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Literatur

Afrika

Schmidt 1978

Peter Schmidt & Donald H. Avery, *Complex Iron Smelting and Prehistoric Culture in Tanzania*. science **201** (1978), 1085–1089.

Recent discoveries show complex technological achievement in African iron production.

Western scientists and students of history have long explained the iron bloomery process by evidence available from European archeology. Ethnographic, technological, and archeological research into the technological life of the Haya of northwestern Tanzania show that these people and their forebears 1500 to 2000 years ago practiced a highly advanced iron smelting technology based on preheating principles and, as a result, produced carbon steel. This sophisticated technology may have evolved as an adaptation to overexploited forest resources. These discoveries are significant for the history of Africa and the history of metallurgy.

Schmidt 1983

Peter R. Schmidt & D. H. Avery, *More Evidence for an Advanced Prehistoric Iron Technology in Africa*. Journal of Field Archaeology **10** (1983), 421–434.

Ethnographic and technological observations of iron smelting among the Haya people of NW Tanzania during 1976 and 1979 have contributed important new evidence for a technologically advanced culture in East-Central Africa. The ethnoarchaeology of Haya iron working shows that the Haya practiced an iron-smelting technology that employed preheating of the air blast a highly efficient technique and formed a massive steel altogether different from that known in the European tradition of iron production. Excavations in 1977 at the KM2 site near Kemondo Bay west of Lake Victoria in Kagera Region, Tanzania, provided abundant evidence for an ancient technology, dating to the first six centuries A.C., that shared many similarities to the living iron-smelting technology. Excavations during 19781979 at the KM3 site, also located near Kemondo Bay, yielded physical evidence for the antiquity of the preheated process and provided definitive proof for a technology similar to the process in historical times. These discoveries affirm that one of the most advanced technologies in the ancient world developed in Africa independent of European influence.

Schmidt 1995

Peter R. Schmidt & S. Terry Childs, *Ancient African Iron Production*. American Scientist **83** (1995), 524–533.

New evidence demonstrates that sub-Saharan African iron technology, already known to be distinctive, had to cope with a difficult iron chemistry.

Aktuell

Bynum 2013

William Bynum, *On the Mode of Communication of Cholera*. nature **495** (2013), 169–170.

W. F. Bynum reassesses the work of John Snow, the Victorian 'cholera cartographer'.

Weaver 2013

Keith Weaver, *Scientists are snobs*. nature **495** (2013), 167–168.
It is a mistake to dismiss the people and projects coming out of lesser-known institutions, argues Keith Weaver — they have strengths too.

Wunsch 2013

Carl Wunsch, Raymond W. Schmitt & D. James Baker, *Climate change as an intergenerational problem*. PNAS **110** (2013), 4435–4436.
Understanding of climate change is a problem for multiple generations. One generation of scientists has to make provisions for the needs of successor generations, rather than focusing solely on its own immediate scientific productivity. Today's climate models will likely prove of little interest in 100 years. But adequately sampled, carefully calibrated, quality controlled, and archived data for key elements of the climate system will be useful indefinitely.
In many cases—describing and understanding decadal variability in the ocean, for example—an honest scientific assessment would acknowledge the need for far longer observational records than are now available or obtainable by any individual. In today's institutions with their short-term time horizons, young scientists interested in such phenomena cannot take on longterm problems. But if society does not find ways to support scientific careers directed at such problems, then we will never understand the fundamentals of this critical subject. What to do?

Anthropologie

Barrett 2011

Justin L. Barrett, *Cognitive Science of Religion: Looking Back, Looking Forward*. Journal for the Scientific Study of Religion **50** (2011), 229–239.
The cognitive science of religion (CSR) arose out of attempts to "science up" religious studies and the anthropology of religion without eliminating interpretive approaches. While maintaining this historical orientation, CSR holds promise to help bridge to other areas within the scientific study of religion. Particularly fruitful areas of future collaboration and complementary study are evolutionary studies of religion, psychology of religion, sociology of religion, and archeology of religion. In response to an invitation to explore the potential of CSR for the 50th anniversary of this journal, I briefly summarize CSR's history and current state and then offer exemplary future directions that might bring CSR into fruitful connection with other areas in the greater scientific study of religion.
Keywords: cognitive science, evolutionary psychology, prosocial behavior.

Bicho 2011

Nuno F. Bicho, Jonathan A. Haws & Loren G. Davis (Hrsg.), *Trekking the Shore, Changing Coastlines and the Antiquity of Coastal Settlement*. Interdisciplinary contributions to archaeology (New York 2011).

Byrne 1996

Richard W. Byrne, *Machiavellian Intelligence*. Evolutionary Anthropology **5** (1996), 172–180.

The hypothesis that intelligence is an adaptation to deal with the complexity of living in semi-permanent groups of conspecifics, a situation that involves the potentially tricky balance of competition and cooperation with the same individuals, has been influential in recent theorizing about human mental evolution. It is important to distinguish among distinct versions of this general idea, for they predict different cognitive consequences and apply to different species of animal. Empirical support is strong in primates for links between (i) social complexity based on evolved tactics that require a good memory for socially relevant information, (ii) neocortical enlargement, and (iii) size of social groupings. However, the evolution of computational thought and the ability to understand other individuals' intentions are not well explained as products of selection for Machiavellian intelligence. Quite different explanations may therefore be required for increases in intelligence that occurred at different times in human ancestry.

Keywords: human evolution; primates; intelligence; brain size; mental representation; thinking

Chisholm 1993

James S. Chisholm, *Death, Hope, and Sex, Life-History Theory and the Development of Reproductive Strategies*. Current Anthropology, **34** (1993), 1–24.

Many social scientists reject evolutionary views of human behavior because of their supposed genetic determinism. To establish that not all evolutionary models are inherently deterministic, I first review the perennial adaptationist-mechanist controversy in evolutionary biology. I then outline life-history theory, a burgeoning field of biology devoted to the study of reproduction, growth and development, and ecology in an evolutionary context. I undertake next to show how life-history theory can provide a satisfactory resolution to the adaptationist-mechanist debate. Combining Promislow and Harvey's arguments about the role of mortality rates in the evolution of life-history traits with Belsky, Steinberg, and Draper's attachment-theory model of the development of alternative reproductive strategies in humans, I propose that the allocation of reproductive ("mating" and "parenting") effort in adults may be partially contingent on their early experience with the causes and correlates of local high death rates. I conclude with a discussion of some implications of this proposal for the emerging field of evolutionary psychology.

Clark 2010

Andy Clark and David J. Chalmers, *The Extended Mind*. In: Richard Menary (Hrsg.), *The Extended Mind*. Life and Mind: Philosophical Isues in Biology and Psychology (Cambridge 2010), 27–42.

Where does the mind stop and the rest of the world begin? The question invites two standard replies. Some accept the demarcations of skin and skull, and say that what is outside the body is outside the mind. Others are impressed by arguments suggesting that the meaning of our words "just ain't in the head," and hold that this externalism about meaning carries over into an externalism about mind. We propose to pursue a third position. We advocate a very different sort of externalism: an active externalism, based on the active role of the environment in driving cognitive processes.

Cosmides 2001

Leda Cosmides & John Tooby, *What is Evolutionary Psychology? Explaining the New Science of the Mind*. (New Haven 2001).

The view that the mind is a teeming confederation of ancient, expert programs is a dramatic and strange departure from the traditional way scientists and non-scientists had thought about the mind. If it proves true, it will revolutionize how social scientists see the relationship between human nature and human life, and will require changes in nearly every field of knowledge that relates to humans. It matters deeply whether evolved specializations exist.

The old model of human nature as general-purpose learning circuits, connected to a blank slate, was a very bland characterization of humanity – one that supplied few specific insights into human social life or culture. Indeed, it denied the reality of any richer characterization of human nature, and it appealed to many scholars precisely because it provided an intellectual justification for disconnecting human nature from human culture.

The model emerging from evolutionary psychology is anything but bland. Its model of human nature has character, definition, and bite, because each formal model of an evolved mental program provides specific implications about its particular area of human life. According to this new view, there are specific circuits in the mind for cooperation, love, sex, parenting, friendship, language, status, ingroup identification, families, deception, remembering and representing the identities of others, incest, food, number, disgust and contamination, jealousy, revenge, aesthetics, violence, play, imitation, extortion, kindness, trade, foraging, dangers, causality, beauty, coalitions, free-riding, morality, natural landscapes, geometry, predators, weapons, gender, and so on. These programs are not the products of culture – culture is the product of these programs.

This emerging model of human nature promises to be rich, precise, specific, and detailed. It will be the work of many lifetimes to produce high-resolution maps of all the circuits and features of human nature, but when this enterprise is finished, the product will be an exacting scientific theory that will rival anything in physics, geology or chemistry. Such detailed and reliable information about the program circuitry of the human mind will inevitably provide the foundation on which a revised set of social sciences will be built, because the decision-rules built into these programs are relevant to all aspects of how humans interact socially, what causes them to adopt some cultural elements over others, and what economic choices they make. The denial of human nature, and the insistence on the blank slate, has been the central fact of modern thought. The dominance of this view has stalled scientific investigation into human nature for most of the 20th century. Its end will change everything about the modern intellectual world.

Cowart 2005

Monica Cowart, *Embodied Cognition*. In: James Fieser & Bradley Dowden (Hrsg.), *Internet Encyclopedia of Philosophy*. (2005). <http://www.iep.utm.edu/embodcog/> (2012-11-25).

Embodied Cognition is a growing research program in cognitive science that emphasizes the formative role the environment plays in the development of cognitive processes. The general theory contends that cognitive processes develop when a tightly coupled system emerges from real-time, goal-directed interactions between organisms and their environment; the nature of these interactions influences the formation and further specifies the nature of the developing cognitive capacities. Since embodied accounts of cognition have been formulated in a variety of different ways in each of the sub-fields comprising cognitive science (that is, developmental psychology, artificial life/robotics, linguistics, and philosophy of mind), a rich

interdisciplinary research program continues to emerge. Yet, all of these different conceptions do maintain that one necessary condition for cognition is embodiment, where the basic notion of embodiment is broadly understood as the unique way an organism's sensorimotor capacities enable it to successfully interact with its environmental niche. In addition, all of the different formulations of the general embodied cognition thesis share a common goal of developing cognitive explanations that capture the manner in which mind, body, and world mutually interact and influence one another to promote an organism's adaptive success.

Currie 2011

Gregory Currie, *The Master of the Masek Beds: Handaxes, Art, and the Minds of Early Humans*. In: Elisabeth Schellekens & Peter Goldie (Hrsg.), *The Aesthetic Mind*, *Philosophy and Psychology*. (Oxford 2011), 9–31.

Di Dio 2009

Cinzia Di Dio & Vittorio Gallese, *Neuroaesthetics: a review*. Current Opinion in Neurobiology **19** (2009), 682–687.

Neuroaesthetics is a relatively young field within cognitive neuroscience, concerned with the neural underpinnings of aesthetic experience of beauty, particularly in visual art. Neuroscientific investigations have approached this area using imaging and neurophysiological techniques, such as functional magnetic resonance (fMRI), magnetoencephalography (MEG) and electroencephalography (EEG). The results produced so far are very heterogeneous. Nonetheless, an overall view of the findings suggests that the aesthetic experience of visual artworks is characterized by the activation of: sensorimotor areas; core emotional centres; and reward-related centres. In the present review, we discuss the functional relevance of these activations and propose that aesthetic experience is a multilevel process exceeding a purely visual analysis of artworks and relying upon visceromotor and somatomotor resonance in the beholder.

Downes 2008

Stephen M. Downes, *Evolutionary Psychology*. In: Edward N. Zalta (Hrsg.), *Stanford Encyclopedia of Philosophy*. (2008). <http://plato.stanford.edu/entries/evolutionary-psychology/> (2012-11-25).

Evolutionary psychology is one of many biologically informed approaches to the study of human behavior. Along with cognitive psychologists, evolutionary psychologists propose that much, if not all, of our behavior can be explained by appeal to internal psychological mechanisms. What distinguishes evolutionary psychologists from many cognitive psychologists is the proposal that the relevant internal mechanisms are adaptations—products of natural selection—that helped our ancestors get around the world, survive and reproduce. To understand the central claims of evolutionary psychology we require an understanding of some key concepts in evolutionary biology, cognitive psychology, philosophy of science and philosophy of mind. Philosophers are interested in evolutionary psychology for a number of reasons. For philosophers of science —mostly philosophers of biology—evolutionary psychology provides a critical target. There is a broad consensus among philosophers of science that evolutionary psychology is a deeply flawed enterprise. For philosophers of mind and cognitive science evolutionary psychology has been a source of empirical hypotheses about cognitive architecture and specific components of that architecture. Philosophers of mind are also critical of evolutionary

psychology but their criticisms are not as all-encompassing as those presented by philosophers of biology. Evolutionary psychology is also invoked by philosophers interested in moral psychology both as a source of empirical hypotheses and as a critical target.

Dror 2008

Itiel E. Dror & Stevan Harnad (Hrsg.), *Cognition Distributed, How cognitive technology extends our minds*. Benjamins Current Topics 16 (Amsterdam 2008).

Duchaine 2001

Bradley Duchaine, Leda Cosmides & John Tooby, *Evolutionary psychology and the brain*. Current Opinion in Neurobiology **11** (2001), 225–230.

The human brain is a set of computational machines, each of which was designed by natural selection to solve adaptive problems faced by our hunter–gatherer ancestors. These machines are adaptive specializations: systems equipped with design features that are organized such that they solve an ancestral problem reliably, economically and efficiently. The search for functionally specialized computational adaptations has now begun in earnest. A host of specialized systems have recently been found, including ones designed for sexual motivation, social inference, judgment under uncertainty and conditioning, as well as content-rich systems for visual recognition and knowledge acquisition.

Dunbar 1998

Robin I. M. Dunbar, *The Social Brain Hypothesis*. Evolutionary Anthropology **6** (1998), 178–190.

Conventional wisdom over the past 160 years in the cognitive and neurosciences has assumed that brains evolved to process factual information about the world. Most attention has therefore been focused on such features as pattern recognition, color vision, and speech perception. By extension, it was assumed that brains evolved to deal with essentially ecological problem-solving tasks.1

Fu 2013

Qiaomei Fu et al., *A Revised Timescale for Human Evolution Based on Ancient Mitochondrial Genomes*. Current Biology (2013), preprint, 1–7. DOI:10.1016/j.cub.2013.02.044.

CurrBiol2013-preprint-Supplement0323.pdf, CurrBiol2013-preprint-Supplement0323.xls

Qiaomei Fu, Alissa Mittnik, Philip L. F. Johnson, Kirsten Bos, Martina Lari, Ruth Bollongino, Chengkai Sun, Liane Giemsch, Ralf Schmitz, Joachim Burger, Anna Maria Ronchitelli, Fabio Martini, Renata G. Cremonesi, Jiří Svoboda, Peter Bauer, David Caramelli, Sergi Castellano, David Reich, Svante Pääbo & Johannes Krause

Background: Recent analyses of de novo DNA mutations in modern humans have suggested a nuclear substitution rate that is approximately half that of previous estimates based on fossil calibration. This result has led to suggestions that major events in human evolution occurred far earlier than previously thought.

Results: Here, we use mitochondrial genome sequences from ten securely dated ancient modern humans spanning 40,000 years as calibration points for the mitochondrial clock, thus yielding a direct estimate of the mitochondrial substitution rate. Our clock yields mitochondrial divergence times that are in agreement with

earlier estimates based on calibration points derived from either fossils or archaeological material. In particular, our results imply a separation of non-Africans from the most closely related sub-Saharan African mitochondrial DNAs (haplogroup L3) that occurred less than 62–95 kya. Conclusions: Though single loci like mitochondrial DNA (mtDNA) can only provide biased estimates of population divergence times, they can provide valid upper bounds. Our results exclude most of the older dates for African and nonAfrican population divergences recently suggested by de novo mutation rate estimates in the nuclear genome.

Gamble 2011

Clive Gamble, John Gowlet & Robin Dunbar, *The Social Brain and the Shape of the Palaeolithic*. Cambridge Archaeological Journal **21** (2011), 115–135.

It is oten the case in interdisciplinary accounts of human evolution that archaeological data are either ignored or treated supericially. This article sets out to redress this position by using archaeological evidence from the last 2.5 million years to test the social brain hypothesis (SBH) — that our social lives drove encephalization. To do this we construct a map of our evolving social complexity that concentrates on two resources — materials and emotions — that lie at the basis of all social interaction. In particular, novel cultural and biological mechanisms are seen as evolutionary responses to problems of cognitive load arising from the need to integrate more individuals and sub-units into the larger communities predicted by the SBH. The Palaeolithic evidence for the ampliication of these twin resources into novel social forms is then evaluated. Here the SBH is used to diferentiate three temporal movements (2.6–1.6 Ma, 1.5–0.4 Ma and 300–25 ka) and their varied evolutionary responses are described in detail. Atention is drawn to the second movement where there is an apparent disconnect between a rise in encephalization and a stasis in material culture. This disconnect is used to discuss the co-evolutionary relationship that existed between materials and emotions to solve cognitive problems but which, at diferent times, ampliied one resource rather than the other. We conclude that the shape of the Palaeolithic is best conceived as a gradient of change rather than a set of step-like revolutions in society and culture.

Glenberg 2008

Arthur M. Glenberg, *Radical changes in cognitive process due to technology, A jaundiced view*. In: Itiel E. Dror & Stevan Harnad (Hrsg.), *Cognition Distributed, How cognitive technology extends our minds*. Benjamins Current Topics 16 (Amsterdam 2008), 71–82.

A strong case can be made that the cognitive system is designed for guiding action, not, for example, symbol manipulation. I review empirical work demonstrating the link between action and cognition with special attention to the processes of language comprehension. Next, I sketch an embodied cognition framework for integrating work on language understanding with a more general approach to cognition and action. This general approach considers contributions to action of bodily states, emotions, social and cultural processes, and learning within a framework that generates a dynamic system. This framework is used to consider the notion of distributed cognition and the prospects that technology might induce substantial changes in cognition. My assessment is that such changes are unlikely.

Keywords: embodied cognition, language comprehension, distributed cognition, action

Goldman 2011
Alvin I. Goldman, *Two Routes to Empathy, Insights from Cognitive Neuroscience*. In: Amy Coplan & Peter Goldie (Hrsg.), *Empathy, Philosophical and Psychological Perspectiues*. (Oxford 2011), 31–44.

Griffiths 2006
Paul E. Griffiths, *Evolutionary Psychology: History and Current Status*. In: Sahotra Sarkar (Hrsg.), *The Philosophy of Science: An Encyclopedia*. (New York 2006).

Henshilwood 2011
Christopher Stuart Henshilwood & Benoît Dubreuil, *The Still Bay and Howiesons Poort, 77–59 ka, Symbolic Material Culture and the Evolution of the Mind during the African Middle Stone Age*. Current Anthropology **52** (2011), 361–400.
Variations in the material culture in Africa in the Late Pleistocene indicate that it was a period of rapid cultural change not previously observed in the Middle Stone Age. In southern Africa, two techno-traditions, the Still Bay and the Howiesons Poort, have raised interest because of their relatively early cultural complexity. What might have driven the development of the innovative practices and ideas between ca. 77,000 and 59,000 years ago? Explanations for the ascent and demise of these two entities must focus on analyses of recovered materials and in situ features such as hearths and spatial patterning. They must also consider whether these innovations are likely to have ensued fromcognitive evolution in Homo sapiens and trace the changes in brain organization and cognitive functions that best explain them. This article presents an updated review of the Still Bay and Howiesons Poort industries and argues that innovations during the Late Pleistocene must be related to a previous expansion of the higher association areas of the temporal and parietal cortices underlying higher theory of mind, perspective taking, and attentional flexibility.

Heyes 2012
Cecilia Heyes, *New thinking: the evolution of human cognition*. Phil. Trans. Royal Society B **367** (2012), 2091–2096.
Humans are animals that specialize in thinking and knowing, and our extraordinary cognitive abilities have transformed every aspect of our lives. In contrast to our chimpanzee cousins and Stone Age ancestors, we are complex political, economic, scientific and artistic creatures, living in a vast range of habitats, many of which are our own creation. Research on the evolution of human cognition asks what types of thinking make us such peculiar animals, and how they have been generated by evolutionary processes. New research in this field looks deeper into the evolutionary history of human cognition, and adopts a more multi-disciplinary approach than earlier 'Evolutionary Psychology'. It is informed by comparisons between humans and a range of primate and non-primate species, and integrates findings from anthropology, archaeology, economics, evolutionary biology, neuroscience, philosophy and psychology. Using these methods, recent research reveals profound commonalities, as well striking differences, between human and non-human minds, and suggests that the evolution of human cognition has been much more gradual and incremental than previously assumed. It accords crucial roles to cultural evolution, techno-social co-evolution and gene–culture co-evolution.

These have produced domain-general developmental processes with extraordinary power—power that makes human cognition, and human lives, unique.
Keywords: cognition; evolution of cognition; cognitive development; social cognition; cultural evolution; human evolution

Jerardino 2010

Antonieta Jerardino & Curtis W. Marean, *Shellfish gathering, marine paleoecology and modern human behavior: Perspectives from cave PP13B, Pinnacle Point, South Africa*. Journal of Human Evolution **59** (2010), 412–424.
Systematic collection of shellfish has been increasingly recognized as an important component of human adaptation to aquatic environments and as part of the archaeological evidence found in association with the appearance of early Homo sapiens. Over the last forty years, South Africa has played a prominent role in recording the earliest evidence of shellfish in and substantial expansion of the early human diets as shown by several Middle Stone Age (MSA) coastal sites along the west and south coasts. In this paper, we report on the abundance of marine invertebrate species from PP13B cave and interpret these abundances in terms of paleoenvironmental changes, the likely shellfish procurement behaviors involved in both rocky and sandy shore contexts, and the significance of the collection of marine shells for purposes other than food collection. Possible cognitive implications of shellfish gathering as a reflection of modern behavior are also suggested.
Keywords: Middle Stone Age | Mossel Bay | Shell midden | Mollusks

Karlin 1994

C. Karlin & M. Julien, *Prehistoric technology: a cognitive science?* In: Colin Renfrew & Ezra B. W. Zubrow (Hrsg.), *The ancient mind, Elements of cognitive archaeology*. New Directions in Archaeology (Cambridge 1994), 152–164.

Langbroek 2012

Marco Langbroek, *Trees and ladders: A critique of the theory of human cognitive and behavioural evolution in Palaeolithic archaeology*. Quaternary International **270** (2012), 4–14.
QuatInt270-004-Comment1.pdf
The modern biological model of (human) evolution is that of a branching tree. By contrast, prevailing models for human cognitive evolution remain unilinear in character, representing a ladder. The linear ladder model is the result of the opposition of an ethnographic and a primate reference frame for cognition, representing the two ends of what by definition becomes a linear line of evolution. It forces all types of behaviour that are not considered fully "modern" to assume a position at a lower level of cognition. The linear model is in addition pushed by the (flawed) perception of a linear encephalization trend over time. The structure of this linear model is not fundamentally based in either modern evolutionary theory or the archaeological record. The model itself is even structurally immune to constraints from pertinent data. Adopting a branching tree model instead has serious implications for views on hominin cognition and particularly the meaning of being "behaviourally modern". In a branching model, "modern behaviour" no longer has a unique status as being by necessity the most sophisticated level of cognition, turning many of the traditional implications derived from the possession of "modern behaviour" moot. The challenge that adoption of a branching tree model creates is that ways have to be devised to account for unique cognitive

expressions that are not covered by the existing framework of ethnography and primatology. In addition, notions about the "superiority" of "modern behaviour" over other forms of cognitive expression have to be abandoned. The advantage is that the model is structured to pertinent archaeological data and actually testable with archaeological data. Two case studies from the Lower and Middle Palaeolithic of Europe probe the construction of unique models for mobility strategies "bottom up" from archaeological data, providing a unique alternative to mobility models and their cognitive implications as derived from "bottom down" application of an ethnoprimatological framework.
In his paper "Trees and ladders: A critique of the theory of human cognitive and behavioural evolution in Palaeolithic archaeology", Marco Langbroek puts forward an important argument against simply using linear methodologies in cognitive archaeology (CA). In this comment I shall argue that the reasons why linear models are problematic are not those proposed by Langbroek but rather lie in weaknesses in the way in which arguments based on models have generally been constructed. Top-down and bottom-up approaches in CA should not be viewed as in opposition, but rather as making complementary contributions within the generation of well-formed families of models. The real problem with linear models arises when flawed theories of behavioral systems are improperly mapped onto mental systems, on the basis of arbitrary rules of connection and unsubstantiated assumptions. Neglecting reference to precise analytic categories is a particularly crucial problem in CA, and this applies also with some aspects of Langbroek's argument. To highlight and overcome these issues with the author's original formulation, I shall suggest the formulation be augmented by implementing some recently introduced epistemic tools for CA.
Keywords: Cognitive archaeology, Epistemology, Incommensurability, Holistic Mapping.

Layton 2011

Robert Layton, *Aesthetics: The Approach from Social Anthropology*. In: Elisabeth Schellekens & Peter Goldie (Hrsg.), *The Aesthetic Mind*, *Philosophy and Psychology*. (Oxford 2011), 208–222.

The evidence from studies of facial attractiveness leaves little doubt that aesthetic appreciation of symmetry is grounded in our evolved psychology, but that is only part of the story. The evidence is penuasive because it is experimentally demonstrable among living people. Geoffrey Miller's imaginative reconstruction of the environment for which art originally became adaptive, however, shows that the Functionalists' warning about the dangers of speculative history remains valid. If the Wola model their ceremonial headdresses and dancing on the behaviour of the bowerbird and birds of paradise, this is not because their rituals are a survival from humanity's original condition, but because they have noted the same analogy between human and bird behaviour that inspired Miller. Different analogies with bird behaviour are noted by other New Guinea Highland communities. The people of Mt. Hagen told Andrew and Marilyn Strathem that men use the resin of the kilt tree in their ceremonial wigs, for it helps men to get women ... It is the brightness of the kilt tree's red flowers which attract flocks of birds to it, and we attract women in the same way' (Strathem and Strathem 1971:89–90). The bowerbird analogy is not unique.

Lemonnier 1986

Pierre Lemonnier, *The Study of Material Culture Today: Toward an Anthropology of Technical Systems*. Journal of Anthropological

Archaeology **5** (1986), 147–186.

Lombard 2012
Marlize Lombard & Miriam Noël Haidle, *Thinking a Bow-and-arrow Set: Cognitive Implications of Middle Stone Age Bow and Stone-tipped Arrow Technology*. Cambridge Archaeological Journal **22** (2012), 237–264.
For various reasons increased effort has recently been made to detect the early use of mechanically-projected weaponry in the archaeological record, but little effort has yet been made to investigate explicitly what these tool sets could indicate about human cognitive evolution. Based on recent evidence for the use of bow-and-arrow technology during the Middle Stone Age in southern Africa by 64 kya, we use the method of generating and analysing cognigrams and effective chains to explore thought-and-action sequences associated with this technology. We show that, when isolated, neither the production of a simple bow, nor that of a stone-tipped arrow, can be reasonably interpreted to indicate tool behaviour that is cognitively more complex than the composite artefacts produced by Neanderthals or archaic modern Homo. On the other hand, as soon as a bow-and-arrow set is used as an effective group of tools, a novel cognitive development is expressed in technological symbiosis, i.e. the ability to conceptualize a set of separate, yet inter-dependent tools. Such complementary tool sets are able to unleash new properties of a tool, inconceivable without the active, simultaneous manipulation of another tool. Consequently, flexibility regarding decision-making and taking action is amplified. The archaeological evidence for such amplified conceptual and technological modularization implies a range of cognitive and behavioural complexity and flexibility that is basic to human behaviour today.

Marean 2011
Curtis W. Marean, *Coastal South Africa and the Coevolution of the Modern Human Lineage and the Coastal Adaptation*. In: Nuno F. Bicho, Jonathan A. Haws & Loren G. Davis (Hrsg.), *Trekking the Shore, Changing Coastlines and the Antiquity of Coastal Settlement*. Interdisciplinary contributions to archaeology (New York 2011), 421–440.
The south coast of South Africa has an unusual confluence of plant diversity, coastline richness, and moderate climate that I think provided the ideal conditions for a refuge for the bottlenecked modern human lineage during the long cold MIS6. The expansion of this populationÆs diet to shellfish was likely crucial to their survival and provided the ideal conditions for the development of the complexities in behavior expressed in the archaeological record from this region. The earliest evidence for shellfish exploitation comes from this region at 164 ka, but I suspect that early modern humans were exploiting shellfish out on the now submerged continental shelf before this date. I have proposed that their ability to expand their diet to this new resource was a benefit of the development of the modern human cognition that appeared coincident with the origin of the modern human lineage. A complex cognition characterized by fully modern working memory and executive functions allowed them to link lunar phases to tidal rhythms and, thus, develop an effective way to schedule visits to the coast in a manner that maximized returns from the coastal resources. Once this was done, this set in motion a progressive increase in the complexity of the marine adaptation along with an increasing emphasis on coastal resources that culminated by 90 ka with dense shell midden accumulations with collection at the Lower Balanoid Zone and Cochlear Zone, and the use of

both rocky and sandy beach contexts. Throughout this time, there is regular, but rare, use of marine mammals such as Cape fur seal and whales, probably through scavenging. By 70 ka, there is the first rare evidence for fishing (Henshilwood et al. 2001b). Upon entering the Holocene, the full range of coastal prey, short of deep-sea fishing and diving, is common in South African sites (Jerardino et al. 2008).
The expansion of the diet to marine foods must have had major, cascading impacts on human diet, nutrition, technology, and mobility. Omega-3 fatty acids are critical to healthy brain growth and placental development, and while marine foods are not the only source (Langdon 2007), they are the best source and their addition to the diet can have substantial fitness benefits (Broadhurst et al. 2002). Unlike the latter authors (see also (Parkington 2003; Parkington et al. 2009)), I do not think that the addition of marine foods stimulated the development of the modern human cognition. Rather, this dietary expansion was a consequence of that cognition. I do agree though that a coastal niche provided excellent incubation conditions for the material cultural expression of behavioral complexity and may explain the rather singular material cultural complexity evident in the South African archaeological record during this crucial phase in the origins of modern humans.
Coastal adaptations facilitate larger group size and reduced mobility (Erlandson 2001). These larger group sizes place added selective pressure on more effective mechanisms for mediation of social relationships. The typical economic contract between men and women, where men provide the protein, is challenged by the coastal adaptation, with possible widespread effects on intersex relations. We can possibly expect social structures with greater evenness if protein is supplied by women (Hawkes 1996; Hawkes and Bliege-Bird 2002) but also by women collecting shellfish in relatively unthreatening circumstances with their children. With further fieldwork, high-quality methods, and highly resolved chronology, we may be able to investigate these interesting possibilities with this rich coastal archaeological record.

Menary 2010

Richard Menary (Hrsg.), *The Extended Mind*. Life and Mind: Philosophical Isues in Biology and Psychology (Cambridge 2010).

Parkington 2001

John Parkington, *Milestones: the Impact of the Systematic Exploitation of Marine Foods on Human Evolution*. In: Phillip V. Tobias, Michael A. Raath, Jacopo Mogg-Cecchi & Gerald A. Doyle (Hrsg.), *Humanity from African Naissance to Coming Millenia: Colloquia in Human Biology and Palaeoanthropology*. (Firenze 2001), 327–336.
The earliest shell middens arguably represent the beginning of systematic and regular exploitation of marine foods, including intertidal shellfish. At this pint there is excellent evidence for many lasr interglacial shell middens along the southern and western coast of the Cape in South Africa and less convincing evidence of shelllfish gathering araound the shores of the Mediterranean Sea. The juxtaposition of unproductive terrestrial and rich offshore ecosystems may help explain these early occurrences. Because marine foods are rich in omega-3 long chain polyunsaturated fatty acids (LC PUFA) they would provide the nutritional substrate that would have allowed the selection of larger brains. More specifically, women would have been able to access high quality foods during pregnancy and lactation, the critical times when most LC PUFA need to be eaten to maximise brain growth. The evidence is

consistent with the scenario of a shift toward greater and more systematic exploitation of marine foods by the beginning of the late Pleistocene in the Cape, leading to the expansion of brain size and appearance of behavioural traits recognisable as the emergence of anatomically and behaviourally modern people.
Keywords: marine food, fatty acids, Pleistocene, South Africa

Pedersen 2013

Eric J. Pedersen, Robert Kurzban & Michael E. McCullough, *Do humans really punish altruistically? A closer look*. Proc. Royal Society B (2013), preprint, 1–8. DOI:10.1098/rspb.2012.2723.
ProcRSocB2013-preprint-Supplement0319-1.docx, ProcRSocB2013-preprint-Supplement0319-2.xls
Some researchers have proposed that natural selection has given rise in humans to one or more adaptations for altruistically punishing on behalf of other individuals who have been treated unfairly, even when the punisher has no chance of benefiting via reciprocity or benefits to kin. However, empirical support for the altruistic punishment hypothesis depends on results from experiments that are vulnerable to potentially important experimental artefacts. Here, we searched for evidence of altruistic punishment in an experiment that precluded these artefacts. In so doing, we found that victims of unfairness punished transgressors, whereas witnesses of unfairness did not. Furthermore, witnesses' emotional reactions to unfairness were characterized by envy of the unfair individual's selfish gains rather than by moralistic anger towards the unfair behaviour. In a second experiment run independently in two separate samples, we found that previous evidence for altruistic punishment plausibly resulted from affective forecasting error—that is, limitations on humans' abilities to accurately simulate how they would feel in hypothetical situations. Together, these findings suggest that the case for altruistic punishment in humans—a view that has gained increasing attention in the biological and social sciences—has been overstated.
Keywords: cooperation, altruistic punishment, third-party punishment, affective forecasting, evolutionary psychology

Pinker 1999

Steven Pinker, *How the Mind Works*. Annals of the New York Academy of Sciences **882** (1999), 119–127.

Robson 2008

Shannen L. Robson & Bernard Wood, *Hominin life history: reconstruction and evolution*. Journal of Anatomy **212** (2008), 394–425.
In this review we attempt to reconstruct the evolutionary history of hominin life history from extant and fossil evidence. We utilize demographic life history theory and distinguish life history variables, traits such as weaning, age at sexual maturity, and life span, from life history-related variables such as body mass, brain growth, and dental development. The latter are either linked with, or can be used to make inferences about, life history, thus providing an opportunity for estimating life history parameters in fossil taxa. We compare the life history variables of modern great apes and identify traits that are likely to be shared by the last common ancestor of Pan-Homo and those likely to be derived in hominins. All great apes exhibit slow life histories and we infer this to be true of the last common ancestor of Pan-Homo and the stem hominin. Modern human life histories are even slower, exhibiting distinctively long post-menopausal life spans and later ages at maturity, pointing to a reduction in adult mortality since the Pan-Homo split.

We suggest that lower adult mortality, distinctively short interbirth intervals, and early weaning characteristic of modern humans are derived features resulting from cooperative breeding. We evaluate the fidelity of three life history-related variables, body mass, brain growth and dental development, with the life history parameters of living great apes. We found that body mass is the best predictor of great ape life history events. Brain growth trajectories and dental development and eruption are weakly related proxies and inferences from them should be made with caution. We evaluate the evidence of life history-related variables available for extinct species and find that prior to the transitional hominins there is no evidence of any hominin taxon possessing a body size, brain size or aspects of dental development much different from what we assume to be the primitive life history pattern for the Pan-Homo clade. Data for life history-related variables among the transitional hominin grade are consistent and none agrees with a modern human pattern. Aside from mean body mass, adult brain size, crown and root formation times, and the timing and sequence of dental eruption of Homo erectus are inconsistent with that of modern humans. Homo antecessor fossil material suggests a brain size similar to that of Homo erectus s.s., and crown formation times that are not yet modern, though there is some evidence of modern human-like timing of tooth formation and eruption. The body sizes, brain sizes, and dental development of Homo heidelbergensis and Homo neanderthalensis are consistent with a modern human life history but samples are too small to be certain that they have life histories within the modern human range. As more life history-related variable information for hominin species accumulates we are discovering that they can also have distinctive life histories that do not conform to any living model. At least one extinct hominin subclade, Paranthropus, has a pattern of dental life history-related variables that most likely set it apart from the life histories of both modern humans and chimpanzees.

Keywords: dentition; encephalization; evolution; growth and development; hominin life history

Soressi 2011

Marie Soressi & Jean-Michel Geneste, *The History and Efficacy of the Chaîne Opératoire Approach to Lithic Analysis: Studying Techniques to Reveal Past Societies in an Evolutionary Perspective*. PaleoAnthropology **2011**, 334–350.

We present here a brief history of the origins and development of the concept of chaîne opératoire, followed by details of the theory of the technological approach (including the protocol), in order to illustrate the gradual shift in lithic analyses in France:

– from a Natural Science, and the study of the "progressive development of Prehistoric Humans,"

– to Anthropology, and the use of techniques to investigate societies through an evolutionary perspective.

We also elaborate/provide insights on the limits, advantages, and potential future directions for the technological approach. Throughout this paper, we focus on the technological approach developed in France and give examples taken mainly from the Middle Paleolithic, our main area of expertise.

Spikins 2010

Penny Spikins, Holly Rutherford & Andy Needham, *The Prehistory of Compassion*. (San Francisco 2010).

Compassion is key to what we feel makes us 'human'. Compassion binds us together, and acts of unselfish compassion inspire us and in troubled times give us

hope for the world. Yet compassion is also remarkably fragile and elusive. As soon as we feel stressed or under pressure we can easily lose our sense of compassion for others (or indeed for ourselves), and as soon as we seek to understand or analyse our own sense of compassion we lose our feeling of this emotion. This apparent fragility of compassion makes addressing the evidence for its development in our most ancient ancestors a unique challenge, yet the archaeological record nonetheless has an important story to tell about the prehistory of compassion. In this volume we review the archaeological evidence for what can be seen as compassionate behaviour from our earliest ancestors to later archaic humans including the Neanderthals to modern humans like ourselves. Through discussing the evidence for a deep seated capacity to care in our ancient past we hope to begin to tell the story of the prehistory of compassion and perhaps to inspire further research.

Stueber 2013

Karsten Stueber, *Empathy*. In: Edward N. Zalta (Hrsg.), *Stanford Encyclopedia of Philosophy*. (2013). <http://plato.stanford.edu/entries/empathy/> (2013-03-24).

Despite its linguistic roots in ancient Greek, the concept of empathy is of recent intellectual heritage. Yet its history has been varied and colorful, a fact that is also mirrored in the multiplicity of definitions associated with the empathy concept in a number of different scientific and non-scientific discourses. In its philosophical heyday at the turn of the 19th to the 20th century, empathy had been hailed as the primary means for gaining knowledge of other minds and as the method uniquely suited for the human sciences, only to be almost entirely neglected philosophically for the rest of the century. Only recently have philosophers become again interested in empathy in light of the debate about our folk psychological mindreading capacities. In the second half of the last century, the task of addressing empathy was mainly left to psychologists who thematized it as a psychological phenomenon and process to be studied by the method of the empirical sciences. Particularly, it has been studied by social psychologists as a phenomenon assumed to be causally involved in creating prosocial attitudes and behavior. Nevertheless, within psychology it is at times difficult to find agreement of how exactly one should understand empathy; a fact of which psychologists themselves have become increasingly aware. The purpose of this entry is to clarify the empathy concept by surveying its history in various philosophical and psychological discussions and by indicating why empathy was and should be regarded to be of such central importance in understanding human agency in ordinary contexts, in the human sciences and for the constitution of ourselves as social and moral agents.

Sumner 2011

T. Alexandra Sumner, *Psychological components of middle paleolithic technology: The proceduralization of lithic core reduction*. Journal of Anthropological Archaeology **30** (2011), 416–431.

Exploring the evolution of human cognition has been as methodologically problematic as it has been a vital area of study over the last couple of decades. In particular, the integration of archaeology and psychology, while fundamental to many such studies, has suffered from a difficulty by many researchers to effectively link models from the cognitive sciences with the archaeological data (Wynn, 2009; Wynn and Coolidge, 2010). In the current study one psychological process, proceduralization is used to examine the technological strategies that underpin the sequential nature of lithic core reduction. This is done via the application of sequential lithic information analysis (SLIA), a method developed by the author for the concurrent study of qualitative and quantitative sequential information. In

the present context SLIA helps elucidate both the micro- and macro-level dynamics that underlie the reduction of a sample of Middle Paleolithic refitted Levallois cores from the site of Taramsa-1, Upper Egypt. The results of this study provide an explanation for the variability recognised within the Levallois technology and also speak to the existence of certain aspects of modern cognition by ca. 70,000 years before present.
Keywords: Cognition | Lithic analysis | Sequential lithic information analysis | Chaîne opératoire | Sequential data | Proceduralization | Levallois technology | Technological behaviour

Tobias 2001

Phillip V. Tobias, Michael A. Raath, Jacopo Mogg-Cecchi & Gerald A. Doyle (Hrsg.), *Humanity from African Naissance to Coming Millenia: Colloquia in Human Biology and Palaeoanthropology*. (Firenze 2001).

Wilson 2005

Robert A. Wilson, *Collective memory, group minds, and the extended mind thesis*. Cognitive Processing **6** (2005), 227–236.
While memory is conceptualized predominantly as an individual capacity in the cognitive and biological sciences, the social sciences have most commonly construed memory as a collective phenomenon. Collective memory has been put to diverse uses, ranging from accounts of nationalism in history and political science to views of ritualization and commemoration in anthropology and sociology. These appeals to collective memory share the idea that memory "goes beyond the individual" but often run together quite different claims in spelling out that idea. This paper reviews a sampling of recent work on collective memory in the light of emerging externalist views within the cognitive sciences, and through some reflection on broader traditions of thought in the biological and social sciences that have appealed to the idea that groups have minds. The paper concludes with some thoughts about the relationship between these kinds of cognitive metaphors in the social sciences and our notion of agency.

Wynn 2011

Thomas Wynn & Frederick L. Coolidge, *The Implications of the Working Memory Model for the Evolution of Modern Cognition*. International Journal of Evolutionary Biology **2011**, 741357. DOI:10.4061/2011/741357.
What distinguishes the cognition of biologically modern humans from that of more archaic populations such as Neandertals? The norm in paleoanthropology has been to emphasize the role of language and symbolism. But the modern mind is more than just an archaic mind enhanced by symbol use. It also possesses an important problem solving and planning component. In cognitive neuroscience these advanced planning abilities have been extensively investigated through a formal model known as working memory. The working memory model is now well-enough established to provide a powerful lens through which paleoanthropologists can view the fossil and archaeological records. The challenge is methodological. The following essay reviews the controversial hypothesis that a recent enhancement of working memory capacity was the final piece in the evolution of modern cognition.

Zaidel 2011
Dahlia W. Zaidel, *Neuroscience, Biology, and Brain Evolution in Visual Art*. In: Elisabeth Schellekens & Peter Goldie (Hrsg.), *The Aesthetic Mind, Philosophy and Psychology*. (Oxford 2011), 44–53.

Biologie

Bennett 2013
T. H. Bennett, T. J. Flowers & L. Bromham, *Repeated evolution of salt-tolerance in grasses*. Biology Letters (2013), preprint, 1–4. DOI:10.1098/rsbl.2013.0029.
BiolLett2013-preprint-Supplement0319.doc
The amount of salt-affected agricultural land is increasing globally, so new crop varieties are needed that can grow in salt-affected soils. Despite concerted effort to develop salt-tolerant cereal crops, few commercially viable salt-tolerant crops have been released. This is puzzling, given the number of naturally salt-tolerant grass species. To better understand why salttolerance occurs naturally but is difficult to breed into crop species, we take a novel, biodiversity-based approach to its study, examining the evolutionary lability of salt-tolerance across the grass family. We analyse the phylogenetic distribution of naturally salt-tolerant species on a phylogeny of 2684 grasses, and find that salt-tolerance has evolved over 70 times, in a wide range of grass lineages. These results are confirmed by repeating the analysis at genus level on a phylogeny of over 800 grass genera. While salt-tolerance evolves surprisingly often, we find that its evolution does not often give rise to a large clade of salt-tolerant species. These results suggest that salt-tolerance is an evolutionarily labile trait in grasses.
Keywords: halophyte, phylogeny, Poaceae

Klima

Brook 2013
Edward J. Brook, *Leads and Lags at the End of the Last Ice Age*. science **339** (2013), 1042–1043.
Carbon dioxide concentrations and Antarctic temperatures were tightly coupled during the last deglaciation.

Parrenin 2013
F. Parrenin et al., *Synchronous Change of Atmospheric CO_2 and Antarctic Temperature During the Last Deglacial Warming*. science **339** (2013), 1060–1063.
s339-1060-Supplement1.pdf
F. Parrenin, V. Masson-Delmotte, P. Köhler, D. Raynaud, D. Paillard, J. Schwander, C. Barbante, A. Landais, A. Wegner & J. Jouzel
Understanding the role of atmospheric CO2 during past climate changes requires clear knowledge of how it varies in time relative to temperature. Antarctic ice cores preserve highly resolved records of atmospheric CO2 and Antarctic temperature for the past 800,000 years. Here we propose a revised relative age scale for the concentration of atmospheric CO2 and Antarctic temperature for the last deglacial warming, using data from five Antarctic ice cores. We infer the phasing between CO2 concentration and Antarctic temperature at four times when their

trends change abruptly. We find no significant asynchrony between them, indicating that Antarctic temperature did not begin to rise hundreds of years before the concentration of atmospheric CO2, as has been suggested by earlier studies.

Methoden

Schmidt 2012

Isabell Schmidt & Vincent Mom, *Computer-aided classification of archaeological objects, Methodological issues in comparing shapes of Solutrean points*. In: João Cascalheira & Célia Gonçalves (Hrsg.), *Actas das IV Jornadas de Jovens em Investigação Arqueológica – JIA 2011, Vol. I, Faro, 11 a 14 de Maio de 2011*. Promontoria Monográfica 16 (Faro 2012), 39–46.

An important part of the craftsmanship of archaeologists lies in their ability to recognize and categorize archaeological objects. The use of computer programs may improve the objectivity, efficiency and reproducibility in this area considerably. We present the computer program SECANTO (the Section Analysis Tool) which is designed to compare shapes of archaeological objects. It was developed to retrieve the best lookalikes of prehistoric pottery. The SECANTO version presented here was especially adapted for usage with lithic Solutrean points. Currently we apply the program to objectify existing typological classifications of shapes of Solutrean lithic points from the Iberian Peninsula. Our lithic data base contains over three hundred complete Solutrean points, whose shapes were compared to each other using SECANTO. The output of the program is a distance matrix. These distances are a measure for the dissimilarities between the points. The distance matrix serves as input for statistical programs to visualize and explore groupings of points. The quantification of the dissimilarity between shapes of Solutrean points allows the (reproducible) recognition and evaluation of patterns and abnormalities. We will discuss methodological considerations which also stimulate thoughts about the usefulness of an "objective" program in the area of typologies as well as possible future applications.

Keywords: Computer applications; Morphology; Solutrean points; Typology

Religion

Mithen 2009

Steven Mithen, *Out of the mind: material culture and the supernatural*. In: Colin Renfrew & Iain Morley (Hrsg.), *Becoming Human: Innovation in prehistoric material and spiritual culture*. (Cambridge 2009), 123–134.

Story or Book

Hawks 2013

John Hawks, *Twisting the tale of human evolution*. nature **495** (2013), 172.

John Hawks enjoys a debunking of myths about our evolutionary fitness for the twenty-first century.

Paleofantasy: What Evolution Really Tells us About Sex, Diet, and How We Live. Marlene Zuk. W. W. Norton: 2012. 336 pp. £17.99

As an anthropologist, I observe that Zuk's use of the term 'fantasy' is just an emphatic way of describing the hypothesis-forming that is essential to evolutionary science. We play with hypotheses, explore their predictions and try very hard to falsify them. So it is, in a way, unremarkable that so many hypotheses proposed by anthropologists about ancient environments now seem to be wrong — and, in a few cases, even ridiculous.