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References

Afrika

Connah 2004
: Graham Connah, *Unbekanntes Afrika, Archäologische Entdeckungen auf dem Schwarzen Kontinent.* (Darmstadt 2006).

Jesse 2004
: Friederike Jesse, *The Neolithic.* In: Derek Welsby (Hrsg.), *Sudan, Ancient Treasures, an Exhibition of Recent Discoveries.* (London 2004), 35–41.

Jesse 2004
: Friederike Jesse, *The Wadi Howar.* In: Derek Welsby (Hrsg.), *Sudan, Ancient Treasures, an Exhibition of Recent Discoveries.* (London 2004), 53–60.

Welsby 2004
: Derek Welsby (Hrsg.), *Sudan, Ancient Treasures, an Exhibition of Recent Discoveries.* (London 2004).

  A comprehensive survey of Sudanese ancient cultures, the history of archaeology in Sudan, current work and recent trends. The Sudan is the largest country in Africa. For millennia it has been the zone of contact between the peoples of Central Africa and those emanating from the Mediterranean world. The National Museum in Khartoum houses one of the finest collections of antiquities from the Nile Valley and is of international importance; however, the vast quantity of material is in store and has rarely if ever been seen by the public. This exhibition will seek to display some of the finest objects produced during all phases of human settlement from the Palaeolithic through to the Islamic period. A large number of these beautiful treasures will be on public display for the first time outside the Sudan and most are recent discoveries.

  Key items will seek to highlight the contrast between the world views of many Sudanese cultures: from the demonstrations of worldly power of the Kerma kings accompanied to their deaths by 400 sacrificed persons, to the humble graves of Christian rulers; from the grandiose temples built by the Egyptian Pharaohs to the churches and mosques of later periods.

Aktuell

Braje 2018
: Todd J. Braje, Torben C. Rick, Tom D. Dillehay, Jon M. Erlandson & Richard G. Klein, *Response.* science **359** (2018), 1225.

  Potter et al. underestimate the complexity of finding intact late Pleistocene coastal sites. Even in geological contexts where Pleistocene shorelines remain aboveground (such as in Alaska and British Columbia), coastal erosion and other

forces tend to ravage or obscure early sites. In contrast to the sustained and intensive efforts to identify early sites in interior regions, the search for Pleistocene sites in coastal settings is just getting started.

Correction 2018

J. H. Schwartz, F. D. Houghton, L. Bondioli & R. Macchiarelli, *Two tales of one city: data, inference and Carthaginian infant sacrifice, Corrigendum.* Antiquity **92** (2018), 279–280.

DeSilva 2018

Jeremy M. DeSilva, *Comment on "The growth pattern of Neandertals, reconstructed from a juvenile skeleton from El Sidrón (Spain)".* science **359** (2018), eaar3611.

Rosas et al. (Reports, 22 September 2017, p. 1282) calculate El Sidrón J1 to have reached only 87.5 % of its adult brain size. This finding is based on an overestimation of Neandertal brain size. Pairwise comparisons with a larger sample of Neandertal fossils reveal that it is unlikely that the brain of El Sidrón would have grown appreciably larger.

Gilbert 2018

Owen M. Gilbert, *Altruism or association?* PNAS **115** (2018), E3069–E3070.

What Wang and Lu (1) actually measure is how often birds join groups or nest alone. Their claim about altruism rests on the argument that only birds that join nests can "ever" help, while those that do not join never help. However, Wang and Lu do not show that birds that never help lack the genes for altruism.

By conflating "altruism" and "association," Wang and Lu (1) perpetuate what Hamilton (3) called "one of the most common misinterpretations" of his theory (4): that it predicts a dynamic equilibrium of indiscriminate altruists and nonaltruists.

Lazer 2018

David M. J. Lazer et al., *The science of fake news.* science **359** (2018), 1094–1096.

David M. J. Lazer, Matthew A. Baum, Yochai Benkler, Adam J. Berinsky, Kelly M. Greenhill, Filippo Menczer, Miriam J. Metzger, Brendan Nyhan, Gordon Pennycook, David Rothschild, Michael Schudson, Steven A. Sloman, Cass R. Sunstein, Emily A. Thorson, Duncan J. Watts and Jonathan L. Zittrain

An emphasis on fake news might also have the unintended consequence of reducing the perceived credibility of real news outlets. There is a great need for rigorous program evaluation of different educational interventions.

They use complex statistical models to predict and maximize engagement with content. It should be possible to adjust those models to increase emphasis on quality information. The platforms could provide consumers with signals of source quality that could be incorporated into the algorithmic rankings of content. They could minimize the personalization of political information relative to other types of content (reducing the creation of "echo chambers").

Potter 2018

Ben A. Potter et al., *Arrival routes of first Americans uncertain.* science **359** (2018), 1224–1225.

Ben A. Potter, Alwynne B. Beaudoin, C. Vance Haynes, Vance T. Holliday, Charles E. Holmes, John W. Ives, Robert Kelly, Bastien Llamas, Ripan Malhi, Shane Miller, David Reich, Joshua D. Reuther, Stephan Schiffels & Todd Surovell

All known populations in Siberia, Russian Far East, and Beringia had terrestrial-oriented economies and technologies, as did widespread Paleoindian groups, with limited evidence of coastal exploitation in lower latitudes. This empirical patterning suggests that they were more likely to follow a land route through Siberia, Beringia, and the Americas south of the ice sheets. Current studies indicate that deglaciation began 19,000 years ago and that an ice-free corridor, largely vegetated and free of proglacial lakes, existed by at least 15,000 to 14,000 years ago.

Rosas 2018

Antonio Rosas et al., *"The growth pattern of Neandertals, reconstructed from a juvenile skeleton from El Sidrón (Spain)", Response to Comment.* science **359** (2018), eaar3820.

Antonio Rosas, Luis Ríos, Almudena Estalrrich, Helen Liversidge, Antonio García-Tabernero, Rosa Huguet, Hugo Cardoso, Markus Bastir, Carles Lalueza-Fox, Marco de la Rasilla & Christopher Dean

The comment by DeSilva challenges our suggestion that brain growth of the El Sidrón J1 Neandertal was still incomplete at 7.7 years of age. Evidence suggests that endocranial volume is likely to represent less than 90 % adult size at El Sidrón as well as Neandertal male plus Krapina samples, in line with further evidence from endocranial surface histology and dural sinus groove size.

Ter-Mikaelian 2018

Maria Ter-Mikaelian, *Why our ways parted.* science **359** (2018), 1186.

My father has been a scientist for almost 40 years. I hadn't planned to follow in his footsteps, but to my surprise, I found myself drawn to research as an undergraduate. I went on to earn a Ph.D. in neuroscience, but I grew disillusioned and ultimately changed careers to become a science writer. Recently, I sat down with my father, who is currently a senior scientist at the Ontario Forest Research Institute in Canada, to reflect on what influenced his decision to stay in academia and mine to leave it. Our conversation has been translated from Russian and edited for brevity and clarity.

Vosoughi 2018

Soroush Vosoughi, Deb Roy & Sinan Aral, *The spread of true and false news online.* science **359** (2018), 1146–1151.

We investigated the differential diffusion of all of the verified true and false news stories distributed on Twitter from 2006 to 2017.The data comprise ≈126,000 stories tweeted by ≈3 million people more than 4.5 million times. We classified news as true or false using information from six independent fact-checking organizations that exhibited 95 to 98 % agreement on the classifications. Falsehood diffused significantly farther, faster, deeper, and more broadly than the truth in all categories of information, and the effects were more pronounced for false political news than for false news about terrorism, natural disasters, science, urban legends, or financial information. We found that false news was more novel than true news, which suggests that people were more likely to share novel information. Whereas false stories inspired fear, disgust, and surprise in replies, true stories inspired anticipation, sadness, joy, and trust. Contrary to conventional wisdom, robots accelerated the spread of true and false news at the same rate, implying that false news spreads more than the truth because humans, not robots, are more likely to spread it.

Wang 2018

Changcao Wang & Xin Lu, *On the relationship between association and altruism, Reply to Gilbert*. PNAS **115** (2018), E3071–E3072.

Finally, we would like to note a few misunderstandings by Gilbert. He cites that in a social amoeba there was little evidence for stable coexistence of altruistic and nonaltruistic phenotypes. This incorrectly equates nonaltruists in ground tits with cheaters in microorganisms, because the latter exploit public goods and thus are analogous to the recipients of altruism.

Wardrop 2018

N. A. Wardrop et al., *Spatially disaggregated population estimates in the absence of national population and housing census data*. PNAS **115** (2018), 3529–3537.

N. A. Wardrop, W. C. Jochem, T. J. Bird, H. R. Chamberlain, D. Clarke, D. Kerr, L. Bengtsson, S. Juran, V. Seaman & A. J. Tatem

Population numbers at local levels are fundamental data for many applications, including the delivery and planning of services, election preparation, and response to disasters. In resource-poor settings, recent and reliable demographic data at subnational scales can often be lacking. National population and housing census data can be outdated, inaccurate, or missing key groups or areas, while registry data are generally lacking or incomplete. Moreover, at local scales accurate boundary data are often limited, and high rates of migration and urban growth make existing data quickly outdated. Here we review past and ongoing work aimed at producing spatially disaggregated local-scale population estimates, and discuss how new technologies are now enabling robust and cost-effective solutions. Recent advances in the availability of detailed satellite imagery, geopositioning tools for field surveys, statistical methods, and computational power are enabling the development and application of approaches that can estimate population distributions at fine spatial scales across entire countries in the absence of census data. We outline the potential of such approaches as well as their limitations, emphasizing the political and operational hurdles for acceptance and sustainable implementation of new approaches, and the continued importance of traditional sources of national statistical data.

Keywords: population | census | remote sensing | geostatistics | surveys

Woods 2018

Kevin J. P. Woods,b & Josh H. McDermott, *Schema learning for the cocktail party problem*. PNAS **115** (2018), E3313–E3322.

pnas115-E03313-Supplement.pdf

The cocktail party problem requires listeners to infer individual sound sources from mixtures of sound. The problem can be solved only by leveraging regularities in natural sound sources, but little is known about how such regularities are internalized. We explored whether listeners learn source "schemas"—the abstract structure shared by different occurrences of the same type of sound source—and use them to infer sources from mixtures. We measured the ability of listeners to segregate mixtures of time-varying sources. In each experiment a subset of trials contained schema-based sources generated from a common template by transformations (transposition and time dilation) that introduced acoustic variation but preserved abstract structure. Across several tasks and classes of sound sources, schema-based sources consistently aided source separation, in some cases producing rapid improvements in performance over the first few exposures to a schema. Learning persisted across blocks that did not contain the learned schema, and

listeners were able to learn and use multiple schemas simultaneously. No learning was evident when schema were presented in the task-irrelevant (i.e., distractor) source. However, learning from task-relevant stimuli showed signs of being implicit, in that listeners were no more likely to report that sources recurred in experiments containing schema-based sources than in control experiments containing no schema-based sources. The results implicate a mechanism for rapidly internalizing abstract sound structure, facilitating accurate perceptual organization of sound sources that recur in the environment.

Keywords: auditory scene analysis | perceptual learning | implicit learning | statistical learning

Significance: The "cocktail party problem" is encountered when sounds from different sources in the world mix in the air before arriving at the ear, requiring the brain to estimate individual sources from the received mixture. Sounds produced by a given source often exhibit consistencies in structure that might be useful for separating sources if they could be learned. Here we show that listeners rapidly learn the abstract structure shared by sounds from novel sources and use the learned structure to extract these sounds when they appear in mixtures. The involvement of learning and memory in our ability to hear one sound among many opens an avenue to understanding the role of statistical regularities in auditory scene analysis.

Wright 2018

Meghan Wright, *Instagram won't solve inequality*. science **359** (2018), 1294.

Science Sam is a big name on campus. She's a Ph.D. candidate in the sciences who wants to pursue a career outside of academia, like me. But unlike me, she is our school's science communication, or #scicomm, superstar. Her Instagram page, which aims to show the "fun and trendy" side of science, was recently celebrated in the school's newsletter for increasing the public's trust in scientists. At a career workshop, graduate students were urged to follow Science Sam's example and use #scicomm to build our personal brands as we enter the job market. I already have an Instagram account, but it reflects my interests in photography and baking more than my love of science. The workshop got me thinking: Should my posts focus less on pastries and more on pipettes?

Anthropologie

Cesana-Arlotti 2018

Nicoló Cesana-Arlotti, Ana Martín, Ernõ Téglás, Liza Vorobyova, Ryszard Cetnarski & Luca L. Bonatti, *Precursors of logical reasoning in preverbal human infants*. science **359** (2018), 1263–1266.

s359-1263-Supplement.pdf, s359-1263-Supplement1.mov, s359-1263-Supplement2.mov, s359-1263-Supplement3.mov, s359-1263-Supplement4.mov, s359-1263-Supplement5.mov, s359-1263-Supplement6.mov, s359-1263-Supplement7.mov, s359-1263-Supplement8.mov, s359-1263-Supplement9.mov

Infants are able to entertain hypotheses about complex events and to modify them rationally when faced with inconsistent evidence. These capacities suggest that infants can use elementary logical representations to frame and prune hypotheses. By presenting scenes containingambiguities about the identity of an object, herewe showthat 12- and 19-month-old infants look longer at outcomes that are inconsistent with a logical inference necessary to resolve such ambiguities. At the moment of a potential deduction, infants' pupils dilated, and their eyes moved

toward the ambiguous object when inferences could be computed, in contrast to transparent scenes not requiring inferences to identify the object. These oculomotor markers resembled those of adults inspecting similar scenes, suggesting that intuitive and stable logical structures involved in the interpretation of dynamic scenes may be part of the fabric of the human mind.

Gibbons 2018

Ann Gibbons, *Complex behavior arose at dawn of humans.* science **359** (2018), 1200–1201.

Advanced stone tools, pigment, and extensive networks emerged as environment changed.

By the time the archaeological record restarted at 320,000 years ago, the Acheulean tools were gone and the basin had changed dramatically. The wet-dry cycle was even more extreme. More than 80 % of mammal species had vanished and new kinds of elephants, pigs, foxes, and springboks gathered at tree-lined streams. MSA tools—relatively sophisticated blades and points that would have been hafted onto spears—were plentiful. The site yielded no human fossils in this key time frame, so researchers can't be sure who the new toolmakers were. But discoveries elsewhere offer a strong hint.

Halberda 2018

Justin Halberda, *Logic in babies.* science **359** (2018), 1214–1215.

12-month-olds spontaneously reason using process of elimination.

A new field, studying the foundations of logical abilities, is emerging. As with other successes of developmental psychology in recent decades [as in work on the psychology of number, language, and theory of mind (15)], this new field will make use of behavior and brain studies with infants, children, and adults; studies of nonhuman animal abilities; studies of the correlations between reasoning and other abilities; and training studies to determine where we all begin and how maturation and experience build upon these foundations. It is a thrilling time for us as scientists—using logical reasoning to understand how we reason logically.

Bibel

Philippson 2015

Walter Homolka, Hanna Liss & Rüdiger Liwak (Hrsg.), *Die Tora die fünf Bücher Mose und die Prophetenlesungen (hebräisch – deutsch), in der Übersetzung von Rabbiner Ludwig Philippson.* (Darmstadt 2015).

Philippson 2016

Walter Homolka, Hanna Liss & Rüdiger Liwak (Hrsg.), *Die Propheten (hebräisch – deutsch), in der Übersetzung von Rabbiner Ludwig Philippson.* (Darmstadt 2016).

Biologie

Avino 2018

Thomas A. Avino et al., *Neuron numbers increase in the human amygdala from birth to adulthood, but not in autism.* PNAS **115** (2018), 3710–3715.

pnas115-03710-Supplement.pdf

Thomas A. Avino, Nicole Barger, Martha V. Vargas, Erin L. Carlson, David G. Amaral, Melissa D. Bauman & Cynthia M. Schumann

Remarkably little is known about the postnatal cellular development of the human amygdala. It plays a central role in mediating emotional behavior and has an unusually protracted development well into adulthood, increasing in size by 40 % from youth to adulthood. Variation from this typical neurodevelopmental trajectory could have profound implications on normal emotional development. We report the results of a stereological analysis of the number of neurons in amygdala nuclei of 52 human brains ranging from 2 to 48 years of age [24 neurotypical and 28 autism spectrum disorder (ASD)]. In neurotypical development, the number of mature neurons in the basal and accessory basal nuclei increases from childhood to adulthood, coinciding with a decrease of immature neurons within the paralaminar nucleus. Individuals with ASD, in contrast, show an initial excess of amygdala neurons during childhood, followed by a reduction in adulthood across nuclei. We propose that there is a long-term contribution of mature neurons from the paralaminar nucleus to other nuclei of the neurotypical human amygdala and that this growth trajectory may be altered in ASD, potentially underlying the volumetric changes detected in ASD and other neurodevelopmental or neuropsychiatric disorders.

Keywords: autism | amygdala | stereology | neuroanatomy | neuronal maturation

Significance: We demonstrate that the number of mature neurons in the human amygdala increases from childhood into adulthood. This trajectory may be due to the incorporation of immature neurons from the paralaminar nucleus in the ventral amygdala. In contrast, individuals with autism spectrum disorder (ASD) show an initial excess of mature neurons followed by a decline into adulthood. Our results suggest a degenerative component in ASD and highlight the need for a more comprehensive understanding of the protracted cellular development of the human amygdala for multiple psychiatric disorders.

Jungpaläolithikum

Trinkaus 2018

Erik Trinkaus & Alexandra P. Buzhilova, *Diversity and differential disposal of the dead at Sunghir.* Antiquity **92** (2018), 7–21.

Understanding the Palaeolithic emergence of human social complexity opens up a key perspective on later periods of cultural evolution. Palaeolithic mortuary practice is particularly revealing, as it echoes the social statuses of both the living and the dead. The famous Sunghir burials fall at the beginning of this sequence. Bioarchaeological analysis of the Sunghir individuals, viewed in the context of earlier Upper Palaeolithic mortuary behaviour more generally, reveals the concurrent practice of a range of funerary treatments, some of which are probably related to individual pathological abnormalities. Through this approach, the Sunghir burials become more than just an example of elaborate Palaeolithic burial, and highlight the diversity of early social and mortuary behaviours.

Keywords: Russia | Sunghir | Palaeolithic | mortuary practice | social complexity

Klima

Kröpelin 2017

Stefan Kröpelin, *Klimawandel und Besiedlung der östlichen Sahara seit der letzten Eiszeit, Ein Schlüssel für die Zukunft?* In: Harald

Meller & Thomas Puttkammer (Hrsg.), *Klimagewalten – Treibende Kraft der Evolution*, *Begleitband zur Sonderausstellung im Landesmuseum für Vorgeschichte Halle (Saale) 30. November 2017 bis 21. Mai 2018*. (Darmstadt 2017), 404–417.

Meller 2017

Harald Meller & Thomas Puttkammer (Hrsg.), *Klimagewalten – Treibende Kraft der Evolution*, *Begleitband zur Sonderausstellung im Landesmuseum für Vorgeschichte Halle (Saale) 30. November 2017 bis 21. Mai 2018*. (Darmstadt 2017).

Wills 2018

Robert C. Wills, Tapio Schneider, John M. Wallace, David S. Battisti & Dennis L. Hartmann, *Disentangling Global Warming, Multidecadal Variability, and El Niño in Pacific Temperatures*. Geophysical Research Letters **45** (2018), 2487–2496.

GeoResLet45-02487-Supplement.pdf

A key challenge in climate science is to separate observed temperature changes into components due to internal variability and responses to external forcing. Extended integrations of forced and unforced climate models are often used for this purpose. Here we demonstrate a novel method to separate modes of internal variability from global warming based on differences in time scale and spatial pattern, without relying on climate models. We identify uncorrelated components of Pacific sea surface temperature variability due to global warming, the Pacific Decadal Oscillation (PDO), and the El Niño–Southern Oscillation (ENSO). Our results give statistical representations of PDO and ENSO that are consistent with their being separate processes, operating on different time scales, but are otherwise consistent with canonical definitions. We isolate the multidecadal variability of the PDO and find that it is confined to midlatitudes; tropical sea surface temperatures and their teleconnections mix in higher-frequency variability. This implies that midlatitude PDO anomalies are more persistent than previously thought.

Key Points:

- A novel method is presented to separate internal variability from global warming based on differences in time scale and spatial pattern
- The key features of the Pacific Decadal Oscillation and El Niño-Southern Oscillation are consistent with their being separate processes
- Decadal variability associated with the Pacific Decadal Oscillation is confined to the midlatitude North Pacific

Neolithikum

Baird 2018

Douglas Baird et al., *Agricultural origins on the Anatolian plateau*. PNAS **115** (2018), E3077–E3086.

pnas115-E03077-Supplement.pdf

Douglas Baird, Andrew Fairbairn, Emma Jenkins, Louise Martin, Caroline Middleton, Jessica Pearson, Eleni Asouti, Yvonne Edwards, Ceren Kabukcu, Gokhan Mustafaoğlu, Nerissa Russell, Ofer Bar-Yosef, Geraldine Jacobsen, Xiaohong Wu, Ambroise Baker & Sarah Elliott

This paper explores the explanations for, and consequences of, the early appearance of food production outside the Fertile Crescent of Southwest Asia, where it

originated in the 10th/9th millennia cal BC. We present evidence that cultivation appeared in Central Anatolia through adoption by indigenous foragers in the mid ninth millennium cal BC, but also demonstrate that uptake was not uniform, and that some communities chose to actively disregard cultivation. Adoption of cultivation was accompanied by experimentation with sheep/goat herding in a system of low-level food production that was integrated into foraging practices rather than used to replace them. Furthermore, rather than being a short-lived transitional state, low-level food production formed part of a subsistence strategy that lasted for several centuries, although its adoption had significant long-term social consequences for the adopting community at Boncuklu. Material continuities suggest that Boncuklu's community was ancestral to that seen at the much larger settlement of Çatalhöyük East from 7100 cal BC, by which time a modest involvement with food production had been transformed into a major commitment to mixed farming, allowing the sustenance of a very large sedentary community. This evidence from Central Anatolia illustrates that polarized positions explaining the early spread of farming, opposing indigenous adoption to farmer colonization, are unsuited to understanding local sequences of subsistence and related social change. We go beyond identifying the mechanisms for the spread of farming by investigating the shorter- and longer-term implications of rejecting or adopting farming practices.

Keywords: Neolithic | spread of farming | early herding | Anatolia | low-level food production

Significance: We demonstrate that the initial spread of farming outside of the area of its first appearance in the Fertile Crescent of Southwest Asia, into Central Anatolia, involved adoption of cultivars by indigenous foragers and contemporary experimentation in animal herding of local species. This represents a rare clear-cut instance of forager adoption and sustained lowlevel food production. We have also demonstrated that farming uptake was not uniform, with some forager communities rejecting it despite proximity to early farming communities. We also show that adoption of small-scale cultivation could still have significant social consequences for the communities concerned. The evidence suggests forager adoption of cultivation and initiation of herding was not necessarily motivated by simple economic concerns of increasing levels of food production and security.

Sheehan 2018

Oliver Sheehan, Joseph Watts, Russell D. Gray & Quentin D. Atkinson, *Coevolution of landesque capital intensive agriculture and sociopolitical hierarchy*. PNAS **115** (2018), 3628–3633.

pnas115-03628-Supplement1.pdf, pnas115-03628-Supplement2.xlsx

One of the defining trends of the Holocene has been the emergence of complex societies. Two essential features of complex societies are intensive resource use and sociopolitical hierarchy. Although it is widely agreed that these two phenomena are associated cross-culturally and have both contributed to the rise of complex societies, the causality underlying their relationship has been the subject of longstanding debate. Materialist theories of cultural evolution tend to view resource intensification as driving the development of hierarchy, but the reverse order of causation has also been advocated, along with a range of intermediate views. Phylogenetic methods have the potential to test between these different causal models. Here we report the results of a phylogenetic study that modeled the coevolution of one type of resource intensification—the development of landesque capital intensive agriculture—with political complexity and social stratification in a sample of 155 Austronesian-speaking societies. We found support for the coevolution of landesque capital with both political complexity and social stratification, but the contin-

gent and nondeterministic nature of both of these relationships was clear. There was no indication that intensification was the "prime mover" in either relationship. Instead, the relationship between intensification and social stratification was broadly reciprocal, whereas political complexity was more of a driver than a result of intensification. These results challenge the materialist view and emphasize the importance of both material and social factors in the evolution of complex societies, as well as the complex and multifactorial nature of cultural evolution.

Keywords: cultural evolution | cultural phylogenetics | sociopolitical hierarchy | intensive agriculture | landesque capital

Significance: Over the past 10,000 years, human societies have grown vastly more complex. How and why this occurred is still debated. One major point of contention is the relationship between two characteristic features of complex societies: intensive resource use and sociopolitical hierarchy. The "materialist" view is that intensification drives hierarchy, but the reverse view and intermediate views have also been proposed. Here we report the results of a phylogenetic study on the coevolution of landesque capital intensive agriculture and sociopolitical hierarchy in the Austronesian-speaking world. We find support for a reciprocal coevolutionary relationship between the two variables, challenging the materialist view and highlighting the importance of social as well as material factors as drivers of cultural evolution.

Religion

Snell 2011

Daniel C. Snell, *Die Religionen des Alten Orients*. (Darmstadt 2014).