

HOW WE BECAME HUMAN FROM THE BEGINNING: The current evidence and what may a Christian make of it?

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ISCAST*-CASE** Lecture, given at New College, The University of New South Wales, at 7.30 pm on Monday July 18, 2011

Michael Knight obtained his BSc and PhD from the University of Melbourne. His career in geology specialised in the field of Hydrogeology, which deals with the distribution and movement of groundwater in the soil and rocks of the Earth's crust. He became Director of The National Centre for Groundwater Management at the University of Technology Sydney (UTS) in 1991 and Professor of Hydrogeology in 1995. In 1996, he was elected World President of the International Association of Hydrogeologists (IAH). Following his retirement in 2004, he was made an Emeritus Professor of Hydrogeology by UTS, and was awarded honorary lifetime membership of the IAH by the Association. Michael is married to Janet, and they have four children and eleven grandchildren.

*ISCAST – Christians in Science and Technology (<http://www.iscast.org/>)

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SUMMARY OF THE LECTURE

Introduction

This lecture builds on, and is consistent with, the concepts and observations of Deep Time for the created world as discussed by previous ISCAST(NSW) speakers: Cohen, D. (2010)¹ and McFarlane, I. (2010)². Creation descriptions in Genesis are profoundly true but use a literary form that is non-scientific and non-literal as discussed by ISCAST lecturer Dixon, J. P. (2008)³. These ISCAST lecturer presentations can be found on the ICASST website <http://www.iscast.org/presentations>. The present lecture evaluates up-to-date evidence from Archaeology, Palaeoanthropology, Geology and Neurology on how we became human and suggests when God historically revealed himself in the creative process He established, and continues to sustain.

Evidence from the Beginning and some Christian views

Our original ancestors called Hominins⁴ walked on two legs (bipedal) some 7 million years ago in Chad, Central Africa^{5,6,7,8,9,10} and soon after in the East African Rift Valley system. Many cycles of climate and environmental alterations^{11,12,13} were experienced by the Hominins including some painful outcomes with some leading to death, e.g., due to floods^{14,15} and predator animals^{16,17}.

Migrations within, and from, Africa occurred in waves across a savannah grassland from 1.8 million years ago by *Homo erectus* initially¹¹. They radiated out from origin centres in Chad and East Africa¹¹. This species of Hominin had a substantially increased brain size to about 1000 ml from about the 400 ml of its *Australopithecine* ancestors^{4,18,19,20,70}. It was also taller, thinner in physique²¹ (a height of 180 cm up from its prior relatives' 110-150 cm) that was better adapted to the arid conditions of the time; *Homo erectus* required 15-18% less drinking water than its predecessors²². However it needed more energy from food: 17% of resting energy was used for its larger brain function compared with 11% for the preceding small brained *Australopithecus*²³.

Groundwater springs were discovered and used as water supplies which enabled *Homo erectus* to travel from Chad and East Africa northwards, westwards and eastwards through the arid areas of Africa, Arabia and Jordan/Israel especially (Knight M.J.,2011, in prep)¹¹. *Homo sapiens* anatomically appeared in Africa (Ethiopia) by 195,000 years ago²⁴ and was the last of the Hominins to migrate within, and leave Africa between 100,000–60,000 years ago. They used dugwell, spring and surface water supplies as they travelled (Knight M.J.,

2011, in prep)¹¹. These observations suggest that *Homo sapiens* had increased its understanding of groundwater and its value compared with previous species. Migrations were very extensive including to Australia by about 50,000 years ago^{4,25,26,27}.

Over time, Hominin anatomy changed (e.g., brain size, cognitive function) and gave rise to creative technologies (e.g., toolmaking from 2.6 million years ago and these showed a preferred choice in rock type selected, as well as being used for defleshing animal bones for food^{28, 29, 30, 31}).

Symbolic thinking also arose (e.g., use of earthen pigments by *Homo heidelbergensis* by about 400,000 years ago in Zambia, Africa³² and later, painting and carving from 32,000 years ago by Cro-Magnon man, a type of *Homo sapiens* living in Europe^{4, 33, 34, 35}). Symbolic thinking and its material activities may suggest that spiritual awareness was beginning.

Primitive verbal communication began at 1.9 million years ago with the expansion of the Broca's Area in the brain^{31, 36, 37} but a fully spoken language ability, as we understand it, was not achieved until 50,000 years ago and then by *Homo sapiens* and not the Neanderthals³⁸. Other cultural developments also occurred such as socialisation when hunter gatherers grew in number. *Homo sapiens* began to settle in groups that constructed substantial buildings, e.g, Wadi Hammeh^{39, 40, 71}, beside the Jordan Valley and engaged in agriculture from about 10,000 years ago.

Accompanying these trends there is archaeological evidence of a growing consciousness of a spiritual dimension to life (and death) illustrated by a reverence for the afterlife (e.g., intentional burials often with grave goods): *Homo heidelbergensis* by about 600,000 years ago in Spain^{41, 42, 43, 44, 45}; followed by the Neanderthals (*Homo neanderthalensis*), e.g., at 60,000 years ago in Amud cave, Israel²¹ and by *Homo sapiens* including us: e.g., Australian Aboriginals at 40,000 years ago at Lake Mungo, Western NSW^{25, 26, 27,4}, by 9,000-8,000 years ago at Jericho, Israel^{46,47} and from 4,640 years ago in the Pyramids in Egypt⁴⁸.

Sin, whilst often not measurable in material records is evidenced by interpersonal violence in skeletons of Neanderthals (45,000–50,000 years ago at Shanidar Cave in northern Iraq^{49, 50, 51}) and *Homo sapiens* from 30,000 years ago along the Nile River in Egypt^{52, 53} and also includes early warfare between 14,000 to 12,000 years ago in Sudan⁵⁴.

Some concern and compassion for others has also been observed in the Neanderthals in Shanidar Cave northern Iraq at about 49,000 years ago^{55, 56, 57, 58}.

Architecture that appears to have been used for worship has been found in south-east Turkey and dates from 11,000–11,500 years ago⁵⁹. It is possible that priestly leadership began at this time even though major settlements and domesticated agriculture (crops and animals) were not developed till about 1000 years later³⁵. Powerful leadership elites emerged in City States in the Bronze Age from 3300 BC.

By the Bronze Age, the data suggest that *Homo sapiens* was fully wired for spiritual belief/disbelief and was free to choose to worship various gods. The evidence for brain wiring involved in belief and disbelief processes in specific locations of the brain has been confirmed by recent neurological brain imaging research⁶⁰. This extends to a recognition of Christian knowledge. The imaging signal in the Vento-Medial Prefrontal Cortex of the brain (belief zone) was stronger in Christians than non-believers when both were asked questions about God and the Virgin Birth⁶¹.

Ur, in Mesopotamia (now southern Iraq)⁶² was a major wealthy capital city in the world in the Bronze Age with a population of over 300,000 people. It was also strongly pagan with a focus on Moon worship that involved the impressive Ziggurat of Ur. Between 2,100 BC and 2,000 BC, priests and kings of the Ur III dynasty had control of all land and resources. After 2,000 BC, the Ammorites conquered Ur and resource ownership returned to the people along with more freedom (e.g., to move along with possessions) though pagan practices such as Moon worship continued. It was in this environment that Abraham was born into a pagan family fathered by Terah; Joshua 24:2-3; Acts 7:2-4. Sometime in the Middle Bronze Age between 1,900 BC and 1600 BC, pagan Terah possibly recognized the new freedoms and decided (with God's guidance unknown to him) to take his family to Canaan, but stopped at Haran

(Genesis 11:31-32) probably due to the Moon worship still active there. God revealed Himself to Abraham in Ur (Acts 7:2-4) and later in Haran when told by God to move on to Canaan (Genesis 12:1-4); Abraham obeyed and stepped out in faith, like what occurs in Christian conversion today.

Abraham begins a new spiritual dimension of humanity. This was completed some 2,000 years ago, when God revealed Himself through Jesus Christ being born into our world fully human and fully God. Humans today can share in this new humanity by accepting Christ, as their personal savior.

Two models of an evolving creation that consist of processes established and sustained by God are proposed. These include both biological and cultural changes over time as well as God's historical revelations from the Bronze Age. Choice in Creation as a result of God's love (Psalm 136) is an important factor in both models^{63,64}. The main differences between the models is the timing of the spiritual self-consciousness of a fallen nature by humans in prehistoric times. Some writers prefer a discreet event whereas others suggest a more continuous process^{65,66}. A specific temporal "Fall" event may not be knowable by scientific methods. Some have tried but their estimates (ranging from 200,000 years ago⁶⁷, 30,000 years ago⁶⁸ to about 10,000 years ago⁶⁹) are really hypothetical and not empirically defensible. A gradual awareness seems more likely, based on the current the empirical evidence of a growing spiritual dimension seen in a range of Hominins. God would be involved in each strategy and both models arrive at a fallen nature awareness in the end which is empirically clear to all.

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How we became human. By David Urry and Lisa Hendry. Today, we sit alone on the only remaining branch of the human family tree. But we are only one character in the story of human evolution. To truly understand who we are, we must look at how we got here and the key physical traits that make us human. Bipedalism. These features serve as useful identifiers in the fossil record of likely bipedalism in our ancestors, the earliest evidence of which may come from the six-million-year-old *Orrorin tugenensis*. But it's not until *Homo erectus* came on the scene about 1.9 million years ago that we see the long-legged form, similar to our own, that makes us so well suited to running and walking over long distances. Big brains. Other Christians, quite frankly, particularly in a lot of churches have tried over the years. Many churches having a pecking order, and the existence of second-class Christians is quite troubling. If you're the wrong race, speak the wrong language, have a disability, are in the wrong profession, have the wrong sex partner, don't come from the right social class, the paternalism of the "right" people marginalizes some fellow Christians and keeps them out of certain things in the church. What is promoted through "Christianity" is the same as Buddhism and Hinduism - a philosophy about the purpose of life and how the experience flows. "Christianity", however, has a "threat" element that is used to "bind" a person to the belief system. Not cool. How do we become human? And I would like to tackle, under this aspect, three questions. The first is, "What does it mean to become human in a technological world?" And, "Why is this particularly difficult in a technological world?" And, finally, "How could science and technology help us in the process of becoming human?" It's not necessarily as negative as it sounds in the overall topic. And that must be the starting point for asking, "What is our goal and what direction are we going when we speak of becoming human?" The key term in psychology is peak experience. Ideally, if you know what a peak experience is and if you remember one of your peak experiences that would be a good starting point. But, think of any moment that was really a high point in your life.