

Literatur

Aktuell

CALLAWAY 2014

Ewen Callaway, *The Neanderthal in the family*. *nature* **507** (2014), 414–416.

Thirty years after the study of ancient DNA began, it promises to upend our view of the past.

That is set to change. New procedures mean that researchers can now reliably obtain DNA from all but the most degraded samples, and then sequence only the portions of a genome that they are interested in. “I’m still surprised that there are so few labs in the world that do this,” says Johannes Krause, a palaeo geneticist at the University of Tübingen, Germany, who led much of the Denisovan work while in Pääbo’s lab. “It’s not rocket science.”

CARO 2014

Tim Caro, Amanda Izzo, Robert C. Reiner Jr, Hannah Walker & Theodore Stankowich, *The function of zebra stripes*. *Nature Communications* **5** (2014), 3535. DOI:10.1038/ncomms4535.

Despite over a century of interest, the function of zebra stripes has never been examined systematically. Here we match variation in striping of equid species and subspecies to geographic range overlap of environmental variables in multifactor models controlling for phylogeny to simultaneously test the five major explanations for this infamous colouration. For subspecies, there are significant associations between our proxy for tabanid biting fly annoyance and most striping measures (facial and neck stripe number, flank and rump striping, leg stripe intensity and shadow striping), and between belly stripe number and tsetse fly distribution, several of which are replicated at the species level. Conversely, there is no consistent support for camouflage, predator avoidance, heat management or social interaction hypotheses. Susceptibility to ectoparasite attack is discussed in relation to short coat hair, disease transmission and blood loss. A solution to the riddle of zebra stripes, discussed by Wallace and Darwin, is at hand.

FALCHI 2014

Mario Falchi et al., *Low copy number of the salivary amylase gene predisposes to obesity*. *NatGen* (2014), preprint, 1–7. DOI:10.1038/ng.2939.

NatGen2014-preprint-Supplement0331.pdf

Mario Falchi, Julia Sarah El-Sayed Moustafa, Petros Takousis, Francesco Pesce, Amélie Bonnefond, Johanna C. Andersson-Assarsson, Peter H. Sudmant, Rajkumar Dorajoo, Mashael Nedham Al-Shafai, Leonardo Bottolo, Erdal Ozdemir, Honcheong So, Robert W. Davies, Alexandre Patrice, Robert Dent, Massimo Mangino, Pirro G. Hysi, Aurélie Dechaume, Marlène Huyvaert, Jane Skinner, Marie Pigeyre, Robert Caiazzo, Violeta Raverdy, Emmanuel Vaillant, Sarah Field, Beverley Balkau, Michel Marre, Sophie Visvikis-Siest, Jacques Weill, Odile Poulain-Godefroy, Peter Jacobson, Lars Sjöstrom, Christopher J. Hammond, Panos Deloukas, Pak

Chung Sham, Ruth McPherson, Jeannette Lee, E. Shyong Tai, Robert Sladek, Lena M. S. Carlsson, Andrew Walley, Evan E. Eichler, Francois Pattou, Timothy D. Spector & Philippe Froguel

Common multi-allelic copy number variants (CNVs) appear enriched for phenotypic associations compared to their biallelic counterparts. Here we investigated the influence of gene dosage effects on adiposity through a CNV association study of gene expression levels in adipose tissue. We identified significant association of a multi-allelic CNV encompassing the salivary amylase gene (AMY1) with body mass index (BMI) and obesity, and we replicated this finding in 6,200 subjects. Increased AMY1 copy number was positively associated with both amylase gene expression ($P = 2.3 \times 1E-14$) and serum enzyme levels ($P < 2.20 \times 1E-16$), whereas reduced AMY1 copy number was associated with increased BMI (change in BMI per estimated copy = -0.15 (0.02) kg/m²; $P = 6.93 \times 1E-10$) and obesity risk (odds ratio (OR) per estimated copy = 1.19 , 95% confidence interval (CI) = 1.13 – 1.26 ; $P = 1.46 \times 1E-10$). The OR value of 1.19 per copy of AMY1 translates into about an eightfold difference in risk of obesity between subjects in the top (copy number > 9) and bottom (copy number < 4) 10% of the copy number distribution. Our study provides a first genetic link between carbohydrate metabolism and BMI and demonstrates the power of integrated genomic approaches beyond genome-wide association studies.

FRITZ 2014

Thomas Hans Fritz, Margot Niessen, Arno Villringer & Marc Leman, *Jymmin, an easy-toimplement musical workout approach, Reply to Padulo et al.* [PNAS 111 \(2014\), E1161](#).

DE HEVIA 2014

Maria Dolores de Hevia, Véronique Izard, Aurélie Coubart, Elizabeth S. Spelke & Arlette Streri, *Representations of space, time, and number in neonates.* [PNAS 111 \(2014\), 4809–4813](#).

[pnas111-04809-Supplement01.mov](#), [pnas111-04809-Supplement02.mov](#), [pnas111-04809-Supplement03.mov](#), [pnas111-04809-Supplement04.mov](#), [pnas111-04809-Supplement05.mov](#), [pnas111-04809-Supplement06.mov](#), [pnas111-04809-Supplement07.mov](#), [pnas111-04809-Supplement08.mov](#), [pnas111-04809-Supplement09.mov](#), [pnas111-04809-Supplement10.mov](#), [pnas111-04809-Supplement11.mov](#), [pnas111-04809-Supplement12.mov](#)

A rich concept of magnitude—in its numerical, spatial, and temporal forms—is a central foundation of mathematics, science, and technology, but the origins and developmental relations among the abstract concepts of number, space, and time are debated. Are the representations of these dimensions and their links tuned by extensive experience, or are they readily available from birth? Here, we show that, at the beginning of postnatal life, 0- to 3-d-old neonates reacted to a simultaneous increase (or decrease) in spatial extent and in duration or numerical quantity, but they did not react when the magnitudes varied in opposite directions. The findings provide evidence that representations of space, time, and number are systematically interrelated at the start of postnatal life, before acquisition of language and cultural metaphors, and before extensive experience with the natural correlations between these dimensions.

cognitive | development | numerical cognition

KERR 2014

Richard A. Kerr, *How Earth Can Cool Without Plunging Into a Deep Freeze.* [science 343 \(2014\), 1189](#).

The model shows how the accelerated erosion that accompanies the rise of great mountains like the Andes recycles more carbon to the sea floor and cools the globe. But the thermodynamic load limit caps just how much even the fastest mountain building can cool climate. So does another factor: temperature. Lower temperature fosters slower weathering reactions. As a result, global cooling slows weathering all across the continents and reins in cooling due to mountain building. That answers earlier criticism that the Himalayan scenario would have threatened the planet with runaway cooling.

PADULO 2014

Johnny Padulo, Nicola Maffulli & Luca Paolo Ardigò, *Signal or noise, a statistical perspective*. [PNAS 111 \(2014\), E1160](#).

Considering the psycho-physical nature of the Borg scale, its poor accuracy, and the related documented relationship with age, the high variability featured in the study results of Fritz et al. seems to reflect more interindividual variability (noise) than the effect of a potential neuro-physiological phenomenon (signal).

RABIN 2014

Ira Rabin, *From analysis to interpretation, A comment on the paper by Rasmussen et al. (2012)*. [Journal of Archaeological Science 43 \(2014\), 124–126](#).

The paper “The constituents of the ink from a Qumran inkwell: New prospects for provenancing the ink on the Dead Sea Scrolls” by Rasmussen et al. (2012) presents an account of the analysis of a residue from an unprovenanced inkwell. In this comment, I reassess their study and offer alternative interpretations of their experimental results.

RASMUSSEN 2014

Kaare Lund Rasmussen et al., *Reply to Ira Rabin’s Comment on our paper Rasmussen et al. (2012)*. [Journal of Archaeological Science 43 \(2014\), 155–158](#).

Kaare Lund Rasmussen, Anna Lluveras Tenorio, Ilaria Bonaduce, Maria Perla Colombini, Leila Birolo, Eugenio Galano, Angela Amoresano, Greg Doudna, Andrew D. Bond, Vincenzo Palleschi, Giulia Lorenzetti, Stefano Legnaioli, Johannes van der Plicht & Jan Gunneweg

In the Comment by Dr. I. Rabin from Bundesanstalt für Materialforschung und -prüfung in Berlin are stated many conjectures and apparent guesses contradicting several of our interpretations. Most of Rabin’s ‘guesses’ and interpretations are unwarranted. Below we rebut some of the misinterpretations under separate headings.

Keywords: Reply | Ink | Qumran | Schoyen inkwell

Anthropologie

HERRNSTEIN 1994

Richard J. Herrnstein & Charles Murray, *The Bell Curve, Intelligence and class structure in American life*. (New York 1996).

HEWLETT 2014

Barry S. Hewlett & Steve Winn, *Allomaternal Nursing in Humans*. [Current Anthropology 55 \(2014\), 200–229](#).

Few studies exist of allomaternal nursing in humans. It is relatively common among some cultures, such as the Aka and Efe' hunter-gatherers of the Congo Basin, but it does not occur in other foragers such as the !Kung and Hadza of Southern and East Africa. This paper utilizes focal follow observations of Aka and Efe' infants, interviews with Aka mothers, ethnographic reports from researchers working with hunter-gatherers, and a survey of the eHRAF cultures to try to answer the following questions: how often does allomaternal nursing occur, who provides it, and under what contexts does it take place? The study indicates that it occurs in many cultures (93% of cultures with data) but that it is normative in relatively few cultures; biological kin, especially grandmothers, frequently provide allomaternal nursing and that infant age, mother's condition, and culture (e.g., cultural models about if and when women other than the mother can nurse an infant or colostrum taboos) impact the nature and frequency of allomaternal nursing. The empirical results of this exploratory study are discussed in the context of existing hypotheses used to explain allomaternal nursing.

Allomaternal nursing is common cross-culturally, but it is poorly understood, and no systematic studies exist. Our study was exploratory and raised more questions than it answered. Considerably more research is needed to test the immunological and other hypotheses. The results could have both basic research (understanding human nature and cultural diversity) and applied (public health, such as healthy contexts for allomaternal nursing) implications.

KHRAMEEVA 2014

Ekaterina E. Khrameeva et al., *Neanderthal ancestry drives evolution of lipid catabolism in contemporary Europeans*. [Nature Communications 5 \(2014\), 3584](#). DOI:10.1038/ncomms4584.

NatComm05-3584-Supplement1.pdf, NatComm05-3584-Supplement2.xlsx, NatComm05-3584-Supplement3.xlsx

Ekaterina E. Khrameeva, Katarzyna Bozek, Liu He, Zheng Yan, Xi Jiang, Yuning Wei, Kun Tang, Mikhail S. Gelfand, Kay Prüfer, Janet Kelso, Svante Pääbo, Patrick Giavalisco, Michael Lachmann & Philipp Khaitovich

Although Neanderthals are extinct, fragments of their genomes persist in contemporary humans. Here we show that while the genome-wide frequency of Neanderthal-like sites is approximately constant across all contemporary out-of-Africa populations, genes involved in lipid catabolism contain more than threefold excess of such sites in contemporary humans of European descent. Evolutionally, these genes show significant association with signatures of recent positive selection in the contemporary European, but not Asian or African populations. Functionally, the excess of Neanderthal-like sites in lipid catabolism genes can be linked with a greater divergence of lipid concentrations and enzyme expression levels within this pathway, seen in contemporary Europeans, but not in the other populations. We conclude that sequence variants that evolved in Neanderthals may have given a selective advantage to anatomically modern humans that settled in the same geographical areas.

LYLE 2014

Henry F. Lyle III & Eric A. Smith, *The reputational and social network benefits of prosociality in an Andean community*. [PNAS 111 \(2014\), 4820–4825](#).

Several theories have emerged to explain how group cooperation (collective action) can arise and be maintained in the face of incentives to engage in free riding. Explanations focusing on reputational benefits and partner choice have particular promise for cases in which punishment is absent or insufficient to deter free riding.

In indigenous communities of highland Peru, collective action is pervasive and provides critical benefits. Participation in collective action is unequal across households, but all households share its benefits. Importantly, investment in collective action involves considerable time, energy, and risk. Differential participation in collective action can convey information about qualities of fellow community members that are not easily observable otherwise, such as cooperative intent, knowledge, work ethic, skill, and/or physical vitality. Conveying such information may enhance access to adaptive support networks. Interview and observational data collected in a Peruvian highland community indicate that persons who contributed more to collective action had greater reputations as reliable, hard workers with regard to collective action and also were considered the most respected, influential, and generous people in the community. Additionally, household heads with greater reputations had more social support partners (measured as network indegree centrality), and households with larger support networks experienced fewer illness symptoms.

free-rider problem | signaling | social support | evolution of cooperation

WILDE 2014

Sandra Wilde et al., *Direct evidence for positive selection of skin, hair, and eye pigmentation in Europeans during the last 5,000 y.* [PNAS 111 \(2014\), 4832–4837.](#)

Sandra Wilde, Adrian Timpson, Karola Kirsanow, Elke Kaiser, Manfred Kayser, Martina Unterländer, Nina Hollfelder, Inna D. Potekhina, Wolfram Schier, Mark G. Thomas & Joachim Burger

Pigmentation is a polygenic trait encompassing some of the most visible phenotypic variation observed in humans. Here we present direct estimates of selection acting on functional alleles in three key genes known to be involved in human pigmentation pathways—HERC2, SLC45A2, and TYR—using allele frequency estimates from Eneolithic, Bronze Age, and modern Eastern European samples and forward simulations. Neutrality was overwhelmingly rejected for all alleles studied, with point estimates of selection ranging from around 2–10% per generation. Our results provide direct evidence that strong selection favoring lighter skin, hair, and eye pigmentation has been operating in European populations over the last 5,000 y.

ancient DNA | computer simulations | natural selection | Neolithic/Bronze Age | Eastern Europe

Biologie

DECKER 2014

Jared E. Decker et al., *Worldwide Patterns of Ancestry, Divergence, and Admixture in Domesticated Cattle.* [PLoS Genetics 10 \(2014\), e1004254. DOI:10.1371/journal.pgen.1004254.](#)

Jared E. Decker, Stephanie D. McKay, Megan M. Rolf, JaeWoo Kim, Antonio Molina Alcalá, Tad S. Sonstegard, Olivier Hanotte, Anders Götherström, Christopher M. Seabury, Lisa Praharani, Masroor Ellahi Babar, Luciana Correia de Almeida Regitano, Mehmet Ali Yildiz, Michael P. Heaton, Wan-Sheng Liu, Chu-Zhao Lei, James M. Reecy, Muhammad Saif-Ur-Rehman, Robert D. Schnabel & Jeremy F. Taylor

The history of Asian cattle involves the domestication and admixture of several species whereas African taurines arose through the introduction of domesticated Fertile Crescent taurines and their hybridization with wild African aurochs.

The domestication and development of cattle has considerably impacted human societies, but the histories of cattle breeds and populations have been poorly understood especially for African, Asian, and American breeds. Using genotypes from 43,043 autosomal single nucleotide polymorphism markers scored in 1,543 animals, we evaluate the population structure of 134 domesticated bovid breeds. Regardless of the analytical method or sample subset, the three major groups of Asian indicine, Eurasian taurine, and African taurine were consistently observed. Patterns of geographic dispersal resulting from co-migration with humans and exportation are recognizable in phylogenetic networks. All analytical methods reveal patterns of hybridization which occurred after divergence. Using 19 breeds, we map the cline of indicine introgression into Africa. We infer that African taurine possess a large portion of wild African auroch ancestry, causing their divergence from Eurasian taurine. We detect exportation patterns in Asia and identify a cline of Eurasian taurine/indicine hybridization in Asia. We also identify the influence of species other than *Bos taurus taurus* and *B. t. indicus* in the formation of Asian breeds. We detect the pronounced influence of Shorthorn cattle in the formation of European breeds. Iberian and Italian cattle possess introgression from African taurine. American Criollo cattle originate from Iberia, and not directly from Africa with African ancestry inherited via Iberian ancestors. Indicine introgression into American cattle occurred in the Americas, and not Europe. We argue that cattle migration, movement and trading followed by admixture have been important forces in shaping modern bovine genomic variation.

Datierung

CHERUBINI 2013

Paolo Cherubini et al., *Olive Tree-Ring Problematic Dating, A Comparative Analysis on Santorini (Greece)*. [PLoS ONE 8 \(2013\), e54730](#). DOI:10.1371/journal.pone.0054730.

Paolo Cherubini, Turi Humbel, Hans Beeckman, Holger Gärtner, David Mannes, Charlotte Pearson, Werner Schoch, Roberto Tognetti & Simcha Lev-Yadun

Olive trees are a classic component of Mediterranean environments and some of them are known historically to be very old. In order to evaluate the possibility to use olive tree-rings for dendrochronology, we examined by various methods the reliability of olive tree-rings identification. Dendrochronological analyses of olive trees growing on the Aegean island Santorini (Greece) show that the determination of the number of tree-rings is impossible because of intra-annual wood density fluctuations, variability in tree-ring boundary structure, and restriction of its cambial activity to shifting sectors of the circumference, causing the tree-ring sequences along radii of the same cross section to differ.

RITNER 2014

Robert K. Ritner & Nadine Moeller, *The Ahmose ‘Tempest Stela’, Thera and Comparative Chronology*. [Journal of Near Eastern Studies 73 \(2014\), 1–19](#).

From the press release: In 2006, radiocarbon testing of an olive tree buried under volcanic residue placed the date of the Thera eruption at 1621—1605 B.C. Until now, the archeological evidence for the date of the Thera eruption seemed at odds with the radiocarbon dating, explained Oriental Institute postdoctoral scholar Felix Hoeflmayer, who has studied the chronological implications related to the eruption. However, if the date of Ahmose’s reign is earlier than previously believed,

the resulting shift in chronology “might solve the whole problem,” Hoeflmayer said.

The revised dating of Ahmose’s reign could mean the dates of other events in the ancient Near East fit together more logically, scholars said. For example, it realigns the dates of important events such as the fall of the power of the Canaanites and the collapse of the Babylonian Empire, said David Schloen, associate professor in the Oriental Institute and Near Eastern Languages & Civilizations on ancient cultures in the Middle East. “This new information would provide a better understanding of the role of the environment in the development and destruction of empires in the ancient Middle East,” he said.

For example, the new chronology helps to explain how Ahmose rose to power and supplanted the Canaanite rulers of Egypt—the Hyksos—according to Schloen. The Thera eruption and resulting tsunami would have destroyed the Hyksos’ ports and significantly weakened their sea power. In addition, the disruption to trade and agriculture caused by the eruption would have undermined the power of the Babylonian Empire and could explain why the Babylonians were unable to fend off an invasion of the Hittites, another ancient culture that flourished in what is now Turkey.

VINTHER 2006

B. M. Vinther et al., *A synchronized dating of three Greenland ice cores throughout the Holocene*. [Journal of Geophysical Research 111 \(2006\), D13102](#). DOI:10.1029/2005JD006921.

JGeophysRes111-D13102-Supplement.zip

B. M. Vinther, H. B. Clausen, S. J. Johnsen, S. O. Rasmussen, K. K. Andersen, S. L. Buchardt, D. Dahl-Jensen, I. K. Seierstad, M.-L. Siggaard-Andersen, J. P. Steffensen, A. Svensson, J. Olsen & J. Heinemeier

As part of the effort to create the new Greenland Ice Core Chronology 2005 (GICC05) a synchronized stratigraphical timescale for the Holocene parts of the DYE-3, Greenland Ice Core Project (GRIP), and North Greenland Ice Core Project (NGRIP) ice cores is made by using volcanic reference horizons in electrical conductivity measurements to match the cores. The main annual layer counting is carried out on the most suited records only, exploiting that the three ice cores have been drilled at locations with different climatic conditions and differences in ice flow. However, supplemental counting on data from all cores has been performed between each set of reference horizons in order to verify the validity of the match. After the verification, the main dating is transferred to all records using the volcanic reference horizons as tie points. An assessment of the mean annual layer thickness in each core section confirms that the new synchronized dating is consistent for all three cores. The data used for the main annual layer counting of the past 7900 years are the DYE-3, GRIP, and NGRIP stable isotope records. As the high accumulation rate at the DYE-3 drill site makes the seasonal cycle in the DYE-3 stable isotopes very resistant to firn diffusion, an effort has been made to extend the DYE-3 Holocene record. The new synchronized dating relies heavily on this record of $\pm 75,000$ stable isotope samples. The dating of the early Holocene consists of an already established part of GICC05 for GRIP and NGRIP which has now been transferred to the DYE-3 core. GICC05 dates the Younger Dryas termination, as defined from deuterium excess, to 11,703 years before A. D. 2000 (b2k), 130 years earlier than the previous GRIP dating.

Energie

NILSSON 2014

Andreas Nilsson, Cecilia Jakobsson Bergstad, Liane Thuvander, David Andersson, Kristin Andersson & Par Meiling, *Effects of continuous feedback on households' electricity consumption, Potentials and barriers*. [Applied Energy](#) **122** (2014), 17–23.

Two field experiments were carried out to study (a) the effects on energy savings of continuous visual feedback via in-home displays, and (b) the motives for responding or not. In study 1, 40 participants living in separate or semi-detached houses in two different towns participated. All participants received a questionnaire and a list of possible energy saving measures. Households were then randomly assigned to an experimental condition (display) or a control condition (no display). In study 2, 32 households in rented apartments participated. No significant differences between the conditions were found for either of the studies. In study 2, semi-structured interviews were conducted among nine of the households. Through an analysis of interview transcripts barriers were identified explaining why the feedback intervention was not sufficient to change behaviour and reduce consumption. The barriers experienced indicate that there is a risk of overconfidence in IHDs. For the development of energy policies and more wide-scale implementation, it is important to be aware of the potential obstacles to success.

Keywords: Electricity consumption | Intervention | Continuous feedback | In-home displays

Mittelpaläolithikum

HENRY 2014

Amanda G. Henry, Alison S. Brooks & Dolores R. Piperno, *Plant foods and the dietary ecology of Neanderthals and early modern humans*. [Journal of Human Evolution](#) **69** (2014), 44–54.

JHumEvo069-0044-Supplement1.pdf, JHumEvo069-0044-Supplement2.pdf

One of the most important challenges in anthropology is understanding the disappearance of Neanderthals. Previous research suggests that Neanderthals had a narrower diet than early modern humans, in part because they lacked various social and technological advances that lead to greater dietary variety, such as a sexual division of labor and the use of complex projectile weapons. The wider diet of early modern humans would have provided more calories and nutrients, increasing fertility, decreasing mortality and supporting large population sizes, allowing them to out-compete Neanderthals. However, this model for Neanderthal dietary behavior is based on analysis of animal remains, stable isotopes, and other methods that provide evidence only of animal food in the diet. This model does not take into account the potential role of plant food. Here we present results from the first broad comparison of plant foods in the diets of Neanderthals and early modern humans from several populations in Europe, the Near East, and Africa. Our data comes from the analysis of plant microremains (starch grains and phytoliths) in dental calculus and on stone tools. Our results suggest that both species consumed a similarly wide array of plant foods, including foods that are often considered low-ranked, like underground storage organs and grass seeds. Plants were consumed across the entire range of individuals and sites we examined, and none of the expected predictors of variation (species, geographic region, or associated stone tool technology) had a strong influence on the number of plant species consumed. Our data suggest that Neanderthal dietary ecology was more

complex than previously thought. This implies that the relationship between Neanderthal technology, social behavior, and food acquisition strategies must be better explored.

Keywords: Phytolith | Starch grain | Microfossil | Microremain | Neanderthal diet | Dental calculus

Neolithikum

HAYDEN 2014

Brian Hayden, *Competitive Feasting before Cultivation? A Comment on Asouti and Fuller*. *Current Anthropology* **55** (2014), 230–231.

In denying any competitive aspects of feasting or ritual, the authors seem to be wed to Rousseauian or British structural-functionalist interpretations in which traditional cultures lacked factional conflicts, competing interests, or dynamic mechanisms of change.

By placing social cohesion in the center of the causal chain leading to domestication, the authors also overlook the fact that communal food consumption and food sharing in order to create strong group cohesion for communitarian interests has been the hallmark of simple foragers for close to 2 million years. Therefore, why should a presumed need for social cohesion 14,000 years ago have led to cultivation and domestication only then and not before?

In addition, the communal structures that the authors refer to in arguing for community and regional integration rituals were too small to accommodate entire social groups and must have been used by very exclusive groups such as secret society members who typically put their own interests ahead of community interests and who requisition surpluses to be stored for their own use. In addition, Kuijt and Finlayson's (2009) claims for communal storage in the Pre-Pottery Neolithic A site actually consisted of multiple storage facilities (four granaries for 10 residential/processing structures). This indicates that these were corporately owned rather than built for communal use by the entire settlement. The human sacrifice of a young woman in the early Pre-Pottery Neolithic rituals at Jerf el Ahmar hardly seems comprehensible in terms of creating community integration (especially when performed in secret for an exclusive group) but clearly fits the pattern of power displays so typical of secret societies and the promotion of members' political interests.

Simply put, the major change that occurred in the region immediately before the beginning of cultivation and domestication was the appearance of complex (transegalitarian) hunter-gatherers who used surplus food in competitive contexts to acquire allies and marriage partners both of which conveyed important survival and reproductive benefits. This new dynamic provided a powerful new force to increase food production—something that ethnographers of transegalitarian societies have repeatedly documented.

Ozeanien

ALLENTOFT 2014

Morten Erik Allentoft et al., *Extinct New Zealand megafauna were not in decline before human colonization*. *PNAS* **111** (2014), 4922–4927.

pnas111-04922-Supplement1.xlsx, pnas111-04922-Supplement2.pdf, pnas111-04922-Supplement3.pdf

Morten Erik Allentoft, Rasmus Heller, Charlotte L. Oskam, Eline D. Lorenzen, Marie L. Hale, M. Thomas P. Gilbert, Christopher Jacomb, Richard N. Holdaway & Michael Bunce

The extinction of New Zealand's moa (Aves: Dinornithiformes) followed the arrival of humans in the late 13th century and was the final event of the prehistoric Late Quaternary megafauna extinctions. Determining the state of the moa populations in the preextinction period is fundamental to understanding the causes of the event. We sampled 281 moa individuals and combined radiocarbon dating with ancient DNA analyses to help resolve the extinction debate and gain insights into moa biology. The samples, which were predominantly from the last 4,000 years preceding the extinction, represent four sympatric moa species excavated from five adjacent fossil deposits. We characterized the moa assemblage using mitochondrial DNA and nuclear microsatellite markers developed specifically for moa. Although genetic diversity differed significantly among the four species, we found that the millennia preceding the extinction were characterized by a remarkable degree of genetic stability in all species, with no loss of heterozygosity and no shifts in allele frequencies over time. The extinction event itself was too rapid to be manifested in the moa gene pools. Contradicting previous claims of a decline in moa before Polynesian settlement in New Zealand, our findings indicate that the populations were large and stable before suddenly disappearing. This interpretation is supported by approximate Bayesian computation analyses. Our analyses consolidate the disappearance of moa as the most rapid, human-facilitated megafauna extinction documented to date.

Zündung

MARIANI 2014

Antonio Mariani & Fabrice Foucher, *Radio frequency spark plug, An ignition system for modern internal combustion engines.* [Applied Energy](#) **122** (2014), 151–161.

Plasma sustained ignition systems are promising alternatives to conventional spark plugs for those applications where the conditions inside the combustion chamber are more severe for spark plug operation, like internal combustion engines with high compression ratio values or intake charge dilution.

This paper shows the results of an experimental activity performed on a spark ignition internal combustion engine equipped with a Radio Frequency sustained Plasma Ignition System (RFSI). Results showed that the RFSI improved engine efficiency, extended the lean limit of combustion and reduced the cycle-by-cycle variability, compared with the conventional spark plug for all test conditions. The adoption of the RFSI also had a positive impact on carbon monoxide and unburned hydrocarbon emissions, whereas nitrogen oxide emissions increased due to higher temperatures in the combustion chamber. Therefore, RFSI represents an innovative ignition device for modern internal combustion engines and overcomes the compatibility problems of other non-conventional ignition systems.

Keywords: Plasma | Internal combustion engine | Efficiency | Exhaust emissions | Dilution