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References

Aktuell

Bradshaw 2014

Corey J. A. Bradshaw & Barry W. Brook, *Human population reduction is not a quick fix for environmental problems*. PNAS **111** (2014), 16610–16615.

The inexorable demographic momentum of the global human population is rapidly eroding Earth's life-support system. There are consequently more frequent calls to address environmental problems by advocating further reductions in human fertility. To examine how quickly this could lead to a smaller human population, we used scenario-based matrix modeling to project the global population to the year 2100. Assuming a continuation of current trends in mortality reduction, even a rapid transition to a worldwide onechild policy leads to a population similar to today's by 2100. Even a catastrophic mass mortality event of 2 billion deaths over a hypothetical 5-y window in the mid-21st century would still yield around 8.5 billion people by 2100. In the absence of catastrophe or large fertility reductions (to fewer than two children per female worldwide), the greatest threats to ecosystems—as measured by regional projections within the 35 global Biodiversity Hotspots—indicate that Africa and South Asia will experience the greatest human pressures on future ecosystems. Humanity's large demographic momentum means that there are no easy policy levers to change the size of the human population substantially over coming decades, short of extreme and rapid reductions in female fertility; it will take centuries, and the long-term target remains unclear. However, some reduction could be achieved by midcentury and lead to hundreds of millions fewer people to feed. More immediate results for sustainability would emerge from policies and technologies that reverse rising consumption of natural resources.

demography | fertility | catastrophe | war | mortality

Gneezy 2014

Uri Gneezy, Elizabeth A. Keenan & Ayelet Gneezy, *Avoiding overhead aversion in charity*. science **346** (2014), 632–635.

s346-0632-Supplement.pdf

Donors tend to avoid charities that dedicate a high percentage of expenses to administrative and fundraising costs, limiting the ability of nonprofits to be effective.We propose a solution to this problem: Use donations from major philanthropists to cover overhead expenses and offer potential donors an overhead-free donation opportunity. A laboratory experiment testing this solution confirms that donations decrease when overhead increases, but only when donors pay for overhead themselves. In a field experiment with 40,000 potential donors, we compared the overhead-free solution with other common uses of initial donations. Consistent with prior research, informing donors that seed money has already been raised increases donations, as does a $1:$1 matching campaign. Our main result, however, clearly shows that informing potential donors that overhead costs are covered by an initial donation significantly increases the donation rate by 80 % (or 94 %) and total donations by 75 % (or 89 %) compared with the seed (or matching) approach.

Janmaat 2014

Karline R. L. Janmaat, Leo Polansky, Simone Dagui Ban & Christophe Boesch, *Wild chimpanzees plan their breakfast time, type, and location*. PNAS **111** (2014), 16343–16348.

Not all tropical fruits are equally desired by rainforest foragers and some fruit trees get depleted more quickly and carry fruit for shorter periods than others. We investigated whether a ripe-fruit specialist, the chimpanzee (Pan troglodytes verus), arrived earlier at breakfast sites with very ephemeral and highly sought-after fruit, like figs, than sites with less ephemeral fruit that can be more predictably obtained throughout the entire day. We recorded when and where five adult female chimpanzees spent the night and acquired food for a total of 275 full days during three fruit-scarce periods in a West African tropical rainforest. We found that chimpanzees left their sleeping nests earlier (often before sunrise when the forest is still dark) when breakfasting on very ephemeral fruits, especially when they were farther away. Moreover, the females positioned their sleeping nests more in the direction of the next day's breakfast sites with ephemeral fruit compared with breakfast sites with other fruit. By analyzing departure times and nest positioning as a function of fruit type and location, while controlling for more parsimonious explanations, such as temperature, we found evidence that wild chimpanzees flexibly plan their breakfast time, type, and location after weighing multiple disparate pieces of information. Our study reveals a cognitive mechanism by which largebrained primates can buffer the effects of seasonal declines in food availability and increased interspecific competition to facilitate first access to nutritious food. We discuss the implications for theories on hominoid brain-size evolution.

prospective cognition | flexible planning | ecological intelligence | interspecific competition | foraging strategies

Moeller 2014

Andrew H. Moeller et al., *Rapid changes in the gut microbiome during human evolution*. PNAS **111** (2014), 16431–16435.

pnas111-16431-Supplement.docx

Andrew H. Moeller, Yingying Li, Eitel Mpoudi Ngole, Steve Ahuka-Mundeke, Elizabeth V. Lonsdorf, Anne E. Pusey, Martine Peeters, Beatrice H. Hahn & Howard Ochman

Humans are ecosystems containing trillions of microorganisms, but the evolutionary history of this microbiome is obscured by a lack of knowledge about microbiomes of African apes. We sequenced the gut communities of hundreds of chimpanzees, bonobos, and gorillas and developed a phylogenetic approach to reconstruct how present-day human microbiomes have diverged from those of ancestral populations. Compositional change in the microbiome was slow and clock-like during African ape diversification, but human microbiomes have deviated from the ancestral state at an accelerated rate. Relative to the microbiomes of wild apes, human microbiomes have lost ancestral microbial diversity while becoming specialized for animal-based diets. Individual wild apes cultivate more phyla, classes, orders, families, genera, and species of bacteria than do individual humans across a range of societies. These results indicate that humanity has experienced a depletion of the gut flora since diverging from Pan.

microbiota | gastrointestinal tract | coevolution | Pan | Gorilla

Venton 2014

Danielle Venton, *Inner Workings: Story of an empire encased in tree rings*. PNAS **111** (2014), 16229.

However, the rings also carry a lesson for modern Mongols, Hessl said. The rings indicate that the devastating droughts of recent decades have been worsened by human-caused climate change. In the past, during times of drought, the empire contracted and ancient Mongols survived by moving and adapting. Today Mongolians are increasingly opting for permanent dwellings and jobs. Retaining an ability to move and adapt as the climate becomes more unpredictable might be key to the survival of their ways.

Wade 2014

Lizzie Wade, *Friends, not foes, boost warriors' success.* science **346** (2014), 535.

New analysis of Yanomamö data suggests that alliances among in-laws raise fighters' fitness.

Napoleon Chagnon took a new look at data from Chagnon's pioneering studies of the Yanomamö from the 1960s and 1970s. Men who became "unokais" together— meaning they participated in the same killing—were largely related by marriage rather than blood. At best, they were cousins, and often they were brothers-in-law. In 1988, Chagnon reported that unokais of every age had more wives and children than their nonunokai counterparts.

In fact, Hill notes, men in many small-scale societies often prefer to ally with their brothers-in-law because by definition these men aren't competing for access to the same women.

Altpaläolithikum

Bednarik 2003

Robert G. Bednarik, *Seafaring in the Pleistocene.* Cambridge Archaeological Journal **13** (2003), 41–66.

Archaeological data from Wallacea (Indonesia) and elsewhere are summarized to show that the history of seafaring begins in the Early Pleistocene, and that this human capability eventually led to Middle Palaeolithic ocean crossings in the general region of Australia. To understand better the technological magnitude of these many maritime accomplishments, a series of replicative experiments are described, and the theoretical conditions of these experiments are examined. The proposition is advanced that hominid cognitive and cultural evolution during the Middle and early Late Pleistocene have been severely misjudged. The navigational feats of Pleistocene seafarers confirm the cultural evidence of sophistication available from the study of palaeoart.

Anthropologie

Bednarik 2013

Robert G. Bednarik, *African Eve: Hoax or Hypothesis?* Advances in Anthropology **3** (2013), 216–228.

The replacement hypothesis proposes that "modern humans" evolved only in sub-Saharan Africa, through a speciation event rendering them unable to breed with other hominins. They then spread throughout Africa, then to Asia, Australia and finally to Europe, replacing all other humans by exterminating or outcompeting them. In this critical analysis of the replacement hypothesis it is shown that it began as a hoax, later reinforced by false paleoanthropological claims and a series of flawed genetic propositions, yet it became almost universally accepted during

the 1990s and has since dominated the discipline. The numerous shortcomings of the hypothesis are appraised from genetic, anthropological, and archaeological perspectives and it is refuted. The resulting hiatus in the history of the human genus is then filled with an outline of a comprehensive alternative theory presented recently, which not only explains the origins of "modern humans" but also numerous so far unexplained aspects of being human.

Keywords: Replacement Hypothesis; Domestication Hypothesis; African Eve; Human Evolution; Genetics; Epistemology

Holloway 2002

Ralph L. Holloway, *Head to head with Boas, Did he err on the plasticity of head form?* PNAS **99** (2002), 14622–14623.

The importance for this writer is not that the changes in head shape were not as statistically significant between immigrants and offspring, or that head shape as characterized by the cephalic index has a greater genetic component. Rather, this finding leads me, and I hope others, to wonder what else one might discover that shows that anthropological holy writ isn't so holy after all. This comment is not to be taken as a call for the wholesale collection of or resuscitation of studies dealing with the cephalic index, but we still remain ignorant about whether it has any adaptive meaning and whether, in fact, normalizing selection might be at work on the trait, where both extremes, hyperdolichocephaly and hyperbrachycephaly, are at a slight selective disadvantage. In other words, despite Boas' study and the claims of his students, the topic of head form ought to be alive and well.

Sparks 2002

Corey S. Sparks & Richard L. Jantz, *A reassessment of human cranial plasticity, Boas revisited.* PNAS **99** (2002), 14636–14639.

In 1912, Franz Boas published a study demonstrating the plastic nature of the human body in response to changes in the environment. The results of this study have been cited for the past 90 years as evidence of cranial plasticity. These findings, however, have never been critiqued thoroughly for their statistical and biological validity. This study presents a reassessment of Boas' data within a modern statistical and quantitative genetic framework. The data used here consist of head and face measurements on over 8,000 individuals of various European ethnic groups. By using pedigree information contained in Boas' data, narrow sense heritabilities are estimated by the method of maximum likelihood. In addition, a series of t tests and regression analyses are performed to determine the statistical validity of Boas' original findings on differentiation between American and European-born children and the prolonged effect of the environment on cranial form. Results indicate the relatively high genetic component of the head and face diameters despite the environmental differences during development. Results point to very small and insignificant differences between European- and American-born offspring, and no effect of exposure to the American environment on the cranial index in children. These results contradict Boas' original findings and demonstrate that they may no longer be used to support arguments of plasticity in cranial morphology.

Energie

Pipitone 2014

Emiliano Pipitone & Leonardo d'Acquisto, *First experience with a piezo film based knock sensor.* unknown (2014), preprint, 1–7.

It is well known that spark advance is a key parameter in spark ignition engine management. Increasing fuel cost and emission regulation strictness require a higher engine efficiency, which can be improved by an accurate regulation of the spark advance. During high load conditions optimal spark advance choice leads the engine to run next to the knock limit, so the management and control system needs to be equipped with a knock sensor, capable of informing the ECU if knocking occurs in order to preserve engine from damages. The authors developed a low cost knock sensor whose sensing element is a thin washer of polyvinylidene fluoride (PVDF), a fluoropolymer characterized by a great piezoelectric effect if polarized. The sensor has been tested on a spark ignition CFR engine and has been compared with a commercial accelerometer and a pressure sensor, in terms of knocking detection capability, of measured knock intensity and of signal to noise ratio. The collected data show that PVDF assures a reliable detection of knock and a precise measurement of knock energy, as well as it gives accurate information about the frequency content of the perceived vibration. The sensor, bonded on the block of the CFR engine, worked for several hours without depolarizing and above all, thanks to the PVDF great piezoelectric effect, the use of a charge amplifier was unnecessary. PVDF proved to have a great potential as knock detector in spark ignition engines at a very low cost.

Keywords: knock sensor; spark advance control; spark ignition engine; piezo film.

Grabung

Edwards 1988

Phillip C. Edwards, *Natufian settlement in Wadi Al-Hammeh*. Paléorient **14** (1988), ii, 309–315.

Wadi Hammeh 27 is an Early Natufian residential settlement, dated ca. 12,000 b.p., located on the eastern margins of the central Jordan Valley. The site has produced a wide variety of cultural and environmental data. This report briefly describes its settlement plan and architecture ; artefacts in basalt, limestone, bone and chert, incised and carved art pieces, and botanical, faunal and human skeletal remains.

Kozlowski 1990

Stefan K. Kozlowski & Andrzej Kempisty, *Architecture of the pre-pottery neolithic settlement in Nemrik, Iraq*. World Archaeology **21** (1990), 348–362.

Moore 2000

Andrew M. T. Moore, Gordon C. Hillman & Anthony J. Legge (Hrsg.), *Village on the Euphrates, From foraging to farming at Abu Hureyra*. (Oxford 2000).

Valla 1988

François R. Valla, *Aspects du sol de l'abri 131 de Mallaha (Eynan)*. Paléorient **14** (1988), ii, 283–296.

The living floor of house 131, one of the oldest at Mallaha, is assigned to its place in the sequence of events which occurred in this particular location. One mentions then the circumstances which allow to identify " living floors " at the site. The study of the structural features of the dwelling, mainly wall, post holes

and fireplaces, indicates that the house was probably horse-shoe shaped. An attempt is made to define the main activity areas and the nature of those activities. Together with material life oriented works it seems possible to recognize some ritual purposes.

Webb 2002

Steven G. Webb & Phillip C. Edwards, *The Natufian human skeletal remains from Wadi Hammeh 27 (Jordan)*. Paléorient **28** (2002), i, 103–123.

This report describes skeletal remains from the early Natufian site ofWadi Hammeh 27 in Jordan. At least seven individuals are represented, and although small, the collection is notable for the eclecticism of its mortuary practice. Modes of mortuary disposal and ritual include a single-primary burial, a collective-secondary burial, burnt human cranial fragments disposed in residential contexts, and the ochre staining of bones. The two burials come from the lowest phase of the site, with fragmentary burials and smaller amounts of material issuing from the upper phases. The primary inhumation is marked by a neighbouring pit, which seems to be augmented by other features through three subsequent stratigraphie phases. Artefact types accompanying the burials were limited to a single Dentalium shell necklace. Overall, the bone series represent gracile individuals with good nutritional and health status. The most extensive data was gained from Homo 1, whose skeleton revealed indications of high functional demands, including several healed injuries, arthritis, a preference for using the right arm, and severe wear of the first molars.

Keywords: Natufian, Jordan, Wadi Hammeh, Human-skeletons, Funeral practices.

Grundlagen

Kienlin 2014

Tobias L. Kienlin, *All Heroes in Their Armour Bright and Shining? Comments on the Bronze Age 'Other'*. In: Kienlin (Hrsg.), *Fremdheit*. (im Druck 2014), 1–42.

What is most striking about the resulting picture is its neglect of variability in Bronze Age groups widely set apart in space and time. That is to say, Kristiansen and Larsson's approach is reductionist and essentialising in that the authors want us to believe in convergence on a pan-European scale of Bronze Age social 'institutions' and elite ideology. It has been shown above that this requires specific narrative strategies most fundamental among them, of course, a running text with numerous illustrations that largely avoids controversial discussion of data or divergent theoretical approaches in favour of a continuous narration of what is perceived as historical 'truth'.

It tends to be ignored, therefore, that a work like The Rise of Bronze Age Society as well as others like it is not just drawing on the evidence or data available at any given time to provide us with a 'true' picture of the Bronze Age. This involves specific narrative strategies that are not normally reflected upon when archaeological texts are considered as 'scientific' rather than the historical narratives which in fact they are.

It is so, not because some finds are ignored while others are given greater weight than they deserve, but because we are led to believe in a rectified Bronze Age with knowledgeable agents reduced to dummies acting out a preformulated 'ideology' where archaeology should aim at a contextual understanding of the structuring

of social relations and cultural knowlegde under specific material and historical conditions.

Mesolithikum

Goring-Morris 1988

A. Nigel Goring-Morris, *Trends in the spatial organization of terminal Pleistocene hunter-gatherer occupations as viewed from the Negev and Sinai*. Paléorient **14** (1988), ii, 231–244.

Preliminary investigation of the organization of space within Terminal Pleistocene occupations in the Negev and Sinai reveals considerable patterning by socio-cultural entity. This is considered to reflect both technological developments (e.g. cooking), as well as the social traditions of the groups concerned, in much the same manner as the stylistic attributes of chipped stone tools and decorative elements. Primary determinants are immobile features, such as hearths, structures and bedrock mortars, with the location of various activities, depending upon their nature, positioned accordingly.

Nadel 2003

D. Nadel, *The Ohalo II brush huts and the dwelling structures of the Natufian and PPNA sites in the Jordan valley*. Archaeology, Ethnology & Anthropology of Eurasia **13** (2003), i, 34–48.

In the southern Levant, the most dramatic observable revolution in the domestic space occurred by the onset of the PPNB period. The basic plan changed from oval/ round to rectangular, inner divisions and the use of plaster became common, and the overall size of structures (including the introduction of two-floor buildings) and village area increased dramatically.

The Ohalo II people were living in simple oval structures (Fig. 13), in a lakeshore camp on a year-round basis. Their diet was based on cereals, fish and a variety of local plant and animal resources. Water, too, was available year-round. Thus, the idea of all-season residence in one location was not a Natufian invention, and was practiced on a local basis in certain times and places long before the Natufian. It appears that the basic residential unit, inhabited by the nuclear family, witnessed environmental oscillations as well as social and economic changes from the time of Ohalo II until the establishment of the PPNA villages. Nonetheless, there is clear continuity in the shape, size and bowl-like section of dwellings, as well as in several indoor domestic activities. This stability endured even the introduction of new building materials and techniques. The use of a round/ oval 8–12 sq.m structure with one inner space and one simple entrance continued for at least 10,000 years, and changed dramatically only with the onset of the PPNB.

Methoden

Classen 2004

Erich Claßen & Andreas Zimmermann, *Tesselations and Triangulations, Understanding Early Neolithic social networks*. In: Magistrat der Stadt Wien (Hrsg.), *Enter the Past – The E-way into the Four Dimensions of Cultural Heritage, Computer Applications and Quantitative Methods in Archaeology – 31st Conference, Vienna,*

Austria, April 2003. BAR International Series 1227 (Oxford 2004), 467–471.

Different mathematical-statisticaI methods can be used in the analysis of the spatial distribution of archaeological data. On the one hand, we will consider Delauney-Triangulations, which connect neighbouring points of a distribution so that compact triangles are built, and on the other, we shad be looking at the use of tessellations in such an analysis. Around the points of a given distribution, polygons are formed; the junctions of the polygons are found in the zones of lowest point density. Delauney-Triangulations of Early Neolithic settlements in the Rhineland, of the so-called Bandkeramik Culture, have shown that settlements were subjected to a standardised spacing in the landscape. Different distance-classes have been observed, uncovering different structures within the Bandkeramik settlement system. Within settlement groups, determined by triangulation, settlement hierarchies can be recognised by the evaluation of archaeological material. It is possible to distinguish big "central" settlements, and secondary settlements that were, more or less, dependent on these. Tesselations make the possible hinterland visible, and allows us to make estimates regarding the economic necessities of individual settlements or settlement groups. The combination of geometrically possible, geographically probable and archaeologically testable contacts is used to decipher past communication networks.

Neolithikum

Belfer-Cohen 2002

Anna Belfer-Cohen & Nigel Goring-Morris, *Recent Developments in Near Eastern Neolithic Research*. Paléorient **28** (2002), ii, 143–148.

Though these phenomena are not new within the archaeological record (already appearing by at least the Upper Palaeolithic, if not earlier), it seems that we can observe a particularly striking innovation during the Neolithic (or even late Natufian?), namely the appearance of sites and localities whose primary functions were not devoted to profane activities associated with daily subsistence per se. Such sites were prominent points in the landscape, beacons that attracted attention and served as focal points for one or more Neolithic communities. It is likely that these were tied to each other through sharing common ancestry and marriage (i.e. kinship) ties, exchange networks, the shared access to non-agricultural land (whether "commons" for grazing or for hunting), etc. Yet at the same time these communities also were affirming their land ownership to the exclusion of the others, as the growing permanency and the high investment in field cultivation dictated clear-cut ownership rights and boundaries. It was this unabated and constant source of tension that was at the heart of sharing the responsibilities of erecting and keeping "alive" the sacred sites that belonged to all, and yet to no one in particular.

Kislev 1986

Mordechai E. Kislev, Ofer Bar-Yosef & Avi Gopher, *Early Neolithic domesticated and wild barley from the Netiv Hagdud region in the Jordan valley*. Israel Journal of Botany **35** (1986), 197–201.

Rachis fragments of cultivated (Hordeum distichon L.) along with brittle (H. spontaneum C. Koch) barley from the early eighth or late ninth millennium B.C. were found at Netiv Hagdud, Israel, proving that the domestication of this cereal was already in progress at the beginning of the aceramic Neolithic period. The

large quantity of kernels and rachis segments and, especially, the numerous segments with irregular fracture provide clear evidence for domesticated barley.

Willcox 1999

George Willcox & Sandra Fornite, *Impressions of wild cereal chaff in pisé from the 10th millennium uncal bp at Jerf el Ahmar and Mureybet: northern Syria*. Vegetation History and Archaeobotany **8** (1999), 21–24.

Pisé (daub or building earth) from Jerf el Ahmar and Mureybet was examined and found to contain plant impressions made by the fine fraction of cereal chaff which had been added to the pisé as a tempering medium. Four wild grasses were identified from impressions, while over fifty taxa were identified from charred remains. Chaff tempering was present in all samples examined and was composed of spikelet bases and fragments of spikelets. Several aspects of these findings complement results obtained from charred remains. The sheer quantity of building material with chaff implies that cereals were widely available. De-husking and winnowing appear to have been carried out on a large scale, probably near the site. Firm evidence for wild rye confirms previous identifications for this period in the middle Euphrates, rye being difficult to distinguish from wild einkorn if only grain is available for identification. The quality of the chaff provides some evidence of crop processing.

Keywords: Chaff impressions – Early Neolithic – De-husking – Secale – Northern Syria