

Winter Semester 2018-19

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN



HUMAN ORIGINS

Lecture: Mondays, 12-14:00 c.t.

Institut für Naturwissenschaftliche Archäologie, Rümelinstraße 23, Room 703

INSTRUCTORS

Dr. Christian Bentz (linguistics), christian.bentz@uni-tuebingen.de

Dr. Hugo Reyes-Centeno (paleoanthropology), hugo.reyes-centeno@uni-tuebingen.de

Dr. Yonatan Sahle (archaeology), yonatan.sahle@uni-tuebingen.de

COURSE DESCRIPTION

This course introduces the evolutionary study of the modern human lineage, with a review of the biological, cultural, and linguistic diversity of human populations over the last million years. It commences with an introduction to key concepts in evolutionary theory and their application to the study of humans. The course provides a survey of the fossil and archaeological records of the genus *Homo* and the speciation or divergence of human populations, including the emergence of human populations that anatomically resemble people living today and their associated cultural assemblages and behavioral repertoires. Likewise, the instructors will provide a historical overview of how advances in evolutionary theory, including the modern synthesis of the mid-twentieth century, have shaped our understanding of human evolution. In doing so, they set the stage for critically examining the origins of anatomical and behavioral modernity, as well as the co-evolution of biology and culture in human populations. The course is then divided into sections corresponding to the instructor's specializations in archaeology, paleoanthropology, and linguistics, providing a more comprehensive overview of how each discipline informs the emergence of biocultural modernity. Students enrolled in Winter Semester 2018-19 will attend the fourth annual, international symposium of the DFG Center for Advanced Studies "Ancient Connections in Eurasia." The course will be of interest to undergraduate students in archaeology, linguistics, paleoanthropology, prehistory, and evolutionary biology.

Students in archaeological science (Faculty of Science) can complete this course for 3 ECTS.

Students in linguistics (Faculty of Philosophy) can complete this course for 6 ECTS under one of the following modules: (1) BA Linguistics: Variation, Evolution & Change; (2) MA Linguistics: Language, Variation & Change; (3) MA Linguistics: Research Trends 1.

COURSE GRADE

Written exam: mix of multiple-choice, short-answer, and essay (90 minutes). For linguistics students, the exam will be tailored to include mainly questions on language evolution.

COURSE OUTLINE

Oct 22 Anatomical and behavioral modernity (Bentz, Reyes-Centeno, and Sahle):

- Evolutionary theory; history and philosophy of the science of human evolution
- The modernity paradigm; gradual and punctuated change across time and space
- Current debates in the study of modern human origins

(Sahle, Reyes-Centeno, and Bentz 2018)

Oct 29 Archaeology at the dawn of modern humans (Sahle)

- Overview of the Early-Middle Pleistocene archaeological record
- The African “Middle Stone Age”
- The “Middle Paleolithic” of Eurasia

(Richter 2011; Toth and Schick 2015; Wadley 2013; Sahle et al. forthcoming)

Nov 5 The archaeology of modern humans (Sahle)

- Complex technologies and behaviors: revolution or evolution?
- The Middle-Late Pleistocene archaeology of Africa
- The Middle to Upper Paleolithic transition in Eurasia

(Conard 2010; McBrearty and Brooks 2000; Roebroeks 2008; Wadley 2013)

Nov 12 The Out-of-Africa dispersal: An archaeological perspective (Sahle)

- Current views and appraisal of the archaeological evidence in hand
- The role of technology and behavior: Is modern as modern does, or looks?
- What archaeological evidence: future directions?

(Conard 2010; Groucutt et al. 2015; Shea 2011)

Nov 19 The Middle-Late Pleistocene fossil record of Africa and Eurasia (Reyes-Centeno)

- Chronology and stratigraphy of key fossil discoveries
- Classification, nomenclature, and taxonomy of fossils
- Anatomically modern humans and their contemporaries

(Bräuer 2015; White et al. 2003)

Nov 26 Genomics of modern human origins and dispersals (Reyes-Centeno)

- Genetics and genomics of recent human populations
- Ancient DNA and fossil calibration methods for dating key events in human evolution
- Inferences on human dispersals

(Nielsen et al. 2017; Reyes-Centeno 2016; Cavalli-Sforza and Feldman 2003)

Dec 3 Bio-cultural co-evolution and adaptations (Reyes-Centeno)

- Evolution by neutral and adaptive forces, modes of transmission
- Theoretical frameworks in the study of co-evolution
- Recent and prospective evolution in human populations

(Laland, Odling-Smee, and Myles 2010; Creanza and Feldman 2016; Renfrew 2010)

Dec 14-15 DFG Center symposium “Ancient Connections in Eurasia”
(Lectures in Alte Aula, Münzgasse 30. Schedule:
www.wordsandbones.uni-tuebingen.de/symposium2018)

Dec 22–Jan 6 Winter Break (no lectures)

Jan 7 Adaptive and Non-adaptive Theories of Language Evolution (Bentz)

- saltational vs. gradualist accounts
- language as combinatorial infinity

(Bentz 2018, p. 9-24; Berwick et al., 2013; Jäger & Rogers, 2012)

Jan 14 Preadaptations to Language (Bentz)

- The evolution of the vocal tract
- Brain areas relevant for language processing
- Genetic underpinnings of language

(Dediu & Christiansen 2016, Fitch 2010, p. 297-364; Fitch 2017)

Jan 21 Interfaces with Archaeology and Palaeoanthropology (Bentz)

- stone tool production and language
- cranial morphology in language evolution research
- linguistic archaeology and “fossils” of language

(Pagel, 2017; Albessard-Ball & Balzeau, 2018; Morgan et al. 2015)

Jan 28 Review and discussion

Feb 4 Exam

SUGGESTED TEXTBOOKS

Klein RG. 2009. *The Human Career: Human Biological and Cultural Origins*. Chicago: University of Chicago Press.

Fitch, W. Tecumseh. 2010. *The Evolution of Language*. Cambridge: Cambridge University Press.

Jobling M, Hurles M, and Tyler-Smith C. 2004. *Human Evolutionary Genetics: Origins, Peoples & Disease*. New York: Garland Science, Taylor & Francis Group.

Müller-Beck H. 2004. *Die Steinzeit: der Weg der Menschen in die Geschichte*. München: Verlag C.H. Beck.

Schrenk F. 2008. *Die Frühzeit des Menschen: Der Weg zum Homo sapiens*. München: Verlag C.H. Beck.

READING LIST

- Albessard-Ball, Lou, and Antoine Balzeau. 2018. Of tongues and men: A review of morphological evidence for the evolution of language. *Journal of Language Evolution* 3 (1): 79-89.
- Bentz, Christian. 2018. *Adaptive Languages: An Information-Theoretic Account of Linguistic Diversity*. Berlin: De Gruyter Mouton.
- Berwick, Robert C. Angela D. Friederici, Noam Chomsky, and Johan J. Bolhuis. 2013. Evolution, brain, and the nature of language. *Trends in Cognitive Sciences* 17 (2): 89-98.
- Bräuer, Günter. 2015. Origin of Modern Humans. In *Handbook of Paleoanthropology*, edited by W. Henke and I. Tattersall. Heidelberg: Springer-Verlag.
- Cavalli-Sforza, L. Luca, and Marcus W. Feldman. 2003. The application of molecular genetic approaches to the study of human evolution. *Nat Genet*.
- Christiansen, Morten H, and Simon Kirby. 2003. *Language evolution*. Oxford: Oxford University Press.
- Christiansen, Morten H., and Nick Chater. 2008. Language as shaped by the brain. *Behavioral and Brain Sciences* 31 (5):489-509.
- Conard, Nicholas J. 2010. Cultural modernity: Consensus or conundrum? *Proceedings of the National Academy of Sciences* 107 (17):7621-7622.
- Creanza, Nicole, and Marcus W. Feldman. 2016. Worldwide genetic and cultural change in human evolution. *Current Opinion in Genetics & Development* 41:85-92.
- Dediu, Dan, and Morten H. Christiansen. 2016. Language evolution: constraints and opportunities from modern genetics. *Topics in Cognitive Sciences* 8: 361-370.
- Fitch, Tecumseh W. 2017. Empirical approaches to the study of language evolution. *Psychonomic Bulletin & Review* 24: 3-33.
- Groucutt, Huw S., Michael D. Petraglia, Geoff Bailey, Eleanor M. L. Scerri, Ash Parton, Laine Clark-Balzan, Richard P. Jennings, Laura Lewis, James Blinkhorn, Nick A. Drake, Paul S. Breeze, Robyn H. Inglis, Maud H. Devès, Matthew Meredith-Williams, Nicole Boivin, Mark G. Thomas, and Aylwyn Scally. 2015. Rethinking the dispersal of *Homo sapiens* out of Africa. *Evolutionary Anthropology: Issues, News, and Reviews* 24 (4):149-164.
- Jäger, Gerhard, and James Rogers. 2012. Formal language theory: refining the Chomsky hierarchy. *Philosophical Transactions of the Royal Society* 367: 1956-1970.
- Klein, Richard G. 2017. Language and human evolution. *Journal of Neurolinguistics* 43 (Part B):204-221.
- Laland, Kevin N., John Odling-Smee, and Sean Myles. 2010. How culture shaped the human genome: bringing genetics and the human sciences together. *Nat Rev Genet* 11 (2):137-148.
- McBrearty, Sally, and Alison S. Brooks. 2000. The revolution that wasn't: a new interpretation of the origin of modern human behavior. *Journal of Human Evolution* 39 (5):453-563.
- Morgan, T. J. H., N. T. Uomini, L. E. Rendell, L. Chouinard-Thuly, S. E. Street, H. M. Lewis, C. P. Cross, C. Evans, R. Kearney, I. de la Torre, A. Whiten, and K. N. Laland. 2015. Experimental evidence for the co-evolution of hominin tool-making teaching and language. *Nature Communications* 6:6029.
- Nielsen, Rasmus, Joshua M. Akey, Mattias Jakobsson, Jonathan K. Pritchard, Sarah Tishkoff, and Eske Willerslev. 2017. Tracing the peopling of the world through genomics. *Nature* 541 (7637):302-310.
- Pagel, Mark. 2017. Darwinian perspectives on the evolution of human languages. *Psychonomic Bulletin & Review* 24: 151-157.
- Renfrew, Colin. 2010. Archaeogenetics - Towards a 'New Synthesis'? *Current Biology* 20 (4):R162-R165.
- Reyes-Centeno, Hugo. 2016. Out of Africa and into Asia: Fossil and genetic evidence on modern human origins and dispersals. *Quaternary International* 416:249-262.
- Richter, Jürgen. 2011. When did the Middle Paleolithic begin? In *Neanderthal Lifeways, Subsistence and Technology: One Hundred Fifty Years of Neanderthal Study*, edited by N. J. Conard and J. Richter. Dordrecht: Springer Netherlands.
- Roebroeks, Wil. 2008. Time for the Middle to Upper Paleolithic transition in Europe. *Journal of Human Evolution* 55 (5):918-926.
- Sahle, Yonatan, Beyene, Yonas, Defleur, Alban, Asfaw, Berhane, WoldeGabriel, Giday, Hart, William K, Renne, Paul R, Carlson, Joshua, White, Tim D. Human emergence: Perspectives from Herto, Afar Rift, Ethiopia. In: *Modern Human Origins and Dispersal*. Tübingen: Kerns Verlag.
- Sahle, Yonatan, Hugo Reyes-Centeno, and Christian Bentz. 2018. Modern human origins and dispersal: current state of knowledge and future directions. *Evolutionary Anthropology: Issues, News, and Reviews* 27 (2):64-67.
- Shea, John J. 2011. *Homo sapiens* is as *Homo sapiens* was. *Current Anthropology* 52 (1):1-35.

- Toth, Nicholas, and Kathy Schick. 2015. Overview of Paleolithic Archaeology. In *Handbook of Paleoanthropology*, edited by W. Henke and I. Tattersall. Berlin, Heidelberg: Springer.
- Wadley, Lyn. 2013. Recognizing Complex Cognition through Innovative Technology in Stone Age and Palaeolithic Sites. *Cambridge Archaeological Journal* 23 (2):163-183.
- White, Tim D., Berhane Asfaw, David DeGusta, Henry Gilbert, Gary D. Richards, Gen Suwa, and F. Clark Howell. 2003. Pleistocene *Homo sapiens* from Middle Awash, Ethiopia. *Nature* 423 (6941):742-747.