

References

Aktuell

CLARK 2021

Samuel J. Clark & Abigail Norris Turner, *Monitoring epidemics, Lessons from measuring population prevalence of the coronavirus*. *PNAS* **118** (2021), e2026412118. DOI:10.1073/pnas.2026412118.

For the United States, data available from the Centers for Disease Control and Prevention (CDC) on 22 January 2021 describe at least 442,000 additional deaths beyond what was expected in 2020 (Fig. 1). The bulk—roughly 336,000—can be attributed directly to COVID-19, and many of the remainder are related to the general disruption wrought by the pandemic. For a sense of scale, there were 291,000 American battle deaths in World War II. Adding to the catastrophic excess deaths, many of the hundreds of thousands of people who have survived COVID-19 require months to recover and suffer ongoing disabilities, and everyone is affected by myriad disruptions to daily life. The cumulative human suffering related to COVID-19 is staggering.

DAVIES 2021

Nicholas G. Davies et al., *Estimated transmissibility and impact of SARS-CoV-2 lineage B.1.1.7 in England*. *science* **2021**, iii, abg3055. DOI:10.1126/science.abg3055.

s2021.03-abg3055-Supplement.pdf

A novel SARS-CoV-2 variant, VOC 202012/01 (lineage B.1.1.7), emerged in southeast England in November 2020 and is rapidly spreading toward fixation. Using a variety of statistical and dynamic modelling approaches, we estimate that this variant has a 43–90 % (range of 95 % credible intervals 38–130 %) higher reproduction number than preexisting variants. A fitted two-strain dynamic transmission model shows that VOC 202012/01 will lead to large resurgences of COVID-19 cases. Without stringent control measures, including limited closure of educational institutions and a greatly accelerated vaccine roll-out, COVID-19 hospitalisations and deaths across England in 2021 will exceed those in 2020. Concerningly, VOC 202012/01 has spread globally and exhibits a similar transmission increase (59–74 %) in Denmark, Switzerland, and the United States.

Nicholas G. Davies, Sam Abbott, Rosanna C. Barnard, Christopher I. Jarvis, Adam J. Kucharski, James D. Munday, Carl A. B. Pearson, Timothy W. Russell, Damien C. Tully, Alex D. Washburne, Tom Wenseleers, Amy Gimma, William Waites, Kerry L. M. Wong, Kevin van Zandvoort, Justin D. Silverman, CMMID COVID-19 Working Group, COVID-19 Genomics UK (COG-UK) Consortium, Karla Diaz-Ordaz, Ruth Keogh, Rosalind M. Eggo, Sebastian Funk, Mark Jit, Katherine E. Atkins and W. John Edmunds

NADEAU 2021

Sarah A. Nadeau, Timothy G. Vaughan, Jérémie Scire, Jana S. Huisman & Tanja Stadler, *The origin and early spread of SARS-CoV-2 in Europe*. *PNAS* **118** (2021), e2012008118. DOI:10.1073/pnas.2012008118.

pnas118-e2012008118-Supplement.pdf

The investigation of migratory patterns during the SARS-CoV-2 pandemic before spring 2020 border closures in Europe is a crucial first step toward an in-depth evaluation of border closure policies. Here we analyze viral genome sequences using a phylodynamic model with geographic structure to estimate the origin and spread of SARS-CoV-2 in Europe prior to border closures. Based on SARS-CoV-2 genomes, we reconstruct a partial transmission tree of the early pandemic and infer the geographic location of ancestral lineages as well as the number of migration events into and between European regions. We find that the predominant lineage spreading in Europe during this time has a most recent common ancestor in Italy and was probably seeded by a transmission event in either Hubei, China or Germany. We do not find evidence for preferential migration paths from Hubei into different European regions or from each European region to the others. Sustained local transmission is first evident in Italy and then shortly thereafter in the other European regions considered. Before the first border closures in Europe, we estimate that the rate of occurrence of new cases from within-country transmission was within the bounds of the estimated rate of new cases from migration. In Summary, our analysis offers a view on the early state of the epidemic in Europe and on migration patterns of the virus before border closures. This information will enable further study of the necessity and timeliness of border closures.

Keywords: SARS-CoV-2 | transmission | disease import | phylogeography

Significance: We estimate the origin and spread of SARS-CoV-2 in Europe prior to spring 2020 border closures based on viral genome sequences using a phylodynamic model with geographic structure. We confirm that the predominant European outbreak most likely started in Italy and spread from there. This outbreak was probably seeded by a transmission event in either Hubei, China or Germany. In particular, we find that before the first border closures in Europe, the rate of new cases occurring from within-country transmission was within or exceeded the estimated bounds on the rate of new migration cases.

SUBRAMANIAN 2021

Rahul Subramanian, Qixin He & Mercedes Pascual, *Quantifying asymptomatic infection and transmission of COVID-19 in New York City using observed cases, serology, and testing capacity*. [PNAS 118 \(2021\), e2019716118](#). [DOI:10.1073/pnas.2019716118](https://doi.org/10.1073/pnas.2019716118).

pnas118-e2019716118-Supplement.pdf

The contributions of asymptomatic infections to herd immunity and community transmission are key to the resurgence and control of COVID-19, but are difficult to estimate using current models that ignore changes in testing capacity. Using a model that incorporates daily testing information fit to the case and serology data from New York City, we show that the proportion of symptomatic cases is low, ranging from 13 to 18%, and that the reproductive number may be larger than often assumed. Asymptomatic infections contribute substantially to herd immunity, and to community transmission together with presymptomatic ones. If asymptomatic infections transmit at similar rates as symptomatic ones, the overall reproductive number across all classes is larger than often assumed, with estimates ranging from 3.2 to 4.4. If they transmit poorly, then symptomatic cases have a larger reproductive number ranging from 3.9 to 8.1. Even in this regime, presymptomatic and asymptomatic cases together comprise at least 50% of the force of infection at the outbreak peak. We find no regimes in which all infection subpopulations have reproductive numbers lower than three. These findings elucidate the uncertainty that current case and serology data cannot resolve, despite consideration of different model structures. They also emphasize how temporal data on

testing can reduce and better define this uncertainty, as we move forward through longer surveillance and second epidemic waves. Complementary information is required to determine the transmissibility of asymptomatic cases, which we discuss. Regardless, current assumptions about the basic reproductive number of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) should be reconsidered.

Keywords: COVID-19 | testing submodel | asymptomatic transmission | epidemiological model | epidemiological parameter estimates

Significance: As health officials face another wave of COVID-19, they require estimates of the proportion of infected cases that develop symptoms, and the extent to which symptomatic and asymptomatic cases contribute to community transmission. Recent asymptomatic testing guidelines are ambiguous. Using an epidemiological model that includes testing capacity, we show that many infections are nonsymptomatic but contribute substantially to community transmission in the aggregate. Their individual transmissibility remains uncertain. If they transmit as well as symptomatic infections, the epidemic may spread at faster rates than current models often assume. If they do not, then each symptomatic case generates, on average, a higher number of secondary infections than typically assumed. Regardless, controlling transmission requires community-wide interventions informed by extensive, well-documented asymptomatic testing.

YIANNOUTSOS 2021

Constantin T. Yiannoutsos, Paul K. Halverson & Nir Mena-chemi, *Bayesian estimation of SARS-CoV-2 prevalence in Indiana by random testing*. [PNAS 118 \(2021\), e2013906118](#). [DOI:10.1073/pnas.2013906118](#).

From 25 to 29 April 2020, the state of Indiana undertook testing of 3,658 randomly chosen state residents for the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus, the agent causing COVID-19 disease. This was the first statewide randomized study of COVID-19 testing in the United States. Both PCR and serological tests were administered to all study participants. This paper describes statistical methods used to address nonresponse among various demographic groups and to adjust for testing errors to reduce bias in the estimates of the overall disease prevalence in Indiana. These adjustments were implemented through Bayesian methods, which incorporated all available information on disease prevalence and test performance, along with external data obtained from census of the Indiana statewide population. Both adjustments appeared to have significant impact on the unadjusted estimates, mainly due to upweighting data in study participants of non-White races and Hispanic ethnicity and anticipated false-positive and false-negative test results among both the PCR and antibody tests utilized in the study.

Keywords: COVID-19 | SARS-CoV-2 | random sample

Significance: Infection with the novel coronavirus severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has resulted in a worldwide pandemic of COVID-19 disease. Efforts to design local, regional, and national responses to the virus are constrained by a lack of information on the extent of the epidemic as well as inaccuracies in newly developed diagnostic tests. In this study we analyze data from testing randomly selected Indiana state residents for infection or previous exposure to SARS-CoV-2 and derive estimates of the statewide COVID-19 prevalence in an attempt to address potential biases arising from nonresponse and diagnostic testing errors.

ZEBERG 2021

Hugo Zeberg & Svante Pääbo, *A genomic region associated with*

protection against severe COVID-19 is inherited from Neandertals.

[PNAS 118 \(2021\), e2026309118. DOI:10.1073/pnas.2026309118.](#)

[pnas118-e2026309118-Supplement.pdf](#)

It was recently shown that the major genetic risk factor associated with becoming severely ill with COVID-19 when infected by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is inherited from Neandertals. New, larger genetic association studies now allow additional genetic risk factors to be discovered. Using data from the Genetics of Mortality in Critical Care (GenOMICC) consortium, we show that a haplotype at a region on chromosome 12 associated with requiring intensive care when infected with the virus is inherited from Neandertals. This region encodes proteins that activate enzymes that are important during infections with RNA viruses. In contrast to the previously described Neandertal haplotype that increases the risk for severe COVID-19, this Neandertal haplotype is protective against severe disease. It also differs from the risk haplotype in that it has a more moderate effect and occurs at substantial frequencies in all regions of the world outside Africa. Among ancient human genomes in western Eurasia, the frequency of the protective Neandertal haplotype may have increased between 20,000 and 10,000 y ago and again during the past 1,000 y.

Keywords: Neandertals | COVID-19 | OAS1 | SARS-CoV-2

Significance: We show that a haplotype on chromosome 12, which is associated with a $\approx 22\%$ reduction in relative risk of becoming severely ill with COVID-19 when infected by SARS-CoV-2, is inherited from Neandertals. This haplotype is present at substantial frequencies in all regions of the world outside Africa. The genomic region where this haplotype occurs encodes proteins that are important during infections with RNA viruses.

Amerika

DA SILVA COELHO 2021

Flavio Augusto da Silva Coelho, Stephanie Gill, Crystal M. Tomlin, Timothy H. Heaton & Charlotte Lindqvist, *An early dog from south-east Alaska supports a coastal route for the first dog migration into the Americas.* [Proc. Royal Society B 288 \(2021\), 20203103.](#)

[ProcRSocB288-20203103-Supplement.pdf](#)

The oldest confirmed remains of domestic dogs in North America are from mid-continent archaeological sites dated approximately 9900 calibrated years before present (cal BP). Although this date suggests that dogs may not have arrived alongside the first Native Americans, the timing and routes for the entrance of New World dogs remain uncertain. Here, we present a complete mitochondrial genome of a dog from southeast Alaska, dated to $10\,150 \pm 260$ cal BP. We compared this high-coverage genome with data from modern dog breeds, historical Arctic dogs and American precontact dogs (PCDs) from before European arrival. Our analyses demonstrate that the ancient dog belongs to the PCD lineage, which diverged from Siberian dogs around 16 700 years ago. This timing roughly coincides with the minimum suggested date for the opening of the North Pacific coastal (NPC) route along the Cordilleran Ice Sheet and genetic evidence for the initial peopling of the Americas. This ancient southeast Alaskan dog occupies an early branching position within the PCD clade, indicating it represents a close relative of the earliest PCDs that were brought alongside people migrating from eastern Beringia southward along the NPC to the rest of the Americas. The stable isotope $\delta^{13}\text{C}$ value of this early dog indicates a marine diet, different from the

younger mid-continent PCDs' terrestrial diet. Although PCDs were largely replaced by modern European dog breeds, our results indicate that their population decline started approximately 2000 years BP, coinciding with the expansion of Inuit peoples, who are associated with traditional sled-dog culture. Our findings suggest that dogs formed part of the initial human habitation of the NewWorld, and provide insights into their replacement by both Arctic and European lineages.

Keywords: *Canis lupus familiaris* | North Pacific Coast | palaeodiet | palaeogenetics | precontact dogs | southeast Alaska

Bibel

CLINES 2021

David J. A. Clines, *The State of the Text of Job*. [unknown \(2021\), preprint, 1–17](#).

However we finesse the extrapolated data suggested above, it is perhaps not generally recognized that the text of the Hebrew Bible may be open to question at so many points—even if one calls oneself a cautious and reluctant emender.

GERTOUX 2014

Gerard Gertoux, *Dating the Five Books of Moses*. [\(2014\)](#).

The 'documentary theory', which suggests that the five books were created around 450 BCE by combining four originally independent sources, known as the Jehovist, or J (c. 900 BCE), the Elohist, or E (c. 800 BCE), the Deuteronomist, or D, (c. 600 BCE), and the Priestly source, or P (c. 500 BCE), as set forth by J. Wellhausen (1895), was accepted by the majority of academic scholars for many years without notable controversy. However, the 'documentary theory' sequence is only based on an evolutionary theory popularized by German archaeologists during the World War II to struggle against Jewish and Christian fundamentalism. In fact, no manuscript evidence of the J,E,P,D-documents or any of the other supposed fragments have ever been discovered and there are no ancient Jewish commentaries that mention any of these imaginary documents or their alleged unnamed authors. In addition, if these multiple sources had actually existed before being amalgamated, they would have been assembled into an undefined order (if authors were independent) as was the case, for example, for the scrolls of the minor prophets (and even the four Gospels), however all the manuscripts of the Pentateuch have the same arrangement of chapters and its five books are always in the same order. It is not randomly assembled episodes recitations but an editorial choice made by a single author who thought that long text as a whole.

Critics of Israel Finkelstein against the Pentateuch, based on the absence of evidence which would be evidence of the absence, are accepted by the majority of academic scholars. According to this prominent archaeologist there would never have been 1) any biblical writing in the time of Moses (Dt 31:24), 2) neither domesticated camels in the time of Abraham (Gn 12:6), 3) nor Philistines (Gn 21:34), 4) nor Hittites (Gn 23:10), 5) nor Arameans (Dt 26:5), 6) nor Chaldeans (Gn 11:28), etc. However according to history and chronology, all these claims are manifestly false. For example, the oldest epigraphs in paleoHebrew are dated 1515 +/- 35 BCE and the ostrakon of Tell Qaiyafa, dated prior to 1010 +/- 40 BCE refers to Leviticus 19:13. Moreover (see *Dating the War of the Hyksos*), Moses, according to Manetho an Egyptian priest (c. 280 BCE), was the priest who ordained their polity and their laws [to the Hyksos], his name Aa Auserre-Ap Apopi; but that when he was gone over to these people, his name was changed, and he was called Moses [Musa "son of Water"]. When this people or Hyksos were

gone out of Egypt to Jerusalem, Ah Ahmose the king of Egypt, who drove them out, reigned afterward 25 years and 4 months (Ag Against Ap Apion I:94, 250, 231, 265; II:16). St Strabo, a Greek geographer and historian, wrote (c. 20 CE): An Egyptian priest named Moses, who managed a portion of the country called the Lower [Egypt], being dissatisfied with the established institutions there, left it and came to Judea with a large body of people who worshipped the Divinity (Geography XV XVI:2:35).

Four chronological markers (datable elements but insignificant at the time of writing) allow dating the five books of Moses: 1) the rate of inflation in slave price, 2) the proportion of Am Amorite names with a conjugated form in the imperfect, 3) the structure in patriarchal treaties and 4) the type of calendars used.

Datierung

SCHIER 2018

Wolfram Schier, *Time scales and chronological concepts in prehistoric archaeology*. In: MAYA T. KASHUBA & ELKE KAISER (Hrsg.), *Principles and Methods of Dating in Archaeology, (Neolithic – Middle Ages)*. (St. Petersburg 2018), 30–54.

The paper discusses methodological aspects of time and dating in prehistoric archaeology. Referring to statistical scale theory it focuses on the distinction of ordinal and rational scales. Conventional dating Methods like typology, stratigraphy and seriation are compared in view of their scale types and properties. All methods of relative chronology can be shown to apply non-temporal proxies of time and an ordinal scale of the inferred time axis. The theory of scales defines a hierarchic relation between scale type and permissible arithmetic and logical operations. The way of inferring and interpreting time in archaeology quite often does not reflect and respect these methodological constraints. A special issue are the scale properties of chronological models based on seriation. Correspondence analysis, as the most wide spread seriation approach, may suggest an interval time scale of types and find complexes when plotted in a diagram of the first two eigenvectors. It is suggested that dating methods strongly influence chronological concepts, emphasizing either continuous evolution or rather discontinuity. The scale properties of chronology thus bias the interpretation of archaeological phenomena. Finally the paper discusses the impact of Bayesian statistics applied to the calibration of radiocarbon dates. It is argued that the inclusion of context information not only enables new and more sophisticated dating models, but also blurs the dividing line between ordinal and rational time scales.

Keywords: time | theory of scales | chronological systems | relative chronology | absolute chronology.

Energie

NORMILE 2021

Dennis Normile, *Nuclear Medicine*. [science 371 \(2021\), 978–982](#).

After 10 years advising survivors of the Fukushima disaster about radiation, Masaharu Tsubokura thinks the evacuations posed a far bigger health risk.

In that first month, “the risk of death rose in both genders and every age group,” Tsubokura wrote in a 2018 review article in the Journal of the National Institute of Public Health. The impact was most notable among the elderly living in long-term care facilities. Tsubokura and colleagues found that among 715 residents

of five evacuated Minamiso-ma nursing homes, the relative risk of death was 2.7 times higher than before the disaster. At one facility, 25 % of residents evacuated died within 90 days.

The findings all suggest that, in Fukushima, those stresses were the real health threat. Evacuation after a nuclear accident may be unavoidable, Tsubokura says. Still, he believes waiting until temporary housing and other facilities are ready could sometimes save lives. “Tsubokura’s findings can be, to some extent, used for the modification of evacuation paradigms,” Balonov says.

Jungpaläolithikum

BAALES 2019

Michael Baales, *Palaeolithic networks and their importance for the diffusion of technical know-how, Or how to find a spouse in a deserted landscape*. Online 2019, Dec. 22. <<http://www.academia.edu/41388626/>> (2021-03-05).

Networking was basic for Upper and Final Palaeolithic hunter-gatherer groups to spread new ideas, innovations and knowledge and thus fundamental for their social life. Furthermore, regular exchanges with relatives and neighbours ensured small (family) groups to gain support in cases of emergency and during special ventures conducted during the process of socialization of young individuals (initialization) to become a fully approved member of their group.

Under a today’s perspective, the high residential mobility of hunter-gatherer groups as the regular macro-moves of individuals caused some uniformity of the archaeological record within a region and during a given period of time. And at least, only this allowed the definition of archaeologically distinct techno-complexes. According to this my aim here is to present here some examples which are in my view able to verify networking of neighbouring hunter-gatherer groups during the European (Late) Upper and Final Palaeolithic

Klima

LOHMANN 2021

Johannes Lohmann & Peter D. Ditlevsen, *Risk of tipping the overturning circulation due to increasing rates of ice melt*. *PNAS* **118** (2021), e2017989118.

pnas118-e2017989118-Supplement.pdf

Central elements of the climate system are at risk for crossing critical thresholds (so-called tipping points) due to future greenhouse gas emissions, leading to an abrupt transition to a qualitatively different climate with potentially catastrophic consequences. Tipping points are often associated with bifurcations, where a previously stable system state loses stability when a system parameter is increased above a well-defined critical value. However, in some cases such transitions can occur even before a parameter threshold is crossed, given that the parameter change is fast enough. It is not known whether this is the case in high-dimensional, complex systems like a state-of-the-art climate model or the real climate system. Using a global ocean model subject to freshwater forcing, we show that a collapse of the Atlantic Meridional Overturning Circulation can indeed be induced even by small-amplitude changes in the forcing, if the rate of change is fast enough. Identifying the location of critical thresholds in climate subsystems by slowly changing system parameters has been a core focus in assessing risks of abrupt climate change. This

study suggests that such thresholds might not be relevant in practice, if parameter changes are not slow. Furthermore, we show that due to the chaotic dynamics of complex systems there is no well-defined critical rate of parameter change, which severely limits the predictability of the qualitative long-term behavior. The Results show that the safe operating space of elements of the Earth system with respect to future emissions might be smaller than previously thought.

Keywords: tipping points | rate-induced tipping | abrupt climate change | overturning circulation

Significance: Ongoing greenhouse gas emissions put elements of the Earth system at risk for crossing critical thresholds (tipping points), leading to abrupt irreversible climate change. Measures for reducing emissions should keep Earth in the safe operating space away from tipping points. Here we show that increasing rates of change of ice melt can induce a collapse of the Atlantic Meridional Overturning Circulation in a global ocean model, while no critical threshold in ice melt is crossed and slower increases to the same level of ice melt do not induce tipping. Moreover, the chaotic dynamics of the climate make such a collapse hard to predict. This shows that the safe operating space of the Earth system might be smaller than previously thought.

MANN 2021

Michael E. Mann, Byron A. Steinman, Daniel J. Brouillette & Sonya K. Miller, *Multidecadal climate oscillations during the past millennium driven by volcanic forcing*. [science](#) **371** (2021), 1014–1019.

[s371-1014-Supplement.pdf](#)

Past research argues for an internal multidecadal (40- to 60-year) oscillation distinct from climate noise. Recent studies have claimed that this so-termed Atlantic Multidecadal Oscillation is instead a manifestation of competing time-varying effects of anthropogenic greenhouse gases and sulfate aerosols. That conclusion is bolstered by the absence of robust multidecadal climate oscillations in control simulations of current-generation models. Paleoclimate data, however, do demonstrate multidecadal oscillatory behavior during the preindustrial era. By comparing control and forced “Last Millennium” simulations, we show that these apparent multidecadal oscillations are an artifact of pulses of volcanic activity during the preindustrial era that project markedly onto the multidecadal (50- to 70-year) frequency band. We conclude that there is no compelling evidence for internal multidecadal oscillations in the climate system.

RAMO 2021

Ruben Ramo, Ekhi Roteta, Ioannis Bistinas, Dave van Wees, Aitor Bastarrika, Emilio Chuvieco & Guido R. van der Werf, *African burned area and fire carbon emissions are strongly impacted by small fires undetected by coarse resolution satellite data*. [PNAS](#) **118** (2021), [e2011160118](#).

Fires are a major contributor to atmospheric budgets of greenhouse gases and aerosols, affect soils and vegetation properties, and are a key driver of land use change. Since the 1990s, global burned area (BA) estimates based on satellite observations have provided critical insights into patterns and trends of fire occurrence. However, these global BA products are based on coarse spatial-resolution sensors, which are unsuitable for detecting small fires that burn only a fraction of a satellite pixel. We estimated the relevance of those small fires by comparing a BA product generated from Sentinel-2 MSI (Multispectral Instrument) images (20-m spatial resolution) with a widely used global BA product based on Moderate Resolution Imaging Spectroradiometer (MODIS) images (500 m) focusing on

sub-Saharan Africa. For the year 2016, we detected 80 % more BA with Sentinel-2 images than with the MODIS product. This difference was predominately related to small fires: we observed that 2.02 Mkm² (out of a total of 4.89 Mkm²) was burned by fires smaller than 100 ha, whereas the MODIS product only detected 0.13 million km² BA in that fire-size class. This increase in BA subsequently resulted in increased estimates of fire emissions; we computed 31 to 101 % more fire carbon emissions than current estimates based on MODIS products. We conclude that small fires are a critical driver of BA in sub-Saharan Africa and that including those small fires in emission estimates raises the contribution of biomass burning to global burdens of (greenhouse) gases and aerosols.

Keywords: Sentinel 2 | Africa | MODIS | small fires | carbon emissions

Significance: Fires burn an area comparable to Europe each year, emitting greenhouse gases and aerosols. We compared burned area (BA) based on 20-m resolution images with a BA derived from 500-m data. It represents an 80 % increase in BA in sub-Saharan Africa, responsible for about 70 % of global BA. This difference is predominately (87 %) attributed to small fires (<100 ha), which account for 41 % of total BA but only for 5 % in coarser resolution products. We found that African fires were responsible for emissions of 1.44 PgC, 31–101 % higher than previous estimates and representing 14 % of global CO₂ emissions from fossil fuel burning. We conclude that small fires are critically important in characterizing the most important disturbance agent on a global scale.

ZHANG 2021

Mingfang Zhang & Xiaohua Wei, *Deforestation, forestation, and water supply*. [science](#) **371** (2021), 990–991.

A systematic approach helps to illuminate the complex forest-water nexus.

Kultur

FLEMING 2009

Daniel E. Fleming, *Kingship of City and Tribe Conjoined, Zimri-Lim at Mari*. In: JEFFREY SZUCHMAN (Hrsg.), *Nomads, Tribes, and the State in the Ancient Near East, Cross-Disciplinary Perspectives*. Oriental Institute Seminars 5 ([Chicago 2009](#)), 227–240.

As a whole, the Mari archives of King Zimri-Lim show one configuration by which mobile pastoralists, the population that we come to regard as “nomads,” could be integrated into a political network that included settlement-based kingdoms. In common modern parlance, with all its flaws, the nomads were bound up with both city and state, even as the nomad category was idealized as distinct. They could even dominate a political landscape of cities and states. In the standard language of early second-millennium Akkadian, the mobile Hana could not be identified with towns (alum), but Zimri-Lim could rule a Hana land (mat Hana). The political category that allowed the combination of mobile Hana and settled populations in a close-knit core of Zimri-Lim’s people was represented by the Binu Sim’al and its subgroups, which may be considered “tribal,” without limitation as primitive and egalitarian. Through this tribal organization, the herding communities of early second-millennium Mesopotamia could participate in regional politics at every level without binding themselves irrevocably to the definition of power by city-based kingdoms.

GRONENBORN 2001

Detlef Gronenborn, *Zum (möglichen) Nachweis von Sklaven/Unfreien in prähistorischen Gesellschaften Mitteleuropas*. [Ethnographisch-Archäologische Zeitschrift 42 \(2001\), 1–42](#).

On (possible) evidence of slaves or unfree in prehistoric societies of Central Europe. Up to this date slavery as a social phenomenon has found little attention in Central European Prehistoric Archaeology. One of the main reasons is the lack of visibility of slavery in the archaeological record. Moreover, prehistoric societies are often construed as having been non-hierarchical, hence an existence of slavery is not taken into consideration. The question of slavery and more rigidly organised prehistoric groups is raised again and solutions are sought by using ethnographically documented examples.

Sklaverei als gesellschaftliches Phänomen ist bislang in der prähistorischen Archäologie Mitteleuropas nur selten behandelt worden. Einer der Hauptgründe dürfte die schwierige Nachweisbarkeit von Sklaverei sein. Jedoch hat wohl auch die vielfach vertretene Ansicht, Sklaverei könne es in den konstruierten wenig hierarchisch gegliederten Gesellschaften nicht gegeben haben, eine Auseinandersetzung mit dem Thema verhindert. In dieser Abhandlung wird die Frage erneut aufgegriffen und mit Hilfe ethnographisch dokumentierter Fallbeispiele Ansätze zu einer Berücksichtigung von Sklaverei und möglicherweise rigide geordneter prähistorischer Gesellschaften vorgeschlagen.

Metallzeiten

KIENLIN 2001

Tobias L. Kienlin, *Frühes Metall im nordalpinen Raum, Technologische, kognitive und soziale Aspekte früher Metallurgie – Ein Vorbericht*. [Ethnographisch-Archäologische Zeitschrift 42 \(2001\), 65–84](#).

While excavations and report patterns of material or substances always contribute toward improving knowledge of ancient monument records, the explanation of cultural change in transition from the Stone Age to the Bronze Age still receives a mere token of attention in German research projects. During the sequential introduction and appearance of new metal substances, factors of progress and dynamic would be thought to have followed as it seems logical and consistent while disregarding prerequisites, causes and mechanisms of cultural change. Until present, this contrasting, relevant Anglo-Saxon debate has only been reluctantly accepted in this country. Its advocates lend cardinal significance to social-cultural and social-economic impacts of metallurgy, while utilising the cultural anthropological approach. On the other hand, the archaeological material is inadequately used to support these debates.

At this point, an attempt will be made to newly evaluate sources of social structure with regard to the period under consideration and in doing so, focusing particular attention on cognitive aspects as to the applicable manners in which metal was utilised. Beginning from the point of the early Bronze Age axes from the north Alpine region were analysed to establish a reconsideration of primary technological data in terms of archaeological context. These analyses serve to approach particular aforementioned models of cultural change. Therefore, they significantly determine metal's contributory importance in its relation to the societies at issue.

Während Ausgrabungen und Materialvorlagen zu einer immer besseren Kenntnis des Denkmälerbestandes beitragen, kommt der Erklärung kulturellen Wandels am Übergang von der Steinzeit zur Bronzezeit in der deutschen Forschung nach wie vor keine besondere Aufmerksamkeit zu. Fortschritt und Dynamik in der Folge der

Einführung des neuen Werkstoffs Metall erscheinen als logisch und folgerichtig, ohne daß Voraussetzungen, Ursachen und Mechanismen kulturellen Wandels der genaueren Spezifikation bedürften. Anders verhält es sich mit der einschlägigen angelsächsischen Diskussion, die hierzulande bislang nur zögerlich rezipiert wurde. Deren Vertreter verbindet ein starkes Interesse an den soziokulturellen wie sozioökonomischen Folgeerscheinungen der Metallurgie, wobei kulturanthropologische Ansätze zur Anwendung kommen. Andererseits ist in dem mangelnden Rückbezug entsprechender Arbeiten auf die archäologischen Hinterlassenschaften ein deutlicher Mißstand zu erkennen. In dem hier vorgestellten Arbeitsvorhaben soll der Versuch einer Neubewertung der Quellen zur Sozialstruktur des in Frage stehenden Zeitraumes unternommen werden, wobei das besondere Augenmerk kognitiven Aspekten des Umgangs mit dem Werkstoff Metall gilt. Ausgehend von einer metallographischen Untersuchung frühbronzezeitlicher Beile des nordalpinen Raumes soll dabei durch den Rückbezug der zunächst primär technologischen Daten auf den archäologischen Kontext versucht werden, zur Gewichtung der angesprochenen Modelle kulturellen Wandels, insbesondere der Bedeutung des Metalls in den fraglichen Gesellschaften, beizutragen.

Mittelalter

DURN 2021

Sarah Durn, *Did a Viking Woman Named Gudrid Really Travel to North America in 1000 A.D.?* [smithsonianmag.com](https://www.smithsonianmag.com/history/did-a-viking-woman-named-gudrid-really-travel-to-north-america-in-1000-a-d-180972122/) **2021**, Mar. 3.

The sagas suggest she settled in Newfoundland and eventually made eight crossings of the North Atlantic Sea.

More than 1,000 years ago, a woman named Gudrid sailed off the edge of the map with her husband and a small crew, landing in what the Vikings called Vinland and what is now Canada. She lived in and explored Newfoundland and the surrounding environs for three years, bearing a son before returning home to Iceland. Ultimately, she made eight crossings of the North Atlantic Sea and traveled farther than any other Viking, from North America to Scandinavia to Rome—or so the Viking sagas claim.

But did Gudrid Thorbjarnardóttir, the “far traveler,” really exist? And, if so, did she really set foot in the Americas 500 years before Christopher Columbus?

Definitive answers to these questions will remain out of reach unless physical evidence or more reliable documentation emerges—highly unlikely scenarios. Still, says Nancy Marie Brown, author of the 2007 biography *The Far Traveler: Voyages of a Viking Woman*, Gudrid’s story suggests that “Viking women were as courageous and as adventurous as Viking men and that there were far fewer limitations on the life of a woman in those times than we may think.”

Mittelpaläolithikum

CONDE-VALVERDE 2021

Mercedes Conde-Valverde, Ignacio Martínez, Rolf M. Quam & Manuel Rosa et al., *Neanderthals and Homo sapiens had similar auditory and speech capacities.* *Nature Ecology & Evolution* (2021), preprint, 1–19. DOI:10.1038/s41559-021-01391-6.

The study of audition in fossil hominins is of great interest given its relationship with intraspecific vocal communication. While the auditory capacities have been

studied in early hominins and in the Middle Pleistocene Sima de los Huesos hominins, less is known about the hearing abilities of the Neanderthals. Here, we provide a detailed approach to their auditory capacities. Relying on computerized tomography scans and a comprehensive model from the field of auditory bioengineering, we have established sound power transmission through the outer and middle ear and calculated the occupied bandwidth in Neanderthals. The occupied bandwidth is directly related to the efficiency of the vocal communication system of a species. Our results show that the occupied bandwidth of Neanderthals was greater than the Sima de los Huesos hominins and similar to extant humans, implying that Neanderthals evolved the auditory capacities to support a vocal communication system as efficient as modern human speech.

Mercedes Conde-Valverde, Ignacio Martínez, Rolf M. Quam, Manuel Rosa, Alex D. Velez, Carlos Lorenzo, Pilar Jarabo, José María Bermúdez de Castro, Eudald Carbonell & Juan Luis Arsuaga

Religion

AIRENTI 2019

GABRIELLA AIRENTI, MARCO CRUCIANI & ALESSIO PLEBE (Hrsg.), *The Cognitive Underpinnings of Anthropomorphism*. *Frontiers in Psychology* 10 ([Lausanne 2019](#)).

LINDEMAN 2015

Marjaana Lindeman, Annika M. Svedholm-Häkkinen & Jari Lipsanen, *Ontological confusions but not mentalizing abilities predict religious belief, paranormal belief, and belief in supernatural purpose*. *Cognition* **134** (2015), 63–76.

The current research tested the hypothesis that the abilities for understanding other people's minds give rise to the cognitive biases that underlie supernatural beliefs. We used structural equation modeling (N = 2789) to determine the roles of various mentalizing tendencies, namely self-reported affective and cognitive empathy (i.e., mind reading), actual cognitive and affective empathic abilities, hyper-empathizing, and two cognitive biases (core ontological confusions and promiscuous teleology) in giving rise to supernatural beliefs. Support for a path from mentalizing abilities through cognitive biases to supernatural beliefs was weak. The relationships of mentalizing abilities with supernatural beliefs were also weak, and these relationships were not substantially mediated by cognitive biases. Core ontological confusions emerged as the best predictor, while promiscuous teleology predicted only a small proportion of variance. The results were similar for religious beliefs, paranormal beliefs, and for belief in supernatural purpose.

Keywords: Supernatural | Paranormal | Mentalizing | Empathy | Promiscuous teleology | Ontological confusions