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References

Aktuell

Boehnke 2018

Kevin F. Boehnke, *Cheating on my mentor*. science **359** (2018), 486.

For the first 2 years of my Ph.D. program, my primary adviser was always available when I needed help, promptly responding to emails and meeting with me when questions arose. But that abruptly changed when he went on sabbatical and left the country. My emails were rarely answered, and our scheduled meetings were often canceled. I did what I could to push my research forward on my own, but I felt I was floundering. I grew frustrated and uncertain about my future, even questioning whether I wanted to pursue a research career. After sufficient wallowing in self-pity, however, I decided to take matters into my own hands by seeking the support that I needed.

Deming 2017

David J. Deming, *The Growing Importance of Social Skills in the Labor Market*. Quarterly Journal of Economics **2017**, 1593–1640.

The labor market increasingly rewards social skills. Between 1980 and 2012, jobs requiring high levels of social interaction grew by nearly 12 percentage points as a share of the U.S. labor force. Math-intensive but less social jobs—including many STEM occupations—shrank by 3.3 percentage points over the same period. Employment and wage growth were particularly strong for jobs requiring high levels of both math skill and social skills. To understand these patterns, I develop a model of team production where workers "trade tasks" to exploit their comparative advantage. In the model, social skills reduce coordination costs, allowing workers to specialize and work together more efficiently. The model generates predictions about sorting and the relative returns to skill across occupations, which I investigate using data from the NLSY79 and the NLSY97. Using a comparable set of skill measures and covariates across survey waves, I find that the labor market return to social skills was much greater in the 2000s than in the mid-1980s and 1990s.

JEL Codes: I20, I24, J01, J23, J24, J31.

Harris 2018

Curtis C. Harris, *Tobacco smoking, E-cigarettes, and nicotine harm*. PNAS **115** (2018), 1406–1407.

E-cigarettes are gaining in popularity not only as a purported smoking cessation strategy, but are also being promoted as being a "cool" habit in commercial and online media, much like tobacco cigarettes were promoted before commercials and other advertising were banned in the United States and other countries.

The findings of Lee et al. suggest that inhaling vapor from E-cigarettes, potentially for decades, may not fully mitigate the risk for cancer compared with the established increase in mortality and morbidity of conventional tobacco cigarettes in cancer epidemiological studies. Such epidemiological studies of E-cigarettes will require following cohorts using E-cigarettes in future decades.

Lee 2018

Hyun-Wook Lee et al., *E-cigarette smoke damages DNA and reduces repair activity in mouse lung, heart, and bladder as well as in human lung and bladder cells.* PNAS **115** (2018), E1560–E1569.

Hyun-Wook Lee, Sung-Hyun Park, Mao-wen Weng, Hsiang-Tsui Wang, William C. Huang, Herbert Lepor, Xue-Ru Wu, Lung-Chi Chen & Moon-shong Tang

E-cigarette smoke delivers stimulant nicotine as aerosol without tobacco or the burning process. It contains neither carcinogenic incomplete combustion byproducts nor tobacco nitrosamines, the nicotine nitrosation products. E-cigarettes are promoted as safe and have gained significant popularity. In this study, instead of detecting nitrosamines, we directly measured DNA damage induced by nitrosamines in different organs of E-cigarette smokeexposed mice. We found mutagenic O6-methyldeoxyguanosines and ã-hydroxy-1,N2-propano-deoxyguanosines in the lung, bladder, and heart. DNA-repair activity and repair proteins XPC and OGG1/2 are significantly reduced in the lung. We found that nicotine and its metabolite, nicotine-derived nitrosamine ketone, can induce the same effects and enhance mutational susceptibility and tumorigenic transformation of cultured human bronchial epithelial and urothelial cells. These results indicate that nicotine nitrosation occurs in vivo in mice and that E-cigarette smoke is carcinogenic to the murine lung and bladder and harmful to the murine heart. It is therefore possible that E-cigarette smoke may contribute to lung and bladder cancer, as well as heart disease, in humans.

Keywords: E-cigarettes | DNA damage | DNA repair | lung–bladder–heart | cancer

Significance: E-cigarette smoke (ECS) delivers nicotine through aerosols without burning tobacco. ECS is promoted as noncarcinogenic. We found that ECS induces DNA damage in mouse lung, bladder, and heart and reduces DNA-repair functions and proteins in lung. Nicotine and its nitrosation product 4-(methylnitrosamine)-1-(3pyridyl)-1-butanone can cause the same effects as ECS and enhance mutations and tumorigenic cell transformation in cultured human lung and bladder cells. These results indicate that nicotine nitrosation occurs in the lung, bladder, and heart, and that its products are further metabolized into DNA damaging agents. We propose that ECS, through damaging DNA and inhibiting DNA repair, might contribute to human lung and bladder cancer as well as to heart disease, although further studies are required to substantiate this proposal.

Nobeli 2018

Irene Nobeli, *In praise of slow.* science **359** (2018), 602.

I huff and puff my way up the moderate slope. Even by my own abysmal standards, this is a poor run. In the past hour, I have been overtaken by both an octogenarian and a mum pushing her toddlers in a buggy. Yet I am smiling. I am a happy runner, despite my utter mediocrity at this sport. But at work, happiness had become elusive. After a relatively relaxed Ph.D. and postdoc, I had been thrilled when I landed a tenured job. But as I worked to establish myself as a group leader, I began to feel intense pressure to be more competitive and publish more. Recently, as I wondered why I felt so discontented at my job, I realized that I could apply some lessons from running to my research.

Tregoning 2018

John Tregoning, *From parade ground to PI.* science **359** (2018), 362.

At the end of my postdoc, I excelled at moving tiny amounts of colorless fluid from one tube to another at strange times of day, and I had a vague sense of where I wanted to go scientifically. But my experience in the lab wasn't sufficient to

equip me to run my own group. That preparation came from my double life as a British Army Reserve officer. Admittedly, I learned several things in the army that have not been so useful in a research lab, including how to march in time with others, shout very loudly, and swear with an unrivaled range of colorful expletives. Critically, though, my time in the army taught me how to be a leader—for good and ill.

Anthropologie

HERSHKOVITZ 2018

Israel Hershkovitz et al., *The earliest modern humans outside Africa.* science **359** (2018), 456–459.

Israel Hershkovitz, Gerhard W. Weber, Rolf Quam, Mathieu Duval, Rainer Grün, Leslie Kinsley, Avner Ayalon, Miryam Bar-Matthews, Helene Valladas, Norbert Mercier, Juan Luis Arsuaga, María Martinón-Torres, José María Bermúdez de Castro, Cinzia Fornai, Laura Martín-Francés, Rachel Sarig, Hila May, Viktoria A. Krenn, Viviane Slon, Laura Rodríguez, Rebeca García, Carlos Lorenzo, Jose Miguel Carretero, Amos Frumkin, Ruth Shahack-Gross, Daniella E. Bar-Yosef Mayer, Yaming Cui, Xinzhi Wu, Natan Peled, Iris Groman-Yaroslavski, Lior Weissbrod, Reuven Yeshurun, Alexander Tsatskin, Yossi Zaidner & Mina Weinstein-Evron

To date, the earliest modern human fossils found outside of Africa are dated to around 90,000 to 120,000 years ago at the Levantine sites of Skhul and Qafzeh. A maxilla and associated dentition recently discovered at Misliya Cave, Israel, was dated to 177,000 to 194,000 years ago, suggesting that members of the Homo sapiens clade left Africa earlier than previously thought.This finding changes our view on modern human dispersal and is consistent with recent genetic studies, which have posited the possibility of an earlier dispersal of Homo sapiens around 220,000 years ago.The Misliyamaxilla is associated with full-fledged Levallois technology in the Levant, suggesting that the emergence of this technology is linked to the appearance of Homo sapiens in the region, as has been documented in Africa.

STRINGER 2018

Chris Stringer & Julia Galway-Witham, *When did modern humans leave Africa?* science **359** (2018), 389–390.

A ≈180,000-year-old fossil from Israel provides evidence for early forays of Homo sapiens into western Asia.

Stone tools excavated from the same stratigraphic layer as that of Misliya-1 show the use of Levallois technology, a complex tool preparation method involving a prepared core. This technology has also been identified in ≈190,000- to 260,000-year-old artifacts from nearby Tabun Cave, but the material at Misliya represents the earliest known association of this industry with modern human fossils in the region. Levallois tools associated with putative early H. sapiens fossils have also been found at Jebel Irhoud (Morocco), suggesting that the emergence of this tool technology may be linked with the appearance and dispersal of our species in both Africa and western Asia.

Bibel

Finkelstein 2016

Israel Finkelstein & Thomas Römer, *Early North Israelite "Memories" of Moab*. In: Jan C. Gertz, Bernard M. Levinson, Dalit Rom-Shiloni & Konrad Schmid (Hrsg.), *The Formation of the Pentateuch, Bridging the Academic Cultures of Europe, Israel, and North America*. Forschungen zum Alten Testament (Tübingen 2016), 711–727.

All this shows that the Bible – the Pentateuch and the Former Prophets – contains traces of early traditions that go back at least to the early days of the Northern Kingdom in the early ninth century BCE. Other materials may contain even earlier memories, for instance in the contexts of the exodus narrative, the early Jacob traditions, traditions about the sanctuary of Shiloh, and positive memories of the house of Saul. Most of these early layers come from the Northern Kingdom. They should probably be understood as local traditions, which – at least in the early days – were memorized in regional shrines. We would refer, for instance, to Gileadite (early Jacob) and Ephraimite (later Jacob, still in the Iron Age) texts from Penuel and Bethel, respectively; Balaam, possibly at Succoth; and Omride traditions about Moab at Nebo. In the late eighth and early seventh centuries BCE – and also later – these early Israelite traditions found their way into Judah. There they acquired later layers of Judahite/Yehudite/Judean (including "pan Israelite") ideologies. They were integrated into scrolls that became the Torah and the Prophets and are now embedded in what can be described as "accumulative memories" (or "traces of memory," according to Jan Assmann), which – as read today – include layers that represent many centuries of transmission – oral and later written – and redaction.

Gertz 2016

Jan C. Gertz, Bernard M. Levinson, Dalit Rom-Shiloni & Konrad Schmid (Hrsg.), *The Formation of the Pentateuch, Bridging the Academic Cultures of Europe, Israel, and North America*. Forschungen zum Alten Testament (Tübingen 2016).

Römer 2016

Thomas Römer, *The Problem of the Hexateuch, Pentateuch, Hexateuch, Enneateuch*. In: Jan C. Gertz, Bernard M. Levinson, Dalit Rom-Shiloni & Konrad Schmid (Hrsg.), *The Formation of the Pentateuch, Bridging the Academic Cultures of Europe, Israel, and North America*. Forschungen zum Alten Testament (Tübingen 2016), 813–827.

Although there is narrative continuity between the books of the Pentateuch and Joshua (Hexateuch) and even across the entire Former Prophets (Enneateuch), there is hardly any evidence of the classic pentateuchal sources in the Former Prophets. The Former Prophets are closely related to the book of Deuteronomy and may therefore still be considered Deuteronomistic. On the literary level, it is impossible to find older sources in the Former Prophets. The links between the Pentateuch and Joshua, as well as with the following books, do not reflect sources that begin somewhere in the Pentateuch but are the work of different redactors who, with different agendas, tried to correlate the pentateuchal scrolls with those of the Former Prophets.

Römer 2016

Thomas Römer, *How to Date Pentateuchal Texts, Some Case Studies*. In: Jan C. Gertz, Bernard M. Levinson, Dalit Rom-Shiloni & Konrad Schmid (Hrsg.), *The Formation of the Pentateuch, Bridging the Academic Cultures of Europe, Israel, and North America*. Forschungen zum Alten Testament (Tübingen 2016), 357–370.

The most secure date for the existence of pentateuchal texts is the Persian period, because this setting can be deduced from hard evidence. The earlier one moves, the more complicated and hypothetical dates become. One should therefore start by considering whether a text its the Persian period, as well as whether it is composite and what would allow for the identification of older layers. The first edition of Deuteronomy in the seventh century BCE has remained an apparently good point of comparison for the dating of older texts since the time of de Wette. As for P, I still think that a Persian period dating is the best option. But one should not dramatize the divergences. Even scholars who support a postexilic date acknowledge that the rituals and prescriptions in Lev 1–15 may well stem at least partially from the time of the First Temple. But it is methodologically more secure to consider the Priestly texts of the Torah first and foremost in the context of the Second Temple.

Sommer 2011

Benjamin D. Sommer, *Dating Pentateuchal Texts and the Perils of Pseudo-Historicism*. In: Thomas B. Dozeman, Konrad Schmid & Baruch J. Schwartz (Hrsg.), *The Pentateuch, International Perspectives in current research*. Forschungen zum Alten Testament 78 (Tübingen 2011), 85–108.

I am far from eschewing the historical study of the Hebrew Bible broadly speaking. To be sure, there are religious thinkers, Christian and Jewish, who have rejected historicism as inimical to the very concept of scripture, but my aim in this article is something altogether different. I readily acknowledge that it is worthwhile to think about how a text's date may help us to understand its ideas, and I am not dismissing all attempts to date biblical texts. Some types of evidence are useful for dating biblical texts; I think especially of the linguistic methods pioneered by Wilhelm Gesenius, S. R. Driver, Arno Kropat, and E. Y. Kutscher and refined and extended by Avi Hurvitz. Further, I know that understanding the nature of the original audience is sometimes crucial for understanding the rhetoric of a text.

Even when we can date a text with some confidence, there is no reason to limit our interpretation of that text by seeing it exclusively or primarily as a response to social, economic, or political factors. Literature that endures for millennia does so precisely because it transcends its setting, because it presents insights into the human condition that remain relevant long after the historical or social conditions from which it emerged have disappeared.

Biologie

Kupferschmidt 2018

Kai Kupferschmidt, *Forever young? Naked mole rats may know the secret*. science **359** (2018), 506–507.

A new study claims the strange rodents flout the mathematics of mortality—but not everyone is convinced.

All mammalian species were thought to adhere to the Gompertz law. The risk of dying rises exponentially with age; in humans, for instance, it doubles roughly every 8 years after the age of 30.

But not naked mole rats. After they reached sexual maturity at 6 months of age, each animal's daily chance of dying was a little more than one in 10,000, Buffenstein found, and it stayed roughly the same, and even went down a little, throughout their lives—even after they reached 25 times the age of sexual maturity. Dying, for naked mole rats, is "stochastic," Buffenstein says. "It's like radioactive decay."

Klima

Jones 2018

T. R. Jones, W. H. G. Roberts, E. J. Steig, K. M. Cuffey, B. R. Markle & J. W. C. White, *Southern Hemisphere climate variability forced by Northern Hemisphere ice-sheet topography*. nature **554** (2018), 351–355.

n554-0351-Supplement.xlsx

The presence of large Northern Hemisphere ice sheets and reduced greenhouse gas concentrations during the Last Glacial Maximum fundamentally altered global ocean–atmosphere climate dynamics1. Model simulations and palaeoclimate records suggest that glacial boundary conditions affected the El Niño–Southern Oscillation2,3, a dominant source of short-term global climate variability. Yet little is known about changes in short-term climate variability at mid- to high latitudes. Here we use a high-resolution water isotope record from West Antarctica to demonstrate that interannual to decadal climate variability at high southern latitudes was almost twice as large at the Last Glacial Maximum as during the ensuing Holocene epoch (the past 11,700 years). Climate model simulations indicate that this increased variability reflects an increase in the teleconnection strength between the tropical Pacific and West Antarctica, owing to a shift in the mean location of tropical convection. This shift, in turn, can be attributed to the influence of topography and albedo of the North American ice sheets on atmospheric circulation. As the planet deglaciated, the largest and most abrupt decline in teleconnection strength occurred between approximately 16,000 years and 15,000 years ago, followed by a slower decline into the early Holocene.

Rehfeld 2018

Kira Rehfeld, Thomas Münch, Sze Ling Ho & Thomas Laepple, *Global patterns of declining temperature variability from the Last Glacial Maximum to the Holocene*. nature **554** (2018), 356–359.

n554-0356-Supplement.xls

Changes in climate variability are as important for society to address as are changes in mean climate1. Contrasting temperature variability during the Last Glacial Maximum and the Holocene can provide insights into the relationship between the mean state of the climate and its variability2,3. However, although glacial–interglacial changes in variability have been quantified for Greenland2, a global view remains elusive. Here we use a network of marine and terrestrial temperature proxies to show that temperature variability decreased globally by a factor of four as the climate warmed by 3–8 degrees Celsius from the Last Glacial Maximum (around 21,000 years ago) to the Holocene epoch (the past 11,500 years). This decrease had a clear zonal pattern, with little change in the tropics (by a factor of only 1.6–2.8) and greater change in the mid-latitudes of both hemispheres (by a factor of 3.3–14). By contrast, Greenland ice-core records show a

reduction in temperature variability by a factor of 73, suggesting influences beyond local temperature or a decoupling of atmospheric and global surface temperature variability for Greenland. The overall pattern of reduced variability can be explained by changes in the meridional temperature gradient, a mechanism that points to further decreases in temperature variability in a warmer future.

Kupfer

Nezafati 2009

Nima Nezafati, Ernst Pernicka & Morteza Momenzadeh, *Introduction of the Deh Hosein Ancient Tin-Copper Mine, Western Iran, Evidence from Geology, Archaeology, Geochemistry and Lead Isotope Data.* Türkiye Bilimler Akademisi Arkeoloji Dergisi **12** (2009), 223–236.

The following evidence attest that the Deh Hosein ancient mine has been a major supplier of tin for andentcivilizations of ancient Iran and Mesopotamia and even perhaps further localities to its west:

The simultaneous occurrence of tin and copper minerals within one mineralization, the strong correspondence of lead isotope ratios as well as good correlation between trace elements of the Deh Hosein ancient mine and the ancient artifacts including high tin, copper and arsenic contents attest to the role of this mine in supplying coppertin ore of the ancient workshops.

In the ancient cuneiform texts, it has been several times mentioned that copper, bronze and tin come from the east. Among these texts, the text from Kanesh which refers to tin coming overland through the Zagros Mountains to Mesopotamia from northwestern Iran (Muhly 1973), and the text referring to mines behind Jabal Hamrin (Ebih) (Innana andEbih, Muhly 1973) may have mentioned Deh Hosein Mine.

The recently discovered Deh Hosein ancient mine is the only known tin (-copper) bearing source in close distance to the eastward Mesopotamia and Luristan area.

The abundance of bronze artifacts from the mid Bronze Age to the end of Iron Age in the whole Mesopotamia and western Iran attests to a rich source of ore in the vicinity of these areas, especially when it would be taken into consideration that this abundance has emerged mainly in these areas and not to adjacent areas.

The Greek word for tin, Kassiteros, can be interpreted as metal “coming from the country of the Kassites” (Ghirshman 1954), and the Kassites lived in central and west central Iran. Also the characteristic Luristan Bronze artifacts appear under the reign of the Kassites in west central Iran and Mesopotamia.

Keywords: Deh Hosein | ancient mining | tin | copper | bronze | lead isotope analysis | archaeometry | Western Iran

Neolithikum

AiD 2014

Archäologie in Deutschland, *Sonderheft 5*, *Ganzes Heft.* Archäologie in Deutschland **2014**, Sonderheft 5.

Vom Jäger und Sammler zum Bauern: Die Neolithische Revolution

Physik

Boylan-Kolchin 2018

Michael Boylan-Kolchin, *Galaxy motions cause trouble for cosmology*. science **359** (2018), 520–521.

Satellite galaxy motions around a nearby galaxy seem to be at odds with dark matter models.

However, LCDM model predictions do not agree with observations of the motions of small satellite galaxies around the Milky Way and its nearby companion, the Andromeda galaxy. According to LCDM, the dark matter surrounding each of these galaxies should be roughly spherically distributed, yet both the Milky Way and Andromeda appear to be surrounded by planar structures of satellites. Some scientists have pointed to satellite planes as evidence that the very idea dark matter is fundamentally incorrect and that effects currently ascribed to dark matter are instead the result of a modification to gravity.

Müller 2018

Oliver Müller, Marcel S. Pawlowski, Helmut Jerjen & Federico Lelli, *A whirling plane of satellite galaxies around Centaurus A challenges cold dark matter cosmology*. science **359** (2018), 534–537.

The Milky Way and Andromeda galaxies are each surrounded by a thin plane of satellite dwarf galaxies that may be corotating. Cosmological simulations predict that most satellite galaxy systems are close to isotropic with random motions, so those two wellstudied systems are often interpreted as rare statistical outliers. We test this assumption using the kinematics of satellite galaxies around the Centaurus A galaxy. Our statistical analysis reveals evidence for corotation in a narrow plane: Of the 16 Centaurus A satellites with kinematic data, 14 follow a coherent velocity pattern aligned with the long axis of their spatial distribution. In standard cosmological simulations, $<0.5\,\%$ of Centaurus A–like systems show such behavior. Corotating satellite systems may be common in the universe, challenging small-scale structure formation in the prevailing cosmological paradigm.

Story or Book

Formato 2018

Megan Formato, *Enrico Fermi, flaws and all*. science **359** (2018), 282.

A revealing biography falls short when it comes to the famous physicist's problematic treatment of women.

The Last Man Who Knew Everything. The Life and Times of Enrico Fermi, Father of the Nuclear Age. David Schwartz. Basic Books, 2017. 477 pp.

The Last Man Who Knew Everything is at its best in the chapters devoted to the Manhattan Project. Following Fermi gives us a vantage point that is, at least initially, more focused on Columbia University and the University of Chicago than Los Alamos. Shifting the focus to these locations allows us to see in great detail the institutional cultures and social worlds that the Fermis helped maintain. Here, Schwartz's science communication skills also shine with patient, easy to follow, nontechnical descriptions of the construction of fission piles.

By raising some of Fermi's misogynistic behaviors only to repeatedly brush them aside, Schwartz props up the tired, problematic trope of the eccentric male genius who is not held responsible for his destructive social behavior.