

References

Afrika

WOTZKA 2016

Hans-Peter Wotzka, *Neolithikum und Afrika, Kleiner Survey nach Objekten für den Kulturvergleich*. In: TIM KERIG, KATHRIN NOWAK & GEORG ROTH (Hrsg.), *Alles was zählt ... , Festschrift für Andreas Zimmermann*. Universitätsforschungen zur prähistorischen Archäologie 285 (Bonn 2016), 409–409.

Does it make sense to use the concept of ‘the Neolithic’ on the African continent? To what extent are Near Eastern/European and African early food producing cultures comparable? A critical review of 42 African Stone Age Cultures with food production shows a wide range of economic strategies, and a high diversity in specialization. Only a small number of African cultures can be directly linked to the Near Eastern Neolithic centres of domestication. The number of African economies who can be of use as analogies to European Neolithic economies is restricted, too. Most of the ancient African groups practiced food production strategies very differently from the European mixed crop and animal husbandry systems. The author denies the usefulness of the concept and the term “Neolithic” for African Archaeology. He also concludes that the European Neolithic is neither a historically unique approach to food producing economies, nor that food producing economies are genetically linked solely to the expansion of the Near Eastern-European Neolithic. The emergence of food production is much more universal and as such, it remains a problem.

Keywords: Africa | Neolithic | food producing economies | nomenclature

Ist es sinnvoll, den Begriff “Neolithikum” auf dem afrikanischen Kontinent anzuwenden? Inwieweit sind frühe vorderorientalisch-europäische und afrikanische produzierende Wirtschaftsweisen miteinander vergleichbar? Eine kritische Sichtung von 42 nahrungserzeugenden Steinzeitkulturen Afrikas zeigt eine große Bandbreite ökonomischer Strategien und einen hohen Grad von Spezialisierung. Nur eine kleine Zahl afrikanischer Kulturen kann direkt mit den nahöstlichen Domestikationszentren verbunden werden. Auch sind die Fälle selten, bei denen afrikanische Wirtschaftssysteme mit denen des europäischen Neolithikums verglichen werden können. Die meisten der altafrikanischen Nahrungsmittelerzeugenden Gruppen bedienten sich Produktionsstrategien, die sehr stark von den europäischen Agrarsystemen mit Ackerbau und Viehzucht abweichen.

Der Autor bestreitet die sinnvolle Anwendbarkeit des Begriffes Neolithikum in der afrikanischen Archäologie. Er betont, dass das europäische Neolithikum weder der historisch einzige Weg zur Erzeugung von Nahrungsmitteln ist, noch dass alle produzierende Wirtschaft auf eine wie auch immer geartete Ausbreitung aus dem Bereich des vorderorientalisch-europäischen Neolithikums zurückzuführen sei. Die Entstehung der Nahrungsmittelproduktion bleibt ein universalhistorisches Problem

Keywords: Afrika | Neolithikum | produzierende Wirtschaftssysteme | Terminologie

Aktuell

BRYAN 2016

Christopher J. Bryan, Gregory M. Walton & Carol S. Dweck, *Psychologically authentic versus inauthentic replication attempts*. [PNAS 113 \(2016\), E6548](#).

Psychological experiments often seem simple. This is deceptive. They are predicated on a careful analysis of psychological processes and the contextual factors that influence them. An authentic replication begins with this psychological understanding. In the best cases it attempts to extend this understanding by, for example, directly comparing contexts in which a phenomenon is likely to emerge to ones in which it is not.

CHANG 2016

Brian Chang, Matthew Croson, Lorian Straker, Sean Gart, Carla Dove, John Gerwin & Sunghwan Jung, *How seabirds plunge-dive without injuries*. [PNAS 113 \(2016\), 12006–12011](#).

[pnas113-12006-Supplement1.mov](#), [pnas113-12006-Supplement2.mov](#)

In nature, several seabirds (e.g., gannets and boobies) dive into water at up to 24 m/s as a hunting mechanism; furthermore, gannets and boobies have a slender neck, which is potentially the weakest part of the body under compression during high-speed impact. In this work, we investigate the stability of the bird's neck during plunge-diving by understanding the interaction between the fluid forces acting on the head and the flexibility of the neck. First, we use a salvaged bird to identify plunge-diving phases. Anatomical features of the skull and neck were acquired to quantify the effect of beak geometry and neck musculature on the stability during a plunge-dive. Second, physical experiments using an elastic beam as a model for the neck attached to a skull-like cone revealed the limits for the stability of the neck during the bird's dive as a function of impact velocity and geometric factors. We find that the neck length, neck muscles, and diving speed of the bird predominantly reduce the likelihood of injury during the plunge-dive. Finally, we use our results to discuss maximum diving speeds for humans to avoid injury.

Keywords: diving | seabirds | buckling | injury | water entry

Significance: Plunge-diving is a very unique foraging method in the animal kingdom. A limited set of water birds exhibit this behavior, and only one family of seabirds (Sulidae) exhibit this behavior at high speeds. We studied the stability of the bird's slender and seemingly fragile neck during a plunge-dive by conducting simple experiments that mimic this behavior. An elegant analysis of the interaction among hydrodynamic forces, neck elasticity, and muscle contraction reveals that seabirds dive at appropriate speeds to avoid injury. Considering the popular recreational sport of diving, we also find a diving speed limit for humans to avoid injury.

CHRISTAKIS 2016

Nicholas A. Christakis, *Female genital cutting under the spotlight*. [nature 538 \(2016\), 465–466](#).

Variations in opinion between members of a community can be exploited to facilitate desirable changes in attitude, as exemplified by films that explore different beliefs about female genital cutting.

Unfortunately, both experiments measured attitudinal shifts at only one point in time after subjects had watched the film. We therefore do not know how stable

the observed improvement was. It is possible that even a week later, for example, attitudes returned to baseline. This is a common concern in the evaluation of educational efforts, and it is usually dealt with by taking measurements at several time points after an intervention. As Vogt et al. intimate, their results suggest that the improvements brought about by the single-treatment films disappeared within a week. Moreover, the data hint that the effect was fading even for the double-treatment film — possibly declining from around 50 % to 10 % of a standard deviation within a week. In addition, we do not know whether improved attitudes led to any change in behaviour, which could range from viewers discussing their beliefs with others to preventing their daughters from being cut. Closing this knowledge–behaviour gap is the holy grail of public-health interventions.

GERBER 2016

Alan S. Gerber, Gregory A. Huber, Daniel R. Biggers & David J. Hendry, *Variation in context unlikely explanation of nonrobustness of noun versus verb results, Reply to Bryan et al.* [PNAS 113 \(2016\), E6549–E6550.](#)

However, this is an ex-post argument, absent from their 2011 article. We provide four reasons our null findings are unlikely to stem from political-context differences. First, turnout effects in mobilization experiments are generally smaller, not larger, in high-profile elections because campaign communication environments are saturated and baseline participation rates are high. To see the difficulty in producing a double-digit turnout boost in such contexts, note that in Bryan et al.’s California 2008 study only 18.2 % of the control group (verb) did not vote.

LYONS 2016

S. Kathleen Lyons et al., *Holocene shifts in the assembly of plant and animal communities implicate human impacts.* [nature 529 \(2016\), 80–83.](#)

[n529-0080-Supplement1.pdf](#), [n529-0080-Supplement2.xlsx](#), [n529-0080-Comment1.pdf](#), [n529-0080-Reply1.pdf](#)

S. Kathleen Lyons, Kathryn L. Amatangelo, Anna K. Behrensmeyer, Antoine Bercovici, Jessica L. Blois, Matt Davis, William A. DiMichele, Andrew Du, Jussi T. Eronen, J. Tyler Faith, Gary R. Graves, Nathan Jud, Conrad Labandeira, Cindy V. Looy, Brian McGill, Joshua H. Miller, David Patterson, Silvia Pineda-Munoz, Richard Potts, Brett Riddle, Rebecca Terry, Anikó Tóth, Werner Ulrich, Amelia Villaseñor, Scott Wing, Heidi Anderson, John Anderson, Donald Waller & Nicholas J. Gotelli

Understanding how ecological communities are organized and how they change through time is critical to predicting the effects of climate change¹. Recent work documenting the co-occurrence structure of modern communities found that most significant species pairs co-occur less frequently than would be expected by chance^{2,3}. However, little is known about how co-occurrence structure changes through time. Here we evaluate changes in plant and animal community organization over geological time by quantifying the co-occurrence structure of 359,896 unique taxon pairs in 80 assemblages spanning the past 300 million years. Co-occurrences of most taxon pairs were statistically random, but a significant fraction were spatially aggregated or segregated. Aggregated pairs dominated from the Carboniferous period (307 million years ago) to the early Holocene epoch (11,700 years before present), when there was a pronounced shift to more segregated pairs, a trend that continues in modern assemblages. The shift began during the Holocene and coincided with increasing human population size^{4,5} and the

spread of agriculture in North America^{6,7}. Before the shift, an average of 64 % of significant pairs were aggregated; after the shift, the average dropped to 37 %. The organization of modern and late Holocene plant and animal assemblages differs fundamentally from that of assemblages over the past 300 million years that predate the large-scale impacts of humans. Our results suggest that the rules governing the assembly of communities have recently been changed by human activity.

LYONS 2016

S. Kathleen Lyons et al., *Lyons et al. reply*. *nature* **538** (2016), e3–e4.

S. Kathleen Lyons, Joshua H. Miller, Kathryn L. Amatangel, Anna K. Behrensmeyer, Antoine Bercovici, Jessica L. Blois, Matt Davis, William DiMichele, Andrew Du, Jussi T. Eronen, J. Tyler Faith, Gary R. Graves, Nathan Jud, Conrad Labandeira, Cindy V. Looy, Brian McGill, David Patterson, Silvia Pineda-Munoz, Richard Potts, Brett Riddle, Rebecca Terry, Anikó Tóth, Werner Ulrich, Amelia Villaseñor, Scott Wing, Heidi Anderson, John Anderson & Nicholas J. Gotelli

Telford et al. argue that sampling is responsible. However, their data supporting a sample size effect are highly inconsistent.

TELFORD 2016

Richard J. Telford, Joseph D. Chipperfield, Hilary H. Birks & H. John B. Birks, *How foreign is the past? Comment*. *nature* **538** (2016), e1–e2.

Lyons et al. report that the break-point results were “similar when island data were excluded”. In fact, although the break-point age is identical (Extended Data Table 1), the already wide 95 % confidence intervals of the break point widen to include the last five million years. This break point is not statistically significant. If the dispersal-limited recent datasets are also excluded (Extended Data Table 1), an early Permian break point is found. This instability reflects the large uncertainties in the break-point analysis.

VOGT 2016

Sonja Vogt, Nadia Ahmed Mohammed Zaid, Hilal El Fadil Ahmed, Ernst Fehr & Charles Efferson, *Changing cultural attitudes towards female genital cutting*. *nature* **538** (2016), 506–509.

n538-0506-Supplement.pdf

As globalization brings people with incompatible attitudes into contact, cultural conflicts inevitably arise. Little is known about how to mitigate conflict and about how the conflicts that occur can shape the cultural evolution of the groups involved. Female genital cutting is a prominent example^{1–3}. Governments and international agencies have promoted the abandonment of cutting for decades, but the practice remains widespread with associated health risks for millions of girls and women^{4,5}. In their efforts to end cutting, international agents have often adopted the view that cutting is locally pervasive and entrenched¹. This implies the need to introduce values and expectations from outside the local culture. Members of the target society may view such interventions as unwelcome intrusions^{1–3,6–9}, and campaigns promoting abandonment have sometimes led to backlash^{1,7,8,10,11} as they struggle to reconcile cultural tolerance with the conviction that cutting violates universal human rights^{1,9}. Cutting, however, is not necessarily locally pervasive and entrenched^{1,3,12}. We designed experiments on cultural change that exploited the existence of conflicting attitudes within cutting societies. We produced four entertaining movies that served as experimental treatments in two experiments in Sudan, and we developed an implicit association test to unobtrusively measure attitudes about cutting. The movies depart from the view that cutting is locally pervasive by dramatizing members of an extended family as they confront

each other with divergent views about whether the family should continue cutting. The movies significantly improved attitudes towards girls who remain uncut, with one in particular having a relatively persistent effect. These results show that using entertainment to dramatize locally discordant views can provide a basis for applied cultural evolution without accentuating intercultural divisions.

Archäologie

BINTLIFF 2016

John Bintliff, *The Landscape Archaeologist, Gould's Male Nipple and the Planck-Mach Debate*. In: TIM KERIG, KATHRIN NOWAK & GEORG ROTH (Hrsg.), *Alles was zählt . . . , Festschrift für Andreas Zimmermann*. Universitätsforschungen zur prähistorischen Archäologie 285 (Bonn 2016), 403–407.

Andreas Zimmermann's research into the history of the European landscape and its demography are a landmark. This chapter will try to explain why we carry out Landscape Archaeology in the first place, and will invoke literature, human ecology, rural history, von Ranke's pure History, Biophilia, the history of modern Physics, and optimal-forager theory in a search for explanations.

Keywords: Landscape | Human Ecology | Biophilia

Andreas Zimmermanns Forschung zur Geschichte der europäischen Landschaft und ihrer Demografie sind Landmarken. Dieses Kapitel versucht zu ergründen, warum wir überhaupt Landschaftsarchäologie betreiben und wird sich bei der Suche nach Erklärungen auf die Literatur, die Humanökologie, die Geschichte des ländlichen Raums, Rankes reine Geschichte, die Biophilie, die Geschichte der modernen Physik und die Optimal-forager-Theorie stützen.

Keywords: Landschaft | Humanökologie | Biophilie

KERIG 2016

TIM KERIG, KATHRIN NOWAK & GEORG ROTH (Hrsg.), *Alles was zählt . . . , Festschrift für Andreas Zimmermann*. Universitätsforschungen zur prähistorischen Archäologie 285 (Bonn 2016).

Bibel

BURNETT 2016

Joel S. Burnett, *Ammon, Moab and Edom, Gods & Kingdoms East of the Jordan*. *Biblical Archaeology Review* 42 (2016), vi, 26–40, 66–67.

Yet from Israel we do not have a single piece of monumental sculpture comparable to those from Ammon and Moab. When it comes to inscriptions, the disparity is even more dramatic. The great inscriptions confirming the history (even the very existence) of Israel and Judah and shedding light on national (and international) religious life come from kings and kingdoms other than Judah and Israel—most important, the Mesha Stele, the Tel Dan Stele and the Balaam inscription from Deir 'Alla. Why is this the case? Is there some cultural reason that Israel has not produced great visual Iron Age art? And why aren't there long inscriptions? Is it simply the luck of the archaeological draw? Or is there some deeper cultural or historical distinction between the kingdoms west and east of the Jordan? Could it have something to do with the fact that we also have no Ammonite, Moabite or Edomite Bible?

SAPIR-HEN 2016

Lidar Sapir-Hen, *Pigs as an Ethnic Marker? You Are What You Eat. Biblical Archaeology Review* **42** (2016), vi, 41–43, 70.

A surprising dichotomy between Israel and Judah in terms of pork consumption is evident in the Iron Age IIB. [...] This dichotomy may hint at the reason (or perhaps one of the reasons) behind the emergence of the pork taboo. It could have been directed not toward the Philistines, who had already begun losing their attraction to pork [in Iron Age IIC], but toward the northern Israelites, who had been eating pork and who had moved to Judah in the decades following the collapse of the northern kingdom in 720 B.C.E.

Biologie

SOUBRIER 2016

Julien Soubrier et al., *Early cave art and ancient DNA record the origin of European bison. Nature Communications* **7** (2016), 13158. DOI:10.1038/ncomms13158.

NatComm07-13158-Supplement.pdf

Julien Soubrier, Graham Gower, Kefei Chen, Stephen M. Richards, Bastien Llamas, Kieren J. Mitchell, Simon Y. W. Ho, Pavel Kosintsev, Michael S. Y. Lee, Gennady Baryshnikov, Ruth Bollongino, Pere Bover, Joachim Burger, David Chivall, Evelyne Crégut-Bonnoure, Jared E. Decker, Vladimir B. Doronichev, Katerina Douka, Damien A. Fordham, Federica Fontana, Carole Fritz, Jan Glimmerveen, Liubov V. Golovanova, Colin Groves, Antonio Guerreschi, Wolfgang Haak, Tom Higham, Emilia Hofman-Kamińska, Alexander Immel, Marie-Anne Julien, Johannes Krause, Oleksandra Krotova, Frauke Langbein, Greger Larson, Adam Rohrlach, Amelie Scheu, Robert D. Schnabel, Jeremy F. Taylor, Małgorzata Tokarska, Gilles Tosello, Johannes van der Plicht, Ayla van Loenen, Jean-Denis Vigne, Oliver Wooley, Ludovic Orlando, Rafał Kowalczyk, Beth Shapiro & Alan Cooper

The two living species of bison (European and American) are among the few terrestrial megafauna to have survived the late Pleistocene extinctions. Despite the extensive bovid fossil record in Eurasia, the evolutionary history of the European bison (or wisent, *Bison bonasus*) before the Holocene (c.11.7 thousand years ago (kya)) remains a mystery. We use complete ancient mitochondrial genomes and genome-wide nuclear DNA surveys to reveal that the wisent is the product of hybridization between the extinct steppe bison (*Bison priscus*) and ancestors of modern cattle (aurochs, *Bos primigenius*) before 120 kya, and contains up to 10% aurochs genomic ancestry. Although undetected within the fossil record, ancestors of the wisent have alternated ecological dominance with steppe bison in association with major environmental shifts since at least 55 kya. Early cave artists recorded distinct morphological forms consistent with these replacement events, around the Last Glacial Maximum (LGM, B21–18 kya).

Grabung

BARKAY 2016

Gabriel Barkay & Zachi Dvira, *Relics in Rubble, The Temple Mount Sifting Project. Biblical Archaeology Review* **42** (2016), vi, 44–55, 64.

The plethora of Byzantine-period artifacts stands in contrast to the commonly held view that in the Byzantine era the Temple Mount was desolate or, according to some sources, a garbage dump. Solomon's Stables, where the new mosque is

located, got its name in the Crusader period (1099–1187 C.E.) when the Knights Templar used the area as stables. They had their headquarters in the Al-Aqsa Mosque, which they named “Solomon’s Temple.”

Klima

FRIELING 2016

Joost Frieling, Henrik H. Svensen, Sverre Planke, Margot J. Cramwinckel, Haavard Selnes & Appy Sluijs, *Thermogenic methane release as a cause for the long duration of the PETM*. [PNAS 113 \(2016\), 12059–12064](#).

The Paleocene–Eocene Thermal Maximum (PETM) (≈ 56 Ma) was a $\approx 170,000$ -y (≈ 170 -kyr) period of global warming associated with rapid and massive injections of ^{13}C -depleted carbon into the ocean–atmosphere system, reflected in sedimentary components as a negative carbon isotope excursion (CIE). Carbon cycle modeling has indicated that the shape and magnitude of this CIE are generally explained by a large and rapid initial pulse, followed by ≈ 50 kyr of ^{13}C -depleted carbon injection. Suggested sources include submarine methane hydrates, terrigenous organic matter, and thermogenic methane and CO_2 from hydrothermal vent complexes. Here, we test for the contribution of carbon release associated with volcanic intrusions in the North Atlantic Igneous Province. We use dinoflagellate cyst and stable carbon isotope stratigraphy to date the active phase of a hydrothermal vent system and find it to postdate massive carbon release at the onset of the PETM. Crucially, however, it correlates to the period within the PETM of longer-term ^{13}C -depleted carbon release. This finding represents actual proof of PETM carbon release from a particular reservoir. Based on carbon cycle box model [i.e., Long-Term Ocean–Atmosphere–Sediment Carbon Cycle Reservoir (LOSCAR) model] experiments, we show that 4–12 pulses of carbon input from vent systems over 60 kyr with a total mass of 1,500 Pg of C, consistent with the vent literature, match the shape of the CIE and pattern of deep ocean carbonate dissolution as recorded in sediment records. We therefore conclude that CH_4 from the Norwegian Sea vent complexes was likely the main source of carbon during the PETM, following its dramatic onset.

Keywords: carbon cycle | thermogenic methane | volcanism | climate change | PETM

Significance: The Paleocene–Eocene Thermal Maximum (PETM) was a period of global warming associated with rapid massive ^{13}C -depleted carbon input, often mentioned as a paleoanalog for future climate change and associated feedbacks. One hypothesized carbon source is intrusive volcanism in the North Atlantic region, but rigid dating lacks. We date thermogenic methane release from a hydrothermal vent and find that it postdates the onset of the PETM but correlates to a period of additional carbon injection within the PETM. This study provides evidence of carbon release during the PETM from a reservoir (i.e., organic matter in sedimentary rocks) and implies that carbon release from the vent systems should be included in all future considerations regarding PETM carbon cycling.

WENZEL 2016

Sabrina Wenzel, Peter M. Cox, Veronika Eyring & Pierre Friedlingstein, *Projected land photosynthesis constrained by changes in the seasonal cycle of atmospheric CO_2* . [nature 538 \(2016\), 499–501](#).

Uncertainties in the response of vegetation to rising atmospheric CO_2 concentrations^{1,2} contribute to the large spread in projections of future climate change^{3,4}.

Climate–carbon cycle models generally agree that elevated atmospheric CO₂ concentrations will enhance terrestrial gross primary productivity (GPP). However, the magnitude of this CO₂ fertilization effect varies from a 20 per cent to a 60 per cent increase in GPP for a doubling of atmospheric CO₂ concentrations in model studies^{5–7}. Here we demonstrate emergent constraints^{8–11} on large-scale CO₂ fertilization using observed changes in the amplitude of the atmospheric CO₂ seasonal cycle that are thought to be the result of increasing terrestrial GPP^{12–14}. Our comparison of atmospheric CO₂ measurements from Point Barrow in Alaska and Cape Kumukahi in Hawaii with historical simulations of the latest climate–carbon cycle models demonstrates that the increase in the amplitude of the CO₂ seasonal cycle at both measurement sites is consistent with increasing annual mean GPP, driven in part by climate warming, but with differences in CO₂ fertilization controlling the spread among the model trends. As a result, the relationship between the amplitude of the CO₂ seasonal cycle and the magnitude of CO₂ fertilization of GPP is almost linear across the entire ensemble of models. When combined with the observed trends in the seasonal CO₂ amplitude, these relationships lead to consistent emergent constraints on the CO₂ fertilization of GPP. Overall, we estimate a GPP increase of 37 ± 9 per cent for high-latitude ecosystems and 32 ± 9 per cent for extratropical ecosystems under a doubling of atmospheric CO₂ concentrations on the basis of the Point Barrow and Cape Kumukahi records, respectively.

Kultur

ALLEN 2016

Mark W. Allen, Robert Lawrence Bettinger, Brian F. Coddling, Terry L. Jones & Al W. Schwitalla, *Resource scarcity drives lethal aggression among prehistoric hunter-gatherers in central California*. [PNAS 113 \(2016\), 12120–12125](#).

The origin of human violence and warfare is controversial, and some scholars contend that intergroup conflict was rare until the emergence of sedentary foraging and complex sociopolitical organization, whereas others assert that violence was common and of considerable antiquity among small-scale societies. Here we consider two alternative explanations for the evolution of human violence: (i) individuals resort to violence when benefits outweigh potential costs, which is likely in resource poor environments, or (ii) participation in violence increases when there is coercion from leaders in complex societies leading to group level benefits. To test these hypotheses, we evaluate the relative importance of resource scarcity vs. sociopolitical complexity by evaluating spatial variation in three macro datasets from central California: (i) an extensive bioarchaeological record dating from 1,530 to 230 cal BP recording rates of blunt and sharp force skeletal trauma on thousands of burials, (ii) quantitative scores of sociopolitical complexity recorded ethnographically, and (iii) mean net primary productivity (NPP) from a remotely sensed global dataset. Results reveal that sharp force trauma, the most common form of violence in the record, is better predicted by resource scarcity than relative sociopolitical complexity. Blunt force cranial trauma shows no correlation with NPP or political complexity and may reflect a different form of close contact violence. This study provides no support for the position that violence originated with the development of more complex hunter-gatherer adaptations in the fairly recent past. Instead, findings show that individuals are prone to violence in times and places of resource scarcity.

Keywords: warfare | prehistoric violence | North America

Significance: From warfare to homicide, lethal violence is an all too common aspect of the human experience, yet we still do not have a clear explanation of why individuals kill one another. We suggest the search for an answer should begin with an empirical understanding of where and when individuals are more prone to experience violence. Examining patterns of lethal trauma among hunter-gatherer populations in prehistoric central California, this study reveals that violence is explained by resource scarcity and not political organization. This finding provides a clear rationale to understand why violence may be greater in specific times or places through human history, which can help predict where and when it may arise in the future.

Ozeanien

SKOGLUND 2016

Pontus Skoglund et al., *Genomic insights into the peopling of the Southwest Pacific*. [nature](#) **538** (2016), 510–513.

[n538-0510-Supplement.pdf](#)

Pontus Skoglund, Cosimo Posth, Kendra Sirak, Matthew Spriggs, Frederique Valentin, Stuart Bedford, Geoffrey R. Clark, Christian Reepmeyer, Fiona Petchey, Daniel Fernandes, Qiaomei Fu, Eadaoin Harney, Mark Lipson, Swapan Mallick, Mario Novak, Nadin Rohland, Kristin Stewardson, Syafiq Abdullah, Murray P. Cox, Françoise R. Friedlaender, Jonathan S. Friedlaender, Toomas Kivisild, George Koki, Pradiptajati Kusuma, D. Andrew Merriwether, Francois-X. Ricaut, Joseph T. S. Wee, Nick Patterson, Johannes Krause, Ron Pinhasi & David Reich

The appearance of people associated with the Lapita culture in the South Pacific around 3,000 years ago¹ marked the beginning of the last major human dispersal to unpopulated lands. However, the relationship of these pioneers to the long-established Papuan people of the New Guinea region is unclear. Here we present genome-wide ancient DNA data from three individuals from Vanuatu (about 3,100–2,700 years before present) and one from Tonga (about 2,700–2,300 years before present), and analyse them with data from 778 present-day East Asians and Oceanians. Today, indigenous people of the South Pacific harbour a mixture of ancestry from Papuans and a population of East Asian origin that no longer exists in unmixed form, but is a match to the ancient individuals. Most analyses have interpreted the minimum of twenty-five per cent Papuan ancestry in the region today as evidence that the first humans to reach Remote Oceania, including Polynesia, were derived from population mixtures near New Guinea, before their further expansion into Remote Oceania^{2–5}. However, our finding that the ancient individuals had little to no Papuan ancestry implies that later human population movements spread Papuan ancestry through the South Pacific after the first peopling of the islands.