

Literatur

Aktuell

BLASER 2011

Martin Blaser, *Stop the killing of beneficial bacteria*. [nature 476 \(2011\), 393–394](#).

Concerns about antibiotics focus on bacterial resistance – but permanent changes to our protective flora could have more serious consequences, says Martin Blaser.

Bacteria have lived in and on animals – constituting their microbiome – since multicellular life evolved about 1 billion years ago. Hosts derive many benefits from their bacterial guests: the *Bacteroides* species that dwell in the colon synthesize our required vitamin K; gut bacteria help us to resist invading organisms. An oral or injectable antibiotic diffuses through the bloodstream and affects targeted pathogen and residential microbiota alike. And evidence is accumulating that our welcome residents do not, in fact, recover completely or are replaced in the long term by resistant organisms.

CAMBOU 2011

Anne Dominique Cambou & Narayanan Menon, *Three-dimensional structure of a sheet crumpled into a ball*. [PNAS 108 \(2011\), 14741–14745](#).

When a thin sheet is crushed into a small three-dimensional volume, it invariably forms a structure with a low volume fraction but high resistance to further compression. Being a far-from-equilibrium process, forced crumpling is not necessarily amenable to a statistical description in which the parameters of the initially flat sheet and the final confinement fully specify the resulting crumpled state. Instead, the internal geometry and mechanical properties of the crumpled ball may reflect the history of its preparation. Our X-ray microtomography experiments reveal that the internal three-dimensional geometry of a crumpled ball is in many respects isotropic and homogeneous. In these respects, crumpling recapitulates other classic nonequilibrium problems such as turbulence, where a system driven by long-wavelength, low-symmetry, forcing shows only rather subtle fingerprints of the forcing mechanism. However, we find local nematic ordering of the sheet into parallel stacks. The layering proceeds radially inward from the outer surface. The extent of this layering increases with the volume fraction, or degree of compression.

elasticity of thin sheets | nonthermal crumpling | stress focusing | nonequilibrium packing

CASEY 2011

B. J. Casey et al., *Behavioral and neural correlates of delay of gratification 40 years later*. [PNAS 108 \(2011\), 14998–15003](#).

B. J. Casey, Leah H. Somerville, Ian H. Gotlib, Ozlem Ayduk, Nicholas T. Franklin, Mary K. Askren, John Jonides, Marc G. Berman, Nicole L. Wilson, Theresa Teslovich, Gary Glover, Vivian Zayas, Walter Mischel and Yuichi Shoda

We examined the neural basis of self-regulation in individuals from a cohort of preschoolers who performed the delay-of-gratification task 4 decades ago. Nearly 60 individuals, now in their mid-forties, were tested on “hot” and “cool” versions of a go/nogo task to assess whether delay of gratification in childhood predicts impulse control abilities and sensitivity to alluring cues (happy faces). Individuals who were less able to delay gratification in preschool and consistently showed low self-control abilities in their twenties and thirties performed more poorly than did high delayers when having to suppress a response to a happy face but not to a neutral or fearful face. This finding suggests that

sensitivity to environmental hot cues plays a significant role in individuals' ability to suppress actions toward such stimuli. A subset of these participants (n = 26) underwent functional imaging for the first time to test for biased recruitment of frontostriatal circuitry when required to suppress responses to alluring cues. Whereas the prefrontal cortex differentiated between nogo and go trials to a greater extent in high delayers, the ventral striatum showed exaggerated recruitment in low delayers. Thus, resistance to temptation as measured originally by the delay-of-gratification task is a relatively stable individual difference that predicts reliable biases in frontostriatal circuitries that integrate motivational and control processes.

reward | behavioral suppression | functional MRI | inferior frontal gyrus | longitudinal

FARRELL 2011

Simon Farrell, *Social influence benefits the wisdom of individuals in the crowd*. [PNAS 108 \(2011\), E625](#).

Lorenz et al.'s claim also rests on their observation that sharing information increased the probability that the true estimate fell outside the range of median estimates. It should be stressed that this ordinal "bracketing" metric does not reflect an absolute worsening of performance [see Lorenz et al.'s figure 1]; by implication, social influence does not impair consensus formation in scenarios such as the Intergovernmental Panel on Climate Change [an example given by Lorenz et al.]. Instead, the shrinkage shown above to be beneficial to individuals' estimates gives the aggregate WOC measure a tougher baseline to compete against. Indeed, the bracketing metric used by Lorenz et al. blindly rewards excessive variance (that is, inaccuracy) in individuals' estimates, because increasing this variance will tend to increase the distance between the median estimates.

HOFFMAN 2011

Moshe Hoffman, Uri Gneezy & John A. List, *Nurture affects gender differences in spatial abilities*. [PNAS 108 \(2011\), 14786–14788](#).

Women remain significantly underrepresented in the science, engineering, and technology workforce. Some have argued that spatial ability differences, which represent the most persistent gender differences in the cognitive literature, are partly responsible for this gap. The underlying forces at work shaping the observed spatial ability differences revolve naturally around the relative roles of nature and nurture. Although these forces remain among the most hotly debated in all of the sciences, the evidence for nurture is tenuous, because it is difficult to compare gender differences among biologically similar groups with distinct nurture. In this study, we use a large-scale incentivized experiment with nearly 1,300 participants to show that the gender gap in spatial abilities, measured by time to solve a puzzle, disappears when we move from a patrilineal society to an adjoining matrilineal society. We also show that about one-third of the effect can be explained by differences in education. Given that none of our participants have experience with puzzle solving and that villagers from both societies have the same means of subsistence and shared genetic background, we argue that these results show the role of nurture in the gender gap in cognitive abilities.

cross-cultural research | nature-nurture debate | women in science | cognitive gender differences | sex differences

HSIANG 2011

Solomon M. Hsiang, Kyle C. Meng & Mark A. Cane, *Civil conflicts are associated with the global climate*. [nature 476 \(2011\), 438–441](#).

n476-0438-Supplement1.pdf, n476-0438-Supplement2.zip

It has been proposed that changes in global climate have been responsible for episodes of widespread violence and even the collapse of civilizations^{1,2}. Yet previous studies have

not shown that violence can be attributed to the global climate, only that random weather events might be correlated with conflict in some cases³⁻⁷. Here we directly associate planetary-scale climate changes with global patterns of civil conflict by examining the dominant interannual mode of the modern climate⁸⁻¹⁰, the El Niño / Southern Oscillation (ENSO). Historians have argued that ENSO may have driven global patterns of civil conflict in the distant past¹¹⁻¹³, a hypothesis that we extend to the modern era and test quantitatively. Using data from 1950 to 2004, we show that the probability of new civil conflicts arising throughout the tropics doubles during El Niño years relative to La Niña years. This result, which indicates that ENSO may have had a role in 21 % of all civil conflicts since 1950, is the first demonstration that the stability of modern societies relates strongly to the global climate.

JAYACHANDRAN 2011

Seema Jayachandran & Ilyana Kuziemko, *Why do mothers breastfeed girls less than boys? Evidence and implications for child health in India*. [Quarterly Journal of Economics](#) **126** (2011), 1485–1538.

Breastfeeding is negatively correlated with future fertility because nursing temporarily reduces fecundity and because mothers usually wean on becoming pregnant again. We model breastfeeding under son-biased fertility preferences and show that breastfeeding duration increases with birth order, especially near target family size; is lowest for daughters and children without older brothers because their parents try again for a son; and exhibits the largest gender gap near target family size, when gender is most predictive of subsequent fertility. Data from India confirm each prediction. Moreover, child survival exhibits similar patterns, especially in settings where the alternatives to breastmilk are unsanitary.

MEDLYN 2011

Belinda E. Medlyn, *Comment on “Drought-Induced Reduction in Global Terrestrial Net Primary Production from 2000 Through 2009”*. [science](#) **330** (2011), 1093d.

Zhao and Running (Reports, 20 August 2010, p. 940) reported that global net primary production has declined over the past decade and that this reduction was caused by drought. However, their findings are not direct measurements, but rather are based on outcomes from models in which a strong temperature dependence is assumed. I examine the assumptions underlying their results and show that their findings can be explained as logical consequences of these assumptions.

MEIJAARD 2011

Erik Meijaard & Douglas Sheil, *A Modest Proposal for Wealthy Countries to Reforest Their Land for the Common Good*. [Biotropica](#) **43** (2011), 524–528.

We discuss a recent press release calling on wealthy countries to do more to combat climate change and protect their biodiversity. We examine some further examples of how questionable views are imposed unilaterally on conservation problems. Until we better engage with local perspectives we shall be less credible and less effective as conservationists. Key words: Biofuel; conservation; deforestation; double-standards; ethics; inequity; oil-palm; REDD; restoration; tree-spiking; tropics.

Satire can help reveal the flaws inherent in the way we frame, formulate, and impose our views on different situations. While mockery is seldom an element in the scientific approach it may be especially effective in the context of ethics where the underlying logic and data are harder to assess and emotional content plays a major role. While we scientists consider ourselves experts on objective information we are much less competent with slippery subjective values—even though we are often unaware when we are crossing

the line. Conservation science is especially vulnerable as it is about values as much as facts.

RAUHUT 2011

Heiko Rauhut, Jan Lorenz, Frank Schweitzer & Dirk Helbing, *Improved individual estimation success can imply collective tunnel vision, Reply to Farrell*. [PNAS 108 \(2011\), E626](#).

When the wisdom of crowd effect is undermined, as experimentally observed, there is a practical danger: when an external decision maker is confronted with diverse opinions and high average confidence in a team of experts, the conclusion may be that the truth must lie somewhere in between.

Although social influence reduces the group's range of estimates, and individuals become more confident of their estimates, the truth often ends up in peripheral regions. This may be considered as a collective tunnel vision.

SAMANTA 2011

Arindam Samanta, Marcos H. Costa, Edson L. Nunes, Simone A. Vieira, Liang Xu & Ranga B. Myneni, *Comment on "Drought-Induced Reduction in Global Terrestrial Net Primary Production from 2000 Through 2009"*. [science 330 \(2011\), 1093c](#).

s329-0940-Supplement2.pdf

Zhao and Running (Reports, 20 August 2010, p. 940) reported a reduction in global terrestrial net primary production (NPP) from 2000 through 2009. We argue that the small trends, regional patterns, and interannual variations that they describe are artifacts of their NPP model. Satellite observations of vegetation activity show no statistically significant changes in more than 85 % of the vegetated lands south of 70°N during the same 2000 to 2009 period.

SHAYO 2011

Moses Shayo & Asaf Zussman, *Judicial ingroup bias in the shadow of terrorism*. [Quarterly Journal of Economics 126 \(2011\), 1447–1484](#).

QJEcon126-1447-Supplement.pdf

We study ingroup bias—the preferential treatment of members of one's group—in naturally occurring data, where economically significant allocation decisions are made under a strong non-discriminatory norm. Data come from Israeli small claims courts during 2000–2004, where the assignment of a case to an Arab or Jewish judge is effectively random. We find robust evidence for judicial ingroup bias. Furthermore, this bias is strongly associated with terrorism intensity in the vicinity of the court in the year preceding the ruling. The results are consistent with theory and lab evidence according to which salience of group membership enhances social identification.

SOLOW 2011

Andrew R. Solow, *Climate for conflict*. [nature 476 \(2011\), 406–407](#).

The idea that climate influences the onset of wars is enticing, but controversial. A study now finds a convincing correlation between global climate and civil conflict in countries affected by the El Niño/Southern Oscillation.

ZHAO 2010

Maosheng Zhao & Steven W. Running, *Drought-Induced Reduction in Global Terrestrial Net Primary Production from 2000 Through 2009*. [science 329 \(2010\), 940–943](#).

s329-0940-Supplement1.pdf, s329-0940-Comment1.pdf, s329-0940-Supplement2.pdf, s329-0940-Comment2.pdf, s329-0940-Reply.pdf, s329-0940-Supplement3.pdf

Terrestrial net primary production (NPP) quantifies the amount of atmospheric carbon fixed by plants and accumulated as biomass. Previous studies have shown that climate constraints were relaxing with increasing temperature and solar radiation, allowing an upward trend in NPP from 1982 through 1999. The past decade (2000 to 2009) has been the warmest since instrumental measurements began, which could imply continued increases in NPP; however, our estimates suggest a reduction in the global NPP of 0.55 petagrams of carbon. Large-scale droughts have reduced regional NPP, and a drying trend in the Southern Hemisphere has decreased NPP in that area, counteracting the increased NPP over the Northern Hemisphere. A continued decline in NPP would not only weaken the terrestrial carbon sink, but it would also intensify future competition between food demand and proposed biofuel production.

ZHAO 2011

Maosheng Zhao & Steven W. Running, *Response to Comments on “Drought-Induced Reduction in Global Terrestrial Net Primary Production from 2000 Through 2009”*. *science* **330** (2011), 1093e.

s329-0940-Supplement3.pdf

Samanta et al. and Medlyn challenge our report of reduced global terrestrial net primary production (NPP) from 2000 through 2009. Our new tests show that other vegetation indices had even stronger negative changes through the decade, and weakening temperature controls on water stress and respiration still did not produce a positive trend in NPP. These analyses strengthen the conclusion of drought-induced reduction in global NPP over the past decade.

Anthropologie

GIBBONS 2011

Ann Gibbons, *Who Were the Denisovans?* *science* **333** (2011), 1084–1087.

At an unusual meeting at a Siberian cave, researchers find that these mysterious archaic humans lived in the same place as both modern humans and Neandertals—though not necessarily at the same time—and their range probably stretched into east Asia

As for the timing of the Neandertalhuman mixing, the newest analyses tend to push that younger. Population geneticist Montgomery Slatkin of the University of California, Berkeley, said that his model runs gave him a wide range of preliminary results, from 65,000 years to 45,000 years ago, but he’s still working the numbers. Reich reported that his independent analyses also suggest a younger date. If the mixing happened more recently than 90,000 years ago, it rules out the Israeli fossils as representatives of the groups who mixed.

Story or Book

NEUVIANS 2011

Tanja Neuvians, *Eine AntiHagiografie*. *Spektrum der Wissenschaft* **2011**, ix, 95–96.

Heiliger oder Spielball von Geschichte und Gesellschaft? Helmut Zander fordert die Anthroposophen heraus.

Helmut Zander, Rudolf Steiner, Die Biografie. Piper, München 2011. 536 S., € 24,95

Zander spart nicht mit Hinweisen darauf, dass es sich bei den Mitgliedern der Theosophischen Gesellschaft durchgehend um Adel und gut situiertes Bürgertum handelte: „Der

typische Theosoph war eine Frau: gebildet, nicht arm und Protestantin, eine Bürgersfrau eben, die aus Mangel an Alternativen Theosophin wurde.“ Man erhält den Eindruck, dass Steiner seinen plötzlichen Aufstieg einer Schar gelangweilter MillionärsGattinnen verdanke, die das Geld ihrer Männer für Spinnereien verprassten.

Für die Anthroposophen, von denen nicht wenige Steiner fast wie einen Heiligen verehren, ist Zanders Befund starker Tobak: Steiner habe von nichts eine Ahnung, stelle ohne fundiertes Wissen Behauptungen auf, die er als höhere Einsichten deklarieren, und wische jegliche Diskussion mit der Autorität des Sehers als unerleuchtete Kleingeisterei vom Tisch. Seine Erkenntnisse habe er weder durch intensives Studium noch durch intuitive Versenkung gefunden, sondern häufig unvorbereitet aus dem Stegreif erfunden oder von anderen abgekupfert. Einige seiner Thesen habe er nachträglich ins Gegenteil verkehrt, womit er sich flexibler gezeigt habe als einige seiner heutigen Anhänger.