

Literatur

Aktuell

EISENSTEIN 2014

Michael Eisenstein, *An injection of trust*. [nature 507 \(2014\), Supplement, S17–S19](#).

Faced with outbreaks of preventable diseases, public-health experts need to win over parents who refuse vaccinations.

EISLER 2014

Mark C. Eisler et al., *Steps to sustainable livestock*. [nature 507 \(2014\), 32–34](#).

Mark C. Eisler, Michael R. F. Lee, John F. Tarlton, Graeme B. Martin, John Beddington, Jennifer A. J. Dungait, Henry Greathead, Jianxin Liu, Stephen Mathew, Helen Miller, Tom Misselbrook, Phil Murray, Valil K. Vinod, Robert Van Saun & Michael Winter

With improved breeding and cultivation, ruminant animals can yield food that is better for people and the planet, say Mark C. Eisler, Michael R. F. Lee and colleagues.

HUGHES 2014

Virginia Hughes, *The Sins of the Father*. [nature 507 \(2014\), 22–24](#).

The roots of inheritance may extend beyond the genome, but the mechanisms remain a puzzle.

The subject remains controversial, in part because it harks back to the discredited theories of Jean-Baptiste Lamarck, a nineteenth-century French biologist who proposed that organisms pass down acquired traits to future generations. To many modern biologists, that’s “scary-sounding”, says Oliver Rando, a molecular biologist at the University of Massachusetts Medical School in Worcester, whose work suggests that such inheritance does indeed happen in animals. If it is true, he says, “Why hasn’t this been obvious to all the brilliant researchers in the past hundred years of genetics?”

One reason why many remain sceptical is that the mechanism by which such inheritance might work is mysterious. Explaining it will require a deep dive into reproductive biology to demonstrate how the relevant signals might be formed in the germ line, the cells that develop into sperm and eggs and carry on, at a minimum, a person’s genetic legacy.

LIVIO 2014

Mario Livio & Joe Silk, *Broaden the search for dark matter*. [nature 507 \(2014\), 29–31](#).

Bold strategies are needed to identify the elusive particles that should make up most of the Universe’s mass, say Mario Livio and Joe Silk.

Some theorists have even started to wonder whether dark matter exists. Since the 1980s, a few have proposed modifying the theory of general relativity to do away with the need for dark matter. Such radical ideas are increasingly invoked to address another grave problem in astrophysics: the origin of the ‘dark energy’ that accelerates the expansion of the Universe.

Rii 2014

Yoshimi Rii, *A powerful narrative*. *nature* **507** (2014), 131.

Scientists should find engaging ways to present information to their target audience, says Yoshimi Rii.

The user-friendly nature of software such as PowerPoint allows anyone to make a presentation without much thought. Type in a few talking points, throw in some pictures and voilà! Here's my cookie-cutter talk. Never mind that there's too much information on some slides — they're bulleted, so they must be easy to understand! The plot makes five or six points, but hey, it's colourful and impressive, so that's OK, right? Reliance on bullet points and complicated graphs has caused many to become lax at applying important performance skills.

Anthropologie

GALUSCHKA 2014

Katharina Galuschka, Elena Ise, Kathrin Krick & Gerd Schulte-Körne, *Effectiveness of Treatment Approaches for Children and Adolescents with Reading Disabilities, A Meta-Analysis of Randomized Controlled Trials*. *PLoS ONE* **9** (2014), e89900.

[DOI:10.1371/journal.pone.0089900](https://doi.org/10.1371/journal.pone.0089900).

Children and adolescents with reading disabilities experience a significant impairment in the acquisition of reading and spelling skills. Given the emotional and academic consequences for children with persistent reading disorders, evidence-based interventions are critically needed. The present meta-analysis extracts the results of all available randomized controlled trials. The aims were to determine the effectiveness of different treatment approaches and the impact of various factors on the efficacy of interventions. The literature search for published randomized-controlled trials comprised an electronic search in the databases ERIC, PsycINFO, PubMed, and Cochrane, and an examination of bibliographical references. To check for unpublished trials, we searched the websites clinicaltrials.com and ProQuest, and contacted experts in the field. Twenty-two randomized controlled trials with a total of 49 comparisons of experimental and control groups could be included. The comparisons evaluated five reading fluency trainings, three phonemic awareness instructions, three reading comprehension trainings, 29 phonics instructions, three auditory trainings, two medical treatments, and four interventions with coloured overlays or lenses. One trial evaluated the effectiveness of sunflower therapy and another investigated the effectiveness of motor exercises. The results revealed that phonics instruction is not only the most frequently investigated treatment approach, but also the only approach whose efficacy on reading and spelling performance in children and adolescents with reading disabilities is statistically confirmed. The mean effect sizes of the remaining treatment approaches did not reach statistical significance. The present meta-analysis demonstrates that severe reading and spelling difficulties can be ameliorated with appropriate treatment. In order to be better able to provide evidence-based interventions to children and adolescent with reading disabilities, research should intensify the application of blinded randomized controlled trials.

Datierung

REBOLLO 2011

N. R. Rebollo, S. Weiner, F. Brock, L. Meignen, P. Goldberg, A.

Belfer-Cohen, O. Bar-Yosef & E. Boaretto, *New radiocarbon dating of the transition from the Middle to the Upper Paleolithic in Kebara Cave, Israel*. *Journal of Archaeological Science* **38** (2011), 2424–2433.

The Middle to Upper Paleolithic transition (MP-UP transition) is considered a major technological and cultural threshold, at the time when modern humans spread “out of Africa”, expanded from the Levant into Europe and possibly into central and northern Asia. The dating of this techno-cultural transition has proved to be extremely difficult because it occurred sometime before 40,000 radiocarbon years before present (14C years BP), which is close to the end of the effective dating range of radiocarbon. Other dating methods such as Thermoluminescence (TL) or Electron Spin Resonance (ESR) are not sufficiently precise to date the recorded archaeological MP-UP transition in the Levant. Here we report a consistent set of stratified radiocarbon ages on freshly excavated charcoal from Kebara Cave, Mt. Carmel (Israel), that span the late Middle Paleolithic (MP) and Early Upper Paleolithic (EUP) This study applied novel strategies to improve sample preparation techniques and data analysis to obtain high-resolution radiocarbon models. From this study it is proposed that the MP-UP transition for this site can be placed immediately after $45,200 \pm 700$ 14C years BP and before $43,600 \pm 600$ 14C years BP or from 49/48 to 47/46 radiocarbon calibrated years before present (years Cal BP).

Keywords: Middle to Upper Paleolithic transition | Radiocarbon dating | Paleolithic Archaeology | Levant | Human evolution

Energie

HARADA 2014

Kouji H. Harada et al., *Radiation dose rates now and in the future, for residents neighboring restricted areas of the Fukushima Daiichi Nuclear Power Plant*. *PNAS* **111** (2014), E914–E923.

Kouji H. Harada, Tamon Niisoe, Mie Imanaka, Tomoyuki Takahashi, Katsumi Amako, Yukiko Fujii, Masatoshi Kanameishi, Kenji Ohse, Yasumichi Nakai, Tamami Nishikawa, Yuuichi Saito, Hiroko Sakamoto, Keiko Ueyama, Kumiko Hisaki, Eiji Ohara, Tokiko Inoue, Kanako Yamamoto, Yukiyo Matsuoka, Hitomi Ohata, Kazue Toshima, Ayumi Okada, Hitomi Sato, Toyomi Kuwamori, Hiroko Tani, Reiko Suzuki, Mai Kashikura, Michiko Nezu, Yoko Miyachi, Fusako Arai, Masanori Kuwamori, Sumiko Harada, Akira Ohmori, Hirohiko Ishikawa & Akio Koizumi
Radiation dose rates were evaluated in three areas neighboring a restricted area within a 20- to 50-km radius of the Fukushima Daiichi Nuclear Power Plant in August–September 2012 and projected to 2022 and 2062. Study participants wore personal dosimeters measuring external dose equivalents, almost entirely from deposited radionuclides (groundshine). External dose rate equivalents owing to the accident averaged 1.03, 2.75, and 1.66 mSv/y in the village of Kawauchi, the Tamano area of Soma, and the Haramachi area of Minamisoma, respectively. Internal dose rates estimated from dietary intake of radiocesium averaged 0.0058, 0.019, and 0.0088 mSv/y in Kawauchi, Tamano, and Haramachi, respectively. Dose rates from inhalation of resuspended radiocesium were lower than 0.001 mSv/y. In 2012, the average annual doses from radiocesium were close to the average background radiation exposure (2 mSv/y) in Japan. Accounting only for the physical decay of radiocesium, mean annual dose rates in 2022 were estimated as 0.31, 0.87, and 0.53 mSv/y in Kawauchi, Tamano, and Haramachi, respectively. The simple and conservative estimates are comparable with variations in the background dose, and unlikely to exceed the ordinary permissible dose rate (1 mSv/y) for the majority

of the Fukushima population. Health risk assessment indicates that post-2012 doses will increase lifetime solid cancer, leukemia, and breast cancer incidences by 1.06 %, 0.03 % and 0.28 % respectively, in Tamano. This assessment was derived from short-term observation with uncertainties and did not evaluate the first-year dose and radioiodine exposure. Nevertheless, this estimate provides perspective on the long-term radiation exposure levels in the three regions.

Fukushima nuclear disaster | exposure assessment | Strontium-90 | forest contamination | food duplicate

Grabung

DASTUGUE 2003

Jean Dastugue, Germaine Depierre & Henri Duday, *Paléopathologie*. In: CLAUDE ROLLEY (Hrsg.), *La tombe princière de Vix*. (Paris 2003), 42–47.

Le squelette de Vix est marqué par deux sortes d'anomalies:

a. Des altérations morphologiques dont la nature congénitale ne fait aucun doute. D'une part, elles portent sur des éléments d'asymétrie crânienne et atlantique qui sont à la frontière de la pathologie et qui évoquent la possibilité d'asymétries vasculaires et nerveuses (artère vertébrale, veine jugulaire interne, nerf trijumeau). D'autre part, il est atteint de malformation subluxante de la hanche bilatérale, affection qui est sans doute plus fréquente qu'on ne le dit généralement chez les populations anciennes et qui mériterait une étude approfondie portant sur de nombreuses collections osseuses encore insuffisamment explorées.

b. De véritables lésions, de nature dégénérative, portant sur diverses articulations. D'une part, on trouve une arthrose indiscutable du joint atlanto-odontoïdien dont, en l'absence des autres pièces cervicales, il est difficile d'apprécier le rapport avec l'asymétrie crânienne ou des modifications rachidiennes sous-jacentes. D'autre part, un syndrome arthrosique des hanches, des articulations sacro-iliaques et du rachis lombaire, facilement explicable par le trouble statique dû à la malformation coxo-fémorale.

Au total, un bilan déjà sévère chez ce sujet jeune ; bilan qui n'est sans doute qu'un minimum, car il est possible que des pièces manquantes de squelette (notamment du rachis) aient également été pathologiques. Mais aussi bilan assez homogène dans la mesure où toutes les anomalies constatées ont pour origine des troubles de développement à l'exclusion de toute étiologie traumatique, inflammatoire ou néoplastique.

Isotope

KINASTON 2014

Rebecca Kinaston, Hallie Buckley, Frederique Valentin, Stuart Bedford, Matthew Spriggs, Stuart Hawkins & Estelle Herrscher, *Lapita Diet in Remote Oceania, New Stable Isotope Evidence from the 3000-Year-Old Teouma Site, Efate Island, Vanuatu*. *PLoS ONE* **9** (2014), e90376. DOI:10.1371/journal.pone.0090376.

Remote Oceania was colonized ca. 3000 BP by populations associated with the Lapita Cultural Complex, marking a major event in the prehistoric settlement of the Pacific Islands. Although over 250 Lapita sites have been found throughout the Western Pacific, human remains associated with Lapita period sites are rare. The

site of Teouma, on Efate Island, Vanuatu has yielded the largest burial assemblage ($n = 68$ inhumations) of Lapita period humans ever discovered, providing a unique opportunity for assessing human adaptation to the environment in a colonizing population. Stable isotope ratios ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$, $\delta^{34}\text{S}$) of human bone collagen from forty-nine Teouma adults were analyzed against a comprehensive dietary baseline to assess the paleodiet of some of Vanuatu's earliest inhabitants. The isotopic dietary baseline included both modern plants and animals ($n = 98$) and prehistoric fauna from the site ($n = 71$). The human stable isotope data showed that dietary protein at Teouma included a mixture of reef fish and inshore organisms and a variety of higher trophic marine (e.g. marine turtle) and terrestrial animals (e.g. domestic animals and fruit bats). The domestic pigs and chickens at Teouma primarily ate food from a C3 terrestrial environment but their $\delta^{15}\text{N}$ values indicated that they were eating foods from higher trophic levels than those of plants, such as insects or human fecal matter, suggesting that animal husbandry at the site may have included free range methods. The dietary interpretations for the humans suggest that broad-spectrum foraging and the consumption of domestic animals were the most important methods for procuring dietary protein at the site. Males displayed significantly higher $\delta^{15}\text{N}$ values compared with females, possibly suggesting dietary differences associated with labor specialization or socio-cultural practices relating to food distribution.

Jungpaläolithikum

KRAUSE 2010

Johannes Krause, Adrian W. Briggs, Martin Kircher, Tomislav Maricic, Nicolas Zwyns, Anatoli Derevianko & Svante Pääbo, *A Complete mtDNA Genome of an Early Modern Human from Kostenki, Russia*. [Current Biology](#) **20** (2010), 231–236.

The recovery of DNA sequences from early modern humans (EMHs) could shed light on their interactions with archaic groups such as Neandertals and their relationships to current human populations. However, such experiments are highly problematic because present-day human DNA frequently contaminates bones [1, 2]. For example, in a recent study of mitochondrial (mt) DNA from Neolithic European skeletons, sequence variants were only taken as authentic if they were absent or rare in the present population, whereas others had to be discounted as possible contamination [3, 4]. This limits analysis to EMH individuals carrying rare sequences and thus yields a biased view of the ancient gene pool. Other approaches of identifying contaminating DNA, such as genotyping all individuals who have come into contact with a sample, restrict analyses to specimens where this is possible [5, 6] and do not exclude all possible sources of contamination. By studying mtDNA in Neandertal remains, where contamination and endogenous DNA can be distinguished by sequence, we show that fragmentation patterns and nucleotide misincorporations can be used to gauge authenticity of ancient DNA sequences. We use these features to determine a complete mtDNA sequence from a $\approx 30,000$ -year-old EMH from the Kostenki 14 site in Russia.

Klima

KERR 2014

Richard A. Kerr, *Atlantic Current Can Shut Down For Centuries, Disrupting Climate*. [science](#) **343** (2014), 831.

And it revealed new detail during the warm period between the two previous ice ages 115,000 to 130,000 years ago—that had seemed to be a tranquil enough time for North Atlantic circulation. Instead, the fossils analyzed by Galaasen and colleagues testified to three episodes in which the flow of NADW had slowed, stopped, or risen toward the surface. Each of the two more recent reductions in NADW flow lasted a few hundred years, but the earlier one consisted of several centuries-long drop-offs chockablock over about 2500 years.

Methoden

BORCARD 2011

Daniel Borcard, Francois Gillet & Pierre Legendre, *Numerical Ecology with R*. Use R! (New York 2011).

For some unclear reasons, a majority of ecology-oriented people are strangely reluctant when it comes to quantifying nature and using mathematical tools to help understand it. As if nature was inherently non-mathematical, which it is certainly not: mathematics is the common language of all sciences. Teachers of biostatistics and numerical ecology thus have to overcome this reluctance: before even beginning to teach the subject itself, they must convince their audience of the interest and necessity of it.

During many decades, ecologists, be they students or researchers (in the academic, private or government spheres), used to plan their research and collect data with few, if any, statistical consideration, and then entrusted the “statistical” analyses of their results to a person hired especially for that purpose. That person may well have been a competent statistician, and indeed in many cases, the progressive integration of statistics into the whole process of ecological research was triggered by such people. In other cases, however, the end product was a large amount of data summarized using a handful of basic statistics and tests of significance that were far from revealing all the richness of the structures hidden in the data tables. The separation of the ecological and statistical worlds presented many problems. The most important were that the ecologists were unaware of the array of methods available at the time, and the statisticians were unaware of the ecological hypotheses to be tested and the specific requirements of ecological data (the double-zero problem is a good example). Apart from preventing the data to be exploited properly, this double unawareness prevented the development of methods specifically tailored to ecological problems.

GOWER 1986

J. C. Gower & P. Legendre, *Metric and Euclidean Properties of Dissimilarity Coefficients*. *Journal of Classification* **3** (1986), 5–48.

We assemble here properties of certain dissimilarity coefficients and are specially concerned with their metric and Euclidean status. No attempt is made to be exhaustive as far as coefficients are concerned, but certain mathematical results that we have found useful are presented and should help establish similar properties for other coefficients. The response to different types of data is investigated, leading to guidance on the choice of an appropriate coefficient.

Keywords: Choice of coefficient; Dissimilarity; Distance; Euclidean property; Metric property; Similarity.

KOLEFF 2003

Patricia Koleff, Kevin J. Gaston & Jack J. Lennon, *Measuring beta diversity for presence–absence data*. *Journal of Animal Ecology* **72** (2003), 367–382.

1. Little consensus has been reached as to general features of spatial variation in beta diversity, a fundamental component of species diversity. This could reflect a genuine lack of simple gradients in beta diversity, or a lack of agreement as to just what constitutes beta diversity. Unfortunately, a large number of approaches have been applied to the investigation of variation in beta diversity, which potentially makes comparisons of the findings difficult.

2. We review 24 measures of beta diversity for presence/absence data (the most frequent form of data to which such measures are applied) that have been employed in the literature, express many of them for the first time in common terms, and compare some of their basic properties.

3. Four groups of measures are distinguished, with a fundamental distinction arising between ‘broad sense’ measures incorporating differences in composition attributable to species richness gradients, and ‘narrow sense’ measures that focus on compositional differences independent of such gradients. On a number of occasions on which the former have been employed in the literature the latter may have been more appropriate, and there are many situations in which consideration of both kinds of measures would be valuable.

4. We particularly recommend (i) considering beta diversity measures in terms of matching/mismatching components (usually denoted a, b and c) and thereby identifying the contribution of different sources of variation in species composition, and (ii) the use of ternary plots to express the relationship between the values of these measures and of the components, and as a way of understanding patterns in beta diversity.

Keywords: beta diversity, biodiversity, presence–absence, similarity indices, spatial turnover.

LEGENDRE 1998

Pierre Legendre & Louis Legendre, *Numerical Ecology*. Developments in Environmental Modelling 20 ([Amsterdam](#) ²1998).

Story or Book

NESBIT 2014

The Wives of Los Alamos. [nature](#) **507** (2014), 37.

The Wives of Los Alamos: A Novel. TaraShea Nesbit Bloomsbury (2014)

Behind the men behind the Los Alamos nuclear-research programme were women whose story has been waiting to be told. TaraShea Nesbit has done it lyrically in this novel. Written in the collective voice of “the wives” — international, often highly educated women — this chronicle of the Manhattan Project’s secret wartime base in New Mexico unfurls as they lived it, distorted by necessary lies. Their strange existence as housewives, “calculators” or lab technicians forms a vivid foreground to the building of the bombs that finished the Second World War, with Nesbit deftly capturing the claustrophobic surreality of it all.

ST CLAIR 2014

Coy St Clair, *Unit Simulation, Reconnect with your past*. [nature](#) **507** (2014), 134.

By the time she reached the end of her territory, three cars had passed without slowing down, even though she had looked hopefully at each one. It was insulting, really. She was a professional, after all. She may have been dressed in normal clothes, but there was no mistaking what she was, especially in this part of town.