dr Arthur Peacocke, the Science And Religion Forum was formally inaugurated in 1975. Its stated purpose was to enable and encourage further discussion of the issues which arise in the interaction between scientific understanding and religious thought. These issues, together with the social and ethical decisions demanded by scientific and technological advances, have remained the subject of the Forum's meetings since that date.

In 2005 the Forum merged with the Christ and the Cosmos Initiative. This had been founded by the Revd Bill Gowland, a past President of the Methodist Conference, with the intention of bringing the latest knowledge of scientific thinking within the orbit of the enquiring layperson.

Thus enlarged, the Forum is open to all who are concerned to relate established scientific knowledge and methodology to religious faith and practice. Complementing its broader objectives, it seeks to:

1) encourage scientists with limited knowledge of religion, and religious people with limited knowledge of science, to appreciate the contributions of both disciplines to human understanding of life in the world

2) provide an interface between academics, active in science-religion work, and public communicators – notably teachers, clerics, and those training future members of these professions.

At every point, the Forum strives to extend recognition that science and religion, properly understood, are not antagonists, but complementary in the quest for truth.

The Forum holds a regular annual conference, plus occasional smaller *ad hoc* meetings, and publishes a twice-yearly journal, *Reviews in Science and Religion.*

At the date of publication the Forum’s President is Prof John Hedley Brooke (Lancaster) and its Chairman Prof Neil Spurway (Glasgow).

INTRODUCTION

NEIL SPURWAY

Caution has rarely been the hallmark of the Science and Religion Forum's topic-choices, and it certainly wasn't for the 2007 Conference in the delectable surroundings of Canterbury. The three key words of the conference title, *evolution, mind* and *theology*, combine to form no mean challenge. To start with evolution, it is as prominent in public discussion today as it has ever been. Much of the reason is the recent spread into Britain of resurgent Creationism – a standpoint which no member of the Forum known to me views with anything other than abhorrence. But 2009, the year in which this book appears in print, is of course one in which two major anniversaries of Charles Darwin coincide: the 200th of his birth, and the 150th of the publication of *The Origin of Species*. There will be immense activity in 2009, celebrating and appraising Darwin's extraordinary contribution to humanity's understanding of itself. However the specific matter of the evolution of mind is unlikely to be particularly prominent, and the evolution of the religious mind still less so.

The themes, then, of this 2009 book, drawn from the SRF's 2007 Conference, are theological assessments of evolution generally, and that of mind and the body/mind relationship particularly; but also the evolution of religious thought and – turning the matter round – the implications of an evolutionary standpoint for religious and theological thinking.

Part 1

The evolution of religion

We were extremely pleased to welcome, as our opening speaker, Steven Mithen (Professor of Early Prehistory in the University of Reading), whose 1996 book, *The Prehistory of the Mind*, is a classic presentation of what archaeology and paleo-anthropology can tell us about the origins of science, art and religion in human pre-history. Reassessing, eleven years later, in the light of newer evidence, Steven Mithen was perhaps a little more cautious about which artefacts and grave-contents can

be confidently interpreted as religious. Even more certainly, therefore, than a decade ago, we can say that religious responses to the world, insofar as they could leave any trace, have been confined within roughly the last 100,000 years. The second speaker, Celia Deane-Drummond (Director of the Centre for Religion and the Biosciences, University of Chester), responding to Mithen, recalled accounts of the dances of great apes at waterfalls which invite interpretation as essentially religious responses, and the point should no more be dismissed than indications of compassion, or of intuitive physics, among them; however, it is almost certainly not hair-splitting to insist that pre-physics is not yet physics, and pre-religion not yet religion.

Another question might be whether the word "evolution" necessarily applies to the pre-historical development of religion. It should be possible for an old-earth Creationist – one who maintains the separate creation of each species but accepts the time-scale of geological science – to read an account such as Steven Mithen's and feel no need to reject its objective content. But both Deane-Drummond and the contributor of the next chapter, Lluis Oviedo (Professor of Theological Anthropology, Pontifical University "Antonianum", Rome), make clear that the subject, as discussed among 21st C professionals, is steeped in evolutionary thought. Mithen's view of how religious thinking developed derives from evolutionary psychology, though his own addition to this school's modular picture of the mind, that of "cognitive fluidity" enabling interchange between modules, is a more powerful proposal than critics, in this book and elsewhere, assert. Nevertheless, Deane-Drummond presents a telling summary of the scientific arguments against evolutionary psychology itself, not asserting that they are decisive but that they should always be borne in mind. Oviedo, in turn, outlines the wide range of alternative accounts of religious evolution: both different biological ones, arguing for various forms of adaptive advantage, and those which insist that cultural evolution is not just a development of the biological but different in kind.

Broader implications of evolution

The next group of papers considers firstly evolution as such, then its implications for the human capacity to know. Fraser Watts (Reader in Theology and Science at the University of Cambridge), although professionally a psychologist, chose to speak on Darwin's thought and its "gifts to theology" – particularly the gift picked out more than a century before by Aubrey Moore, in Oxford, of emphasizing the ever-presence, the immanence of God, within the day-to-day events which constitute the

evolutionary process. As Deane-Drummond had already noted, the idea that divine intervention is to be sought at the points where current science is unable to explain something – the "God of the Gaps" approach – is never met in modern theology, only in the imagined theologies of anti-religious propagandists. Nevertheless, Watts' respondent, Anthony Freeman (Editor of the Journal of Consciousness Studies), insists that a mechanism must be proposed even for the light-touch divine influence on evolution which Watts and Moore uphold, and questions whether either writer is sufficiently clear as to what this might be.

Following this exchange, I myself explore what kinds of theological statement are possible, if one accepts that the human brain/mind is wholly a product of evolution. I conclude that those implying knowledge of events or states of being outside the confines of space and time can have no claim on our acceptance: unlike our concepts of the physical world, or the behaviour of other creatures in it, such propositions have not been tested by our evolutionary survival. This brings down the withering scorn of the respondent, Derek Stanesby (former Canon of St George's Chapel, Windsor). Readers will enjoy his polemic, and will at least grant that I didn't take Editorial advantage and choose a kid-glove antagonist! However I do ask them to consider carefully whether my radically Popperian account of knowledge – constructed wholly in terms of the organism's experiments and the mind's conjectures, surviving or otherwise at the hands of nature – can possibly constitute, as Derek Stanesby asserts, a "return to positivism". Stanesby also denounces evolutionary psychology in general, and its idea of domain-specific mental modules in particular. Now I happen to be sympathetic to this idea, but it is Steven Mithen, not I, who uses it in his paper: at no point in mine does the term "evolutionary psychology" appear.

The relation of mind to body

The next contribution was that of Roger Trigg (currently President of the International Society for the Philosophy of Religion). Against the modern trend, Trigg argues for a dualistic view of the mind-body relation: that they are not, as in the simplistic caricature, two different *stuffs*, but nevertheless two different categories of being. The problem this raises, of course, is what the great neurophysiologist, Sir Charles Sherrington, characterized three quarters of a century ago as "the how of mind's leverage on matter". That is why the majority of modern philosophers and neuroscientists prefer to think not so much of "mind", an entity, as of

mental properties or functions, adopting labels like “supervenience” or “dual-aspect monism” to designate their positions.

However, the respondent to this paper, Anne Runehov (Associate Professor of Systematic Theology in the University of Copenhagen) argues for a picture more complex than either dualism or supervenience as usually presented. To place it relative to mainstream 21st C thought, one might characterize her position in terms of two levels of supervenience, or as triple-aspect monism, though these terms are mine, not Anne Runehov’s. In this elusive field, one of the best pieces of advice was probably that given me almost 50 years ago by the wonderfully-named philosopher John Wisdom, after he had read my own first, very-young-man’s article in the field: “Strive chiefly to be clear what facts about the world you are concerned that your antagonist should not forget.”

An approach to Christology

The most ambitious of the invited contributions to the conference is surely that of Jeremy Law (Dean of Chapel at our host institution, Canterbury Christ Church University). Working from an account of human evolution closely paralleling Steven Mithen’s, but expressed in his own words and embodying further material, Jeremy Law grasps the nettle of theological anthropology – adding a radically theological dimension to the paleo-anthropological picture, and placing Christ within this framework. The first aspect of any theological perspective has to be that of purpose: here Law’s discussion has echoes of that by Watts. Thence recognition of the crucial role of language in the development of *Homo sapiens* leads him to the Word, as represented in the gospel of St John …. and ultimately to the person of Christ, and the “internal conversation” within the Trinity which provides his title.

One of Law’s considerations, as he confronts the tension between superficial randomness and hidden purpose, is of the possibility of constrained contingency, imaged by the slight troughs of an uneven snooker table, and this is the aspect of his talk which attracts the main comments of his respondent, Roger Knight, a parish rector in the Diocese of Rochester. Knight points to several inconsistencies in the biblical handling of this idea, and perhaps to one in Law’s own use of it. Examples of the first category are the several incidents in which a person – Pharaoh, say, or Judas – is pre-ordained to an evil act and yet held guilty of it. The second is Law’s account of Christ’s life and death as simultaneously necessary and contingent: can any event be both?

Concluding invited paper

At the end of the conference, the invited main papers were the subject of a masterly overview by Revd Dr Roger Paul (The Church of England's national adviser to the Council for Christian Unity). Among topics which Roger Paul develops much further than the original speakers is the theoretical biologist Stuart Kauffman's investigation of the laws of complexity, whereby increasingly complex systems appear capable of emerging by purely natural processes – Kauffman's account entails no mechanism that is necessarily theological, let alone supernatural. Paul moves on to Steven Mithen's concept of cognitive fluidity, seeing it (rightly in my view) as a much broader capacity than Derek Stanesby believes, and as underlying the whole possibility of metaphorical and symbolic thinking, without which every imaginative expression and every form of abstract thought, from mathematics to theology, would be impossible. Echoing, yet going beyond, my own question, "What can evolved minds know of God?", Roger Paul concludes:

> How can an evolved mind transcend itself? How can it go beyond the structures, ways of thinking and language that the forces of natural selection have shaped? I hope that this book, and the contributions from such a variety of disciplines and convictions, will stimulate further exploration of this question.

Whether or not such transcendence can ever happen, I cannot but share that hope for this book.

Part 2

Contributed papers

Papers offered by people attending the conference are held in parallel sessions, timetabled separately from the sequence of invited papers with which, apart only from Lluis Oviedo's contribution, we have been concerned so far. The selection printed here offers an invaluable set of nuances on the conference theme.

Gavin Hitchcock (University of Zimbabwe) writes of mathematics, the "unreasonable effectiveness" of which (Eugene Wigner's phrase) has puzzled people for generations. Do mathematicians discover eternal truths, "out there" in the world of Platonic ideas, or create the thought-forms in their own, cognitively-fluid minds? Hitchcock seems to incline toward the latter account – as, may I say, do I.

Dick Vane-Wright (late Head of Entomology at the Natural History Museum) considers the rapid growth, in the current generation, of environmental concern. He judges it not only as crucially important for the survival of our species as we know it but also so radical as to represent a significant evolutionary step for the human mind.

Ron Choong (Princeton Theological Seminary, USA) tackles frontally a topic only passingly acknowledged by several of the invited speakers: how the concept of sin stands in the perspective of neuroscience. His focus is on Benjamin Libet's often-cited experiments, indicating that the brain decides on actions before its "owner" knows it has done so.

Finally in this group, Jeremy Swayne, physician and priest, urges a more holistic view of sickness and healing as another necessary step in humanity's view of itself. If achieved, it would surely be an evolutionary change comparable, in both nature and importance, to that discussed by Dick Vane-Wright?

The last chapter is by Revd Dr Sjoerd Bonting (Episcopalian Priest and retired Biochemist from the Netherlands and USA). This *tour-de-force* proved too long for inclusion in the spoken programme, but I am delighted to present it here as a conclusion to our symposium. Different readers will focus on different sections of the paper, which ranges from brain science to the Biblical view of persons. Bonting opens his "Discussion" thus:

> A survey of the biblical data on the mind reveals the position that humans are a body-mind unity and that there is no real distinction between mind and soul. For this reason, I prefer to eliminate the "soul" concept, considering the mind to encompass both our intellectual and spiritual faculties. This view is supported by current neuroscientific insights.

For my own part, I welcome every word of that. Those who do not will find Sjoerd Bonting a tough and terse protagonist.

Body-mind unity

If then, with Editorial arrogance, I were to draw a single moral from these diverse yet admirable – indeed sometimes wonderful – contributions, invited and submitted, it would be that body-mind unity, however expressed, must be the 21st C view of human nature.

So I suggest that even Ron Choong is simplistic, in his assessment of Libet's findings – simplistic in not taking account of the unquantifiable diversity of influences which make up our individual histories and form our characters. In most of our decisions to act we only have time to draw on these unconsciously, but *it is when we do not draw upon them, not*

when we do, that we are less than human: unconscious thought is still thought! And the body-mind unit which performs such thought is all the more us, ourselves, because it sets into action before we are aware that it is doing so.

As to the even deeper problems, underlying so many of these papers –
1) the relation of mental functions to the physical brain, and
2) the respect in which Divine will can guide the world without gaps showing in our scientific accounts
– I return again and again to the analogy of my computer. There are so many levels at which its actions can be described. One level is that of electrons, positive holes, and their behaviour at p-n junctions. Next up is that of currents, potentials and resistances, many orders different in one direction than the other. Above that, we soon come to the machine code which instructs these current flows, and the changes of resistance. Above this is the program, written in this instance by an expert in Microsoft Word. But she/he knew absolutely nothing about what I would actually type onto the keyboard … and an account in those terms shares in turn no elements whatsoever with the thoughts in my mind which lead me to perform my highly-fallible typing. Descriptions at different levels, simultaneously appropriate yet not interchangeable, and not even obviously cross-referring, are the stuff of everyday life. Why is it so hard for us to see that such distinctions between levels of description apply, without gainsay, to the relations between brains and their properties, and between people and their God?

PART 1

CHAPTER ONE

THE PREHISTORY OF THE RELIGIOUS MIND

STEVEN MITHEN

Stephen Mithen, FBA, studied at the Slade School of Fine Art and at Sheffield and York Universities (where his topics included computing science) before taking a PhD in Archeology at Cambridge. He then moved to the Department of Archeology at the University of Reading, where he is now Professor of Early Prehistory and Head of the School of Human and Environmental Sciences.

His first book was "Thoughtful Foragers: A Study of Prehistoric Decision Making" (1990). This was followed by probably his most renowned book, "The Prehistory of the Mind: A Search for the Origins of Art, Religion and Science" (1996). Recent publications include "The Singing Neanderthals: The Origin of Music, Language, Mind and Body" (1995).

The essay which follows revisits the position on the rise of religion presented in "The Prehistory of the Mind", testing it against a large body of more recent evidence. It is an expansion of the opening paper of the 2007 conference.

The religious mind

Although any claims about human universals must be made with extreme caution, it is not unreasonable to suggest that types of thought, action and material culture that we classify as "religious" are present in all extant human societies. Individuals within those societies may claim to be atheists, but as far as I know there are no known societies entirely composed of those who have no religious belief. Even atheists may claim to possess feelings about spirituality and engage in activities that an outside observer might categorise as being ritualistic and even religious. The same is likely to apply to all societies documented historically, and those studied archaeologically at least back to the start of the Neolithic, as

testified by the pervasiveness of monuments and burials that appear to be of a religious nature. Quite how far back into prehistory religiosity can be traced is a key topic of this essay.

The types of thoughts, actions and material culture in human societies that we describe as religious are enormously diverse. We categorise them together because they share some belief in supernatural power. This often includes the idea that one or more supernatural beings/entities were involved in the creation of the Universe and continue to intervene in the world. By mechanisms such as prayer, meditation, ritual and sacrifice, people believe they can gain a greater understanding of such beings/entities, engage in a form of dialogue with them or seek to influence their interventions in human affairs.

Why should religiosity be so pervasive, perhaps even universal, in human society? There are two possible answers. The first is that there is indeed a supernatural power that was involved in the creation of the universe and may continue to intervene in the world. The diversity of religious thought might simply reflect different but equally valid manifestations of that single truth. Alternatively, this diversity might reflect different degrees of revelation or understanding in which there is progress through time to a more accurate understanding of the nature of the supernatural, which in a broad sense we might describe as the nature of "God". In this regard, "God" may even be choosing to reveal different aspects of itself to people at different stages of their history and in different parts of the world.

The second possible explanation for the pervasiveness of religiosity is that the human mind might simply be prone to believe in the supernatural, even though the origin and on-going activity of the universe and life are explained by entirely natural processes: religion is simply a curious invention of the human mind. As such, it would need to be explained by reference to evolutionary history. This would be the same type of explanation that we use for other universal attributes of human mind such as language and music, all ultimately grounded in natural selection.

How can we differentiate between these two possible explanations? Those who are persuaded of the first tend to invoke the notion of "faith" and contend that it is only by reference to God that there is any meaning to human existence. Those who believe that God and religion are merely artefacts of the human mind point to the progress science is making in explaining aspects of the world that were once attributed to the actions of a supernatural power – most notably the manner in which natural selection has explained the origin of species, including our own species, *Homo sapiens*. But those of a religious persuasion are equally likely to draw on

scientific knowledge, pointing to those aspects of the world that science has revealed but seems unable to explain, such as many features of the quantum world.

One source of data that neither party have sufficiently engaged within is that concerning human evolution. The insufficiency does not apply in a general sense, as commentators from Darwin to Dawkins have placed this either implicitly or explicitly at the centre of their opposition to a divine creator, but in terms of the particularities of the fossil and archaeological record. What can these tell us about the origins of the religious mind? In this essay I will review the evidence for human evolution, focussing on the evidence for the earliest forms of religious thought and exploring how this may have become pervasive in human society. First, however, we need to attend to the definition of religiosity.

What is religion?

In general terms, I am simply referring to belief in supernatural agency, whether that is defined as belief in one God, or many Gods, or in spirits, ghosts, animism and so forth. In this essay I am simply using "God" as a short-hand for a religious ideology, with no reference to any particular conception of "God". Pascal Boyer (2001) has usefully re-defined God as an "all-knowing strategic agent", while I also include the attribution of knowledge, will and purpose to inanimate entities as a key element of religious thought. I find the distinction that Harvey Whitehouse (2004) has drawn between "imagistic" and "doctrinal" modes of religiosity useful, especially because these can be broadly related to forms of socio-economic organisation. According to Whitehouse, the imagistic mode consists of the tendency within certain small-scale or regionally fragmented ritual traditions and cults for revelation to be transmitted through sporadic collective action, evoking multi-vocal iconic imagery, encoded in memory as distinct episodes, and producing highly cohesive and particularistic social ties. In contrast, the doctrinal mode of religiosity consists of the tendency within many regional and world religions for revelations to be codified as a body of doctrine, transmitted through structured forms of worship, memorised as part of one's general knowledge and a product of large, anonymous communities.

The recognition of either mode of religiosity from archaeological evidence provides many challenges. The doctrinal mode is more accessible as this tends to create monumental architecture and iconic symbols shared over an extensive area, although identifying these as necessarily of a religious nature may not be as easy as it may initially appear. Moreover, as

the doctrinal mode of religiosity is likely to be derivative of a state scale of social organisation of the type that only originated less than 5000 years ago, prehistorians are predominately concerned with identifying religious activity that would fall within Whitehouse's imagistic mode.

Recognising religion in the archaeological record

The most systematic attempt to develop an explicit methodology was by Colin Renfrew in his 1985 book, *The Archaeology of Cult*. This exposed the many steps of inference that an archaeologist must go through when seeking to identify religious activity, often involving the elimination of other explanations for the presence of particular types of artefacts and their particular spatial location and associations within a settlement.

Of the numerous methodological challenges involved in the identification of religious activity from the archaeological record, four can be briefly considered. First, religious thought may have no material representation – it may reside entirely within the mind of an individual. While this cannot be entirely ruled out, I think it is highly unlikely as material objects are frequently, perhaps always, required as cognitive anchors for religious ideas that do not sit comfortably within an evolved mind (Mithen 1998). There remains a dilemma, however, as those material objects might be entirely natural, such as a mountain top or an unmodified stone. As such, although they are visible, an archaeologist is unlikely to appreciate their significance.

Second, religious belief may have material representation but this may be of a nature that does not survive in the archaeological record. All of the objects and structures involved in religious activity might be made from organic materials and hence subject to rapid decay. While this will always be one of the fundamental problems with the reconstruction of past activity and thought, some aspects of it is being alleviated by the developments in archaeological science that continue to enhance the recovery of evidence. The development of isotopic studies of human bone, for instance, has provided archaeologists with information about past diet when no food remains have been preserved, while micro-morphological studies of floor deposits have extracted unprecedented amounts of information about past activities. Both of these can be used to enhance our understanding of past religion, such as by identifying individuals who may have had special diets and areas where non-domestic activities occurred.

A third problem is simply the ambiguity of so much archaeological evidence: objects and structures can easily be misinterpreted as being of religious nature; conversely, items of a religious significance may not be

recognised as such – a manger in a stable is likely to be interpreted simply as a feeding place for cattle. A classic example of the former is Neanderthal burial (see Gargett 1989 for a review of the evidence). As I will further discuss below, the discovery that some Neanderthal bodies, of both adults and infants, had been carefully laid within shallow pits inevitably led to proposals about beliefs in an afterlife, while objects found within those so-called graves, such as stone artefacts, animal bones and remnants from flowers, were interpreted as the consequence of graveside ritual. But such burials might be no more than the disposal of "rubbish" in a reasonably hygienic manner and all such artefacts may be part of the rubbish or present for entirely unrelated reasons, such as the parts of flowers coming from the burrowing of rodents – as is likely in the (in)famous case of the Shanidar Neanderthal burials.

A fourth problem to note (there are numerous others, but describing them all would make this essay too depressing) is that our definition of religion might be too restrictive. This derives from the present-day world, or at least that of the recent historical past, which provides us with just a small fraction of the human communities that have lived since the *Homo* genus appeared more than two million years ago. It may be the case that forms of religious belief and action existed in the past that have no modern equivalence; by defining religion on the basis of what we know today, as in the manner of Whitehouse, we risk becoming blind to that of the past.

Human evolution and religious thought

Plio-Pleistocene hominins [1]

As Darwin predicted and as almost a century of fossil discoveries have now demonstrated, human origins are found in Africa. There were numerous species of bipedal primates in Africa between six and two million years ago, these being descendants of the common ancestor we share with the chimpanzee (see Lewin & Foley 2004 for details about hominin fossils relating to this and later sections). These hominins display considerable morphological variation, which most likely relates to the exploitation of specific niches within the African landscape. They have been placed into three genus, *Ardipithecus, Australaopithecus* and *Homo,*

[1] Hominin is a recent term in paleoanthropology, taking account of DNA-based modifications of the Linnaean classification. However, it includes all species of *Homo* and of *Australopithecus,* so that the lay reader may take it as equivalent, for the purposes of this article, to the Linnaean "hominid". Ed.

with the latter constituted by two purported species, *Homo habilis* and *Homo rudolfensis*. Flaked stone tools are known from at least 2.5 million years ago but in light of the repertoire of tools used by chimpanzees it seems likely that hammer stones, sticks, leaves and other minimally modified materials were used long before flaked stone artefacts appeared.

The two species of *Homo* are characterized by relatively larger brains than the other hominins, up to 650 cc rather than the 450 cc, which is also characteristic of chimpanzees today, together with smaller teeth and a flatter face. These features may be within the range of variation for this grade of hominin without necessarily indicating any evolved cognitive or linguistic abilities. The key problem we face with assessing the significance of brain size is the rarity of the post-cranial skeletons for earliest *Homo*, which leaves open the possibility that the relatively large brains are simply a product of large body size. Indeed, a strong case can be made for reclassifying *H,habilis* and *H.rudolfensis* as australopithecines, and identifying *H.ergaster*, appearing by 1.8 million years ago, as the first member of the *Homo* genus (Wood & Collard 1999).

I cannot find any archaeological evidence within this grade of hominin that would suggest the presence of religious ideas. Their behaviour is readily understood from the perspective of comparative primatology – these hominins are simply relatively large brained and bipedal primates, making a rather more extensive use of stone artefacts than is known among living primates today. While there remains some debate concerning the selective pressures that led to the evolution of bipedalism, more extensive tool use and a meat-based diet, there is no reason to believe that these cannot be explained within the framework of evolutionary ecology as is used to understand the behaviour of animals today (e.g. Aiello & Wheeler 1995).

The evolution of theory of mind

There are, however, three features of these early hominins that may be relevant to the appearance of religious thought at a later stage in human evolution. First, they appear to have been living in larger social groups, this most likely being an adaptive response to the risk of predation in relatively open environments (Aiello & Dunbar 1993). This in turn is likely to have created selective pressures for two cognitive attributes that appear unique to the *Homo* genus and to have been evolutionary related. One of these is what psychologists call “theory of mind” abilities; in simple terms this is being aware that other individuals have beliefs and desires, and that those beliefs and desires might be different to one’s own

– although full definitions are problematic (Carruthers & Smith 1996). There is a substantial debate as to whether Theory of Mind capabilities are present in chimpanzees, and if they are how they differ to ours today (e.g. Povinelli 1993, 1999; Tomasello, Call & Hare 2003). The importance of this cognitive ability, or probably this package of abilities, is that it allows one to predict the behaviour of other individuals and consequently facilities both competition (via social manipulation) and co-operation: those individuals who had theory of mind capacities were at a reproductive advantage.

Closely allied to the evolution of theory of mind is that of enhanced communication. Dunbar (1996) has argued that verbal communication would have begun to function as a means of "social grooming": vocalizations would have been used as a relatively cheap means (in terms of time) to develop social relationships, gradually replacing the use of physical grooming for the same end as used among living primates. Enhanced verbal communication would have also been used as a means to manipulate the emotions and hence behaviour of other individuals, this being made possible because of the evolution of theory-of-mind capabilities (Mithen 2000; 2005).

While these first stages in the evolution of theory of mind and linguistic capabilities would have made early hominins a different kind of primate to their own immediate ancestors and to those non-human primates extant today, there are no traces of the distinctive cultural attributes of *Homo sapiens*. There is no evidence for burial, art, architecture and so forth. We are, of course, dealing with archaeological sites that are between 1.5 and 2.5 millions of years old and hence must take into account the problems of preservation and discovery. But there is no hint of anything "cultural" beyond stone artefacts, and certainly nothing that we might wish to place within the category of religious.

Early Humans: from *Homo ergaster* to *Homo neanderthalensis*

H.ergaster, appearing at around 1.8 million years ago, may mark an evolutionary transition to a type of hominin for which behavioural analogies with living primates are of limited value. With a near-fully modern stature and bipedal gait, this species is most likely the first to disperse out of Africa. Brain size reached up to 900 cc, although some specimens show the maintenance of relatively small brain capacities – those from the site of Dmanisi in Georgia were no more than 650cc (Gabunia *et al.* 2000; Lordkipanidze *et al.* 2000). The Asian lineage of this species evolved into *Homo erectus* and appears to have made at least

one water crossing on rafts to reach Flores Island by 850,000 years ago (Morwood *et al*. 1998).

In Europe, the middle Pleistocene is marked by a succession of hominins that are claimed to constitute at least three species: *Homo antecessor*, *H.heidelbergensis* and *H.neanderthalenis* (Lewin & Foley 2004). These may form a single evolving lineage or multiple dispersals into Europe of species that evolved from *H.eragster* in Africa.

These hominins appear to show a gradual increase of brain size until a capacity equivalent to, and in some cases exceeding that of *Homo sapiens* is attained in late Pleistocene specimens. Stone artefacts appear to increase in technological complexity from Oldowan-like flakes associated with *Homo antecessor*, Acheulian handaxes with *H.heidelbegensis* and levallois technology with *H.neanderthalensis*. Examples of bone and wooden tools are exceedingly rare, but the discovery of the Schöningen spears (Thieme 1997) indicates that this is most likely a consequence of the rarity of both preservation and discovery. Traces of structures and non-utilitarian artefacts are effectively absent, with the few ambiguous examples, claimed by some, merely emphasizing their extreme rarity and unsophisticated nature.

Can we find anything in the archaeological record of these "Early Humans" that suggest religious thought? Some claim that we can, and point to two lines of (exceedingly uncommon) evidence: objects that appear not to have any utilitarian function, and burials.

Contentious symbolic artefacts

There are no unambiguous examples of visual symbols related to this grade of hominin; even if there were, the connection with religious thought would still need to be established. The most provocative artefact is a small piece of stone (c. 3cm) from the site of Berekhat Ram in Israel that dates to c. 250,000 years ago and is claimed by some to be a figurine, an image of a female (D'Errico & Nowell 2000). Superficially, there is a resemblance: one can visualize a head, arms and bust; moreover microscopic analysis has demonstrated that the stone has been deliberately incised with a stone blade. But whether the female form is simply in the "eye of the beholder", as I believe it is, or has been deliberately imposed, remains contentious. Those who believe that the Berekhat Ram "figurine" is the earliest known representation of the human form have drawn analogies with the significantly larger Venus Figurines of the Upper Palaeolithic, these having been made between 30,000 and 20,000 years ago by modern humans in ice age Europe. As I will elaborate on below,

those Venus Figurines unquestionably testify to religious thought. But there is absolutely no basis for any link with the tiny piece of stone from Berekhat Ram.

Other than this object, the closest we appear to get to any form of art object made by Early Humans are incised pieces of bone from the site of Bilzingsleben, dating to around 350,000 years ago (Mania & Mania 1988). These have been claimed to be of symbolic significance because the incisions appear to be ordered; indeed on one piece of bone they form a neat set of parallel lines. There are potential utilitarian explanations, such as that the bones had been used as "cutting boards" for meat and plant, resulting in the types of incisions that we find on our bread-boards at home. Whether this is adequate remains unclear, and to me the lines look more ordered and deliberate than would be expected from accidental marking. Two enormous claims are required to suggest that such incised artefacts suggest a religious mind. First, one must claim that the marks have a symbolic significance, and second, one must claim that they are symbolising some form of religious entity. Neither claim can be substantiated on the basis of present evidence. Nevertheless, extravagant assertions have been made by certain archaeologists and commentators about the Bilizingsleben hominins, suggesting that they had pagan-like religious beliefs. There is no evidence for this.

The evidence from burials

Burials might provide a more promising source of evidence for those who wish to find religiosity in early prehistory. The earliest known burials are those in the caves of Skhul and Qafzeh at Mount Carmel, Israel that date to between 100,000 and 80,000 years ago (Vandermeersch 1970). These are of a lineage of *Homo sapiens* that most likely dispersed out of Africa during the last interglacial (c. 125,000 years ago). The burials have grave goods in the form of animal parts, such as the jaw of a wild boar and antlers of deer that have been carefully positioned with the bodies. Red ochre had also been used during what ought to be described as a burial ritual (Hovers *et al*. 2003).

These burials are of *Homo sapiens* – although a lineage that appears to have gone extinct, making no contribution to the modern gene pool. Of greater interest to the concerns of this essay are the burials of Neanderthals (*H neanderthalensis*) that are found between 65,000 and 30,000 years ago in the Near East and Europe. There are numerous examples of such burials, the most famous being those of the Shanidar cave in Iraq, Amud cave in Israel and La Ferrassie in France (see Gargett 1989, 1999 for

extensive discussion of these and other Middle Palaeolithic burials). There has been a long and detailed debate within archaeology about such burials. Three questions are most pertinent. First, are they deliberate burials or simply accidental, such as from rock falls within caves? While some might be of the latter type, there are numerous examples where it is clear that a pit has been excavated and a body carefully lain within. Second, do these burials simply represent the hygienic deposition of a rotting corpse? While this is an intriguing idea, two factors mitigate against it. One is that the Neanderthals are not known to be particularly tidy. Their living sites appear to be replete with the rubbish from the tools they have made and animals they have butchered; without any other evidence for systemic rubbish disposal, it seems far fetched that this would have been applied to human bodies. The other reason is that there are much easier and safer ways to dispose of a dead body than by burying it in the ground, especially within a cave that one is continuing to use. Dead bodies can be slung into rivers or simply left for the vultures, hyenas and eventually beetles to take away.

The third question is whether any grave goods are present within the Neanderthal burials? Numerous claims have previously been made, notably that of wreaths of flowers laid across the bodies in Shanidar Cave. But none of these claims have stood up to scrutiny. Any artefacts or animal bones found within the graves are more reasonably interpreted as incidental contents of the material used to back-fill the grave. The claim for flowers at Shanidar was made on the basis of high frequencies of flower pollen within the grave fill. This is now thought to be a consequence of burrowing rodents that had used flower parts to line their nests.

Without grave goods, or indeed any signs of graveside ritual, it is difficult to make a claim that Neanderthals burials are related to religious ideas, such as belief in an after-life. A more reasonable interpretation is simply that they had buried members of their community, ranging from very young infants to mature adults, simply because they had loved them during life and wish to care for their bodies after death (Mithen 2005). We know that the Neanderthals did care for each other as there are examples of individuals with healed injuries that would have required support during their healing process. Indeed, there is no reason to think that the Neanderthals were any less empathetic and emotional than we are today; they may have been more so because their populations were constantly teetering on the edge of extinction and hence the loss of any individual may have threatened the on-going existence of the whole community. In this regard their theory-of-mind capabilities, that had begun to evolve

within Plio-Pleistocene hominins were most likely as advanced as our own.

Explaining the absence of religious thought before *H.sapiens*

In light of the absence of any convincing artworks, symbols, grave goods or ritual behaviour of any kind for not only the Neanderthals but also for *Homo ergaster*, *erectus* and *heidelbergensis*, there is no basis for arguing that these hominins had any form of religious belief. We must, of course, always be cautious in light of issues about preservation in the archaeological record and the fact that religious ideas could conceivably have had no material representation (although I think the latter is highly unlikely).

This absence of evident religiosity is intriguing as in so many other ways these early Humans, and especially the Neanderthals, are so similar to modern humans for whom religion appears pervasive, if not universal. The Neanderthals had brains as large as ours today, made complex stone artefacts displaying high levels of technical skill, and could adapt to a wide range of environmental conditions (see Stringer & Gamble 1993 and Mellars 1996 for overviews of the Neanderthals). Their vocal tracts were very similar to modern humans, indicating that there was no anatomical reason why they could not have possessed language. Some form of advanced communication must have been essential in light of what we know about their lifestyles (Mithen 2005).

There are, however, some striking differences between Neanderthals and modern humans in addition to the apparent absence of a religious mind. There is, for instance, an astonishing absence of cultural innovation: the Neanderthals appear to have made the same types of stone artefacts year after year for millennia, even through periods of dramatic environmental change. They did respond to changes in raw material supply and the resources they had to exploit, but only in a highly limited manner. For a population that appears to have been under significant levels of adaptive stress, it is surprising that there appears to have been no invention of projectile technology.

My own explanation for the striking similarities and differences between Neanderthals and *Homo sapiens*, and one that would explain an absence of religious thought, is that their minds had different forms of architecture (Mithen 1996). The Neanderthals appear to have had a "domain-specific" mentality. By this I mean that they may have had stores of knowledge and ways of thinking about the social world, about tools, and about the natural world, as sophisticated as that of modern humans,