

## Literatur

### Aktuell

ALLEN 2014

Liz Allen, Amy Brand, Jo Scott, Micah Altman & Marjorie Hlava, *Credit where credit is due*. [nature](#) **508** (2014), 312–313.

Liz Allen, Amy Brand, Jo Scott, Micah Altman and Marjorie Hlava are trialling digital taxonomies to help researchers to identify their contributions to collaborative projects.

CHO 2014

Adrian Cho, *The Morning After, Inflation Result Causes Headaches*. [science](#) **344** (2014), 19–20.

Cosmologists still say that the observation from Background Imaging of Cosmic Extragalactic Polarization (BICEP), a specialized telescope at the South Pole, jibes with the simplest model of inflation and lays waste to more complicated ones. Ironically, however, the now-dead models are the ones most theorists favored. The simplest model and ones like it suffer from a conceptual problem that may render them internally inconsistent, researchers say.

That’s where string theory comes in. For 30 years, it has been physicists’ best shot at a theory that melds quantum mechanics with Einstein’s general theory of relativity, which states that gravity arises when energy and mass warp spacetime. String theory assumes the universe has 10 dimensions, six of them wound up in tiny loops, and some critics have dismissed it as an ultracomplex “theory of anything”—so flexible that there is no conceivable way to test it empirically.

CULBERTSON 2014

Jennifer Culbertson & David Adger, *Language learners privilege structured meaning over surface frequency*. [PNAS](#) **111** (2014), 5842–5847.

Although it is widely agreed that learning the syntax of natural languages involves acquiring structure-dependent rules, recent work on acquisition has nevertheless attempted to characterize the outcome of learning primarily in terms of statistical generalizations about surface distributional information. In this paper we investigate whether surface statistical knowledge or structural knowledge of English is used to infer properties of a novel language under conditions of impoverished input. We expose learners to artificial-language patterns that are equally consistent with two possible underlying grammars—one more similar to English in terms of the linear ordering of words, the other more similar on abstract structural grounds. We show that learners’ grammatical inferences overwhelmingly favor structural similarity over preservation of superficial order. Importantly, the relevant shared structure can be characterized in terms of a universal preference for isomorphism in the mapping from meanings to utterances. Whereas previous empirical support for this universal has been based entirely on data from cross-linguistic language samples, our results suggest it may reflect a deep property of the human cognitive system—a property that, together with other structure-sensitive principles, constrains the acquisition of linguistic knowledge.

learning biases | typology | artificial grammar learning | semantic scope | transitional probabilities

#### CURRY 2014

Andrew Curry, *Kurdistan Offers an Open Window on The Ancient Fertile Crescent*. [science 344 \(2014\), 18–19](#).

#### GENG 2014

Lei Geng, Becky Alexander, Jihong Cole-Dai, Eric J. Steig, Joël Savarino, Eric D. Sofen & Andrew J. Schauer, *Nitrogen isotopes in ice core nitrate linked to anthropogenic atmospheric acidity change*. [PNAS 111 \(2014\), 5808–5812](#).

[pnas111-05808-Supplement2.pdf](#)

Nitrogen stable isotope ratio (d15N) in Greenland snow nitrate and in North American remote lake sediments has decreased gradually beginning as early as  $\approx 1850$  Christian Era. This decrease was attributed to increasing atmospheric deposition of anthropogenic nitrate, reflecting an anthropogenic impact on the global nitrogen cycle, and the impact was thought to be amplified  $\approx 1970$ . However, our subannually resolved ice core records of d15N and major ions (e.g., NO<sub>3</sub><sup>-</sup>, SO<sub>4</sub><sup>-2</sup>) over the last  $\approx 200$  y show that the decrease in d15N is not always associated with increasing NO<sub>3</sub><sup>-</sup> concentrations, and the decreasing trend actually leveled off  $\approx 1970$ . Correlation of d15N with H<sup>+</sup>, NO<sub>3</sub><sup>-</sup>, and HNO<sub>3</sub> concentrations, combined with nitrogen isotope fractionation models, suggests that the d15N decrease from  $\approx 1850$ – $1970$  was mainly caused by an anthropogenic-driven increase in atmospheric acidity through alteration of the gas-particle partitioning of atmospheric nitrate. The concentrations of NO<sub>3</sub><sup>-</sup> and SO<sub>4</sub><sup>-2</sup> also leveled off  $\approx 1970$ , reflecting the effect of air pollution mitigation strategies in North America on anthropogenic NO<sub>x</sub> and SO<sub>2</sub> emissions. The consequent atmospheric acidity change, as reflected in the ice core record of H<sup>+</sup> concentrations, is likely responsible for the leveling off of d15N  $\approx 1970$ , which, together with the leveling off of NO<sub>3</sub><sup>-</sup> concentrations, suggests a regional mitigation of anthropogenic impact on the nitrogen cycle. Our results highlight the importance of atmospheric processes in controlling d15N of nitrate and should be considered when using d15N as a source indicator to study atmospheric flux of nitrate to land surface/ecosystems.

fossil fuel emissions | proxy | industrial | acid deposition | clean air act

#### GLAUSIUSZ 2014

Josie Glausiusz, *The Plastics Puzzle*. [nature 508 \(2014\), 306–308](#).

When toxicologists warned that the plastics ingredient BPA might be harmful, consumers clamoured for something new. But problems persist.

BPS was first made in 1869 as a dye. But because it was introduced into consumer goods only recently — into cash-register receipts in 2006, for example — few researchers have studied its toxicity. “The main question, to which we have no answer, is: ‘is BPS as toxic as BPA?’” says René Habert, an endocrinologist at Paris Diderot University.

#### GÓMEZ 2014

David Maximiliano Gómez et al., *Language universals at birth*. [PNAS 111 \(2014\), 5837–5841](#).

David Maximiliano Gómez, Iris Berent, Silvia Benavides-Varela, Ricardo A. H. Bion, Luigi Cattarossi, Marina Nespore & Jacques Mehler

The evolution of human languages is driven both by primitive biases present in the human sensorimotor systems and by cultural transmission among speakers. However, whether the design of the language faculty is further shaped by linguistic

biological biases remains controversial. To address this question, we used near-infrared spectroscopy to examine whether the brain activity of neonates is sensitive to a putatively universal phonological constraint. Across languages, syllables like blif are preferred to both lbif and bdif. Newborn infants (2–5 d old) listening to these three types of syllables displayed distinct hemodynamic responses in temporal-perisylvian areas of their left hemisphere. Moreover, the oxyhemoglobin concentration changes elicited by a syllable type mirrored both the degree of its preference across languages and behavioral linguistic preferences documented experimentally in adulthood. These findings suggest that humans possess early, experience-independent, linguistic biases concerning syllable structure that shape language perception and acquisition.

human newborns | speech perception | NIRS | sonority | phonology

#### MACILWAIN 2014

Colin Macilwain, *Beware of backroom deals in the name of ‘science’*. [nature 508 \(2014\), 289](#).

The term ‘sound science’ has become Orwellian double-speak for various forms of pro-business spin, says Colin Macilwain.

In the end, regulatory arguments are more philosophical than scientific in their nature. Environmentalists advocate caution in the face of uncertainty; industry wants cost-benefit analysis. The natural sciences have little to say on which approach is wiser. Industry, however, has become adroit at using the concept of sound science to advocate the latter path.

#### SIMPSON 2014

Victoria J. Simpson, Gayle Brewer & Colin A. Hendrie, *Evidence to Suggest that Women’s Sexual Behavior is Influenced by Hip Width Rather than Waist-to-Hip Ratio*. [Archives of Sexual Behavior \(2014\), preprint, 1–5](#). DOI:10.1007/s10508-014-0289-z.

Waist-to-hip ratio (WHR) is an important ornament display that signals women’s health and fertility. Its significance derives from human development as a bipedal species. This required fundamental changes to hip morphology/musculature to accommodate the demands of both reproduction and locomotion. The result has been an obstetric dilemma whereby women’s hips are only just wide enough to allow the passage of an infant. Childbirth therefore poses a significant hip width related threat to maternal mortality/risk of gynecological injury. It was predicted that this would have a significant influence on women’s sexual behavior. To investigate this, hip width and WHR were measured in 148 women (Mage=20.93,±,0.17 years) and sexual histories were recorded via questionnaire. Data revealed that hip width per se was correlated with total number of sexual partners, total number of one night stands, percentage of sexual partners that were one night stands, number of sexual partners within the context of a relationship per year sexually active, and number of one night stands per year sexually active. By contrast, WHR was not correlated with any of these measures. Further analysis indicated that women who predominantly engaged in one night stand behavior had wider hips than those who did not. WHR was again without effect in this context. Women’s hip morphology has a direct impact on their risk of potentially fatal childbirth related injury. It is concluded that when they have control over this, women’s sexual behavior reflects this risk and is therefore at least in part influenced by hip width.

Keywords: Hip width | Waist-to-hip ratio | Obstetric dilemma | Sexual behavior

## Bibel

### CLINES 2014

David J. A. Clines, *One or Two Things You May Not Know about the Universe, The Cosmology of the Divine Speeches in Job*. In: JOHN JARICK (Hrsg.), *Oxford Old Testament Seminar Papers*. (preprint).

My reading of it is that in the divine scale of values justice is not of capital consequence. What matters to God in the world he has created is not whether its humans are treated according to their deserts, but the matter of the maintenance of the vast and complex enterprise, huger far than the humans who form a fragment of it; they are in fact barely mentioned in the whole of the divine speeches.

You could call this a green theology, in that its focus is the world of nature, which it apparently esteems above the world of humans. Or you could call it a cruel theology, that turns its back on the cries of a suffering humanity. It is certainly a theology that makes no promises and offers no hopes; it is shocking in its austerity. It is not that God does not care for humanity, nor that he will have nothing to do with them (the prologue and the epilogue show the falsity of that). But he can talk for chapters at a time without so much as mentioning them. That has got to mean something about his values.

### MURPHY 2010

SARA MURPHY (Hrsg.), *Easter, Exploring the Resurrection of Jesus*. (Washington 2010).

v Sara Murphy: Introduction

1 Hershel Shanks: Emmaus Where Christ Appeared; Many sites vie for the honor, but Emmaus-Nicopolis is the leading contender

17 N. T. Wright: The Resurrection of Resurrection

20 Marcus J. Borg: Thinking About Easter

23 Michael W. Holmes: To Be Continued . . . The many endings of the Gospel of Mark

40 The Resurrection

42 To the Tomb

### TABOR 2014

James Tabor, *The Last Days of Jesus, A Final "Messianic" Meal*. *Bible History Daily* 2014, Apr. 18.

James Tabor examines gospel accounts of the last supper.

## Biologie

### BOGAERT 2006

Anthony F. Bogaert, *Biological versus nonbiological older brothers and men's sexual orientation*. *PNAS* 103 (2006), 10771–10774.

The most consistent biodemographic correlate of sexual orientation in men is the number of older brothers (fraternal birth order). The mechanism underlying this effect remains unknown. In this article, I provide a direct test pitting prenatal against postnatal (e.g., social/rearing) mechanisms. Four samples of homosexual and heterosexual men (total n = 944), including one sample of men raised in nonbiological and blended families (e.g., raised with half- or step-siblings or as adoptees) were studied. Only biological older brothers, and not any other sibling characteristic, including non-biological older brothers, predicted men's sexual

orientation, regardless of the amount of time reared with these siblings. These results strongly suggest a prenatal origin to the fraternal birth-order effect.

immune | sexuality

PUTS 2006

David A. Puts, Cynthia L. Jordan & S. Marc Breedlove, *O brother, where art thou? The fraternal birth-order effect on male sexual orientation*. *PNAS* **103** (2006), 10531–10532.

[F]or each additional brother that precedes him, a boy's chance of growing up to be gay increases by a third. If Freud had known that, he might have suggested that the presence of older brothers shifts family dynamics, subjecting the youngest son to a social milieu that leads to homosexuality. However, in this issue of *PNAS*, Anthony Bogaert provides evidence that the social influence of an older brother is irrelevant to whether his younger brother will develop a homosexual orientation. It is the number of older biological brothers the mother carried, not the presence of older brothers while growing up, that makes some boys grow up to be gay. Older stepbrothers in the home have no effect, although older biological brothers raised apart still exert their influence.

## Energie

N'TSOUKPOE 2014

Kokouvi Edem N'Tsoukpoe, Thomas Schmidt, Holger Urs Rammelberg, Beatriz Amanda Watts & Wolfgang K. L. Ruck, *A systematic multi-step screening of numerous salt hydrates for low temperature thermochemical energy storage*. *Applied Energy* **124** (2014), 1–16.

- Salt hydrates offer very low potential for thermochemical heat storage.
- The efficiency of classical processes using salt hydrates is very low: typically 25 %.
- New processes are needed for the use of salt hydrates in thermochemical heat storage.

In this paper, the potential energy storage density and the storage efficiency of salt hydrates as thermochemical storage materials for the storage of heat generated by a micro-combined heat and power (micro-CHP) have been assessed. Because salt hydrates used in various thermochemical heat storage processes fail to meet the expectations, a systematic evaluation of the suitability of 125 salt hydrates has been performed in a three-step approach. In the first step general issues such as toxicity and risk of explosion have been considered. In the second and third steps, the authors implement a combined approach consisting of theoretical calculations and experimental measurements using Thermogravimetric Analysis (TGA). Thus, application-oriented comparison criteria, among which the net energy storage density of the material and the thermal efficiency, have been used to evaluate the potential of 45 preselected salt hydrates for a low temperature thermochemical heat storage application. For an application that requires a discharging temperature above 60 °C,  $\text{SrBr}_2 \cdot 6\text{H}_2\text{O}$  and  $\text{LaCl}_3 \cdot 7\text{H}_2\text{O}$  appear to be the most promising, only from thermodynamic point of view. However, the maximum net energy storage density including the water in the water storage tank that they offer (respectively 133 kW h m<sup>-3</sup> and 89 kW h m<sup>-3</sup>) for a classical thermochemical heat storage process are not attractive for the intended application. Furthermore, the thermal efficiency that would result from the storage process based on salt hydrates without condensation heat recovery appears also to be very low (lower than 40 % and typically 25 %). Even for application requiring lower discharging temperature like 35 °C, the expectable efficiency and net energy storage density including the

water storage remain low. Alternative processes are needed to implement for salt hydrates in low temperature thermochemical heat storage applications.

**Keywords:** Salt hydrates | Material selection | Thermochemical heat storage | Thermogravimetric analysis | Net energy storage density | Micro-combined heat and power

In dieser Publikation wurden die potentiellen Energiespeicherdichte und der Speicher-Wirkungsgrad von Salzhydraten als thermochemischen Speichermaterialien zur Speicherung von Wärme ermittelt, die von einem Mikro-Blockheizkraftwerk (Mikro-BHKW) erzeugt wird. Da Salzhydrate bei verschiedenen Anwendungen hinter den Erwartungen zurückgeblieben sind, wurde eine systematische Evaluation für die Eignung von 125 Salzhydraten in einer dreistufigen Prozedur durchgeführt. Im ersten Schritt wurden generelle Aspekte wie Toxizität und Explosionsrisiko berücksichtigt. Im zweiten und dritten Schritt implementierten die Autoren einen kombinatorischen Ansatz, der aus theoretischen Berechnungen und experimentellen Messungen mittels thermogravimetrischer Analyse (TGA) besteht. Damit wurde eine systematische Evaluation der potentiellen Energiespeicherdichte und Effizienz von 45 vorausgewählten Salzhydraten für Niedertemperatur-Wärmespeicheranwendungen bei unter 105 °C durchgeführt. Für eine Anwendung, die eine Entladetemperatur über 60 °C benötigt, sind  $\text{SrBr}_2 \cdot 6\text{H}_2\text{O}$  und  $\text{LaCl}_3 \cdot 7\text{H}_2\text{O}$  zumindest vom thermodynamischen Standpunkt, aus die vielversprechendsten Speichermaterialien. Jedoch erscheint deren jeweilige maximale Nettoenergiespeicherdichte inklusive Wasserspeichertank unter Betrachtung eines klassischen thermochemischen Wärmespeicherprozesses von 133 kW h m<sup>-3</sup> bzw. 89 kW h m<sup>-3</sup> nicht attraktiv für die betrachtete Anwendung. Weiterhin ist die thermische Effizienz, die aus dem Speicherprozess ohne Kondensationswärme-Rückgewinnung resultiert, ebenfalls sehr niedrig (niedriger als 40 %, typischerweise 25 %). Sogar für Anwendungen, die eine geringere Ausspeichertemperatur, z.B. 35 °C, benötigen, bleibt die zu erwartende Effizienz und Nettoenergiespeicherdichte niedrig. Alternative Prozesse werden benötigt, um Salzhydrate in Niedrigtemperaturspeicheranwendungen zu implementieren.

**Schlüsselwörter:** Salzhydrate | Materialwahl | thermochemische Wärmespeicherung | Thermogravimetrische Analyse | Nettoenergiespeicherdichte | Mikro-Blockheizkraftwerk

## Grundlagen

FOLEY 2014

Robert Foley & Marta Mirazón Lahr, *The Role of “the Aquatic” in Human Evolution, Constraining the Aquatic Ape Hypothesis*. [Evolutionary Anthropology](#) **23** (2014), 56–59.

Few things show the distinctiveness of human evolution research better than the Aquatic Ape Hypothesis (AAH). On one hand, we have “orthodox” research into human evolution, firmly based on land; on the other, we have the aquatic ape community, convinced not only that our ancestors went through an aquatic phase, but that the professional scientific community ignores their work and keeps it out of the mainstream. How many fields of science have two entirely parallel communities that essentially are hermetically sealed from each other?

## Jungpaläolithikum

ROZZI 2009

Fernando V. Ramirez Rozzi et al., *Cutmarked human remains bearing*

*Neandertal features and modern human remains associated with the Aurignacian at Les Rois.* *Journal of Anthropological Sciences* **87** (2009), 153–185.

Fernando V. Ramirez Rozzi, Francesco d’Errico, Marian Vanhaeren, Pieter M. Grootes, Bertrand Kerautret & Véronique Dujardin

The view that Aurignacian technologies and their associated symbolic manifestations represent the archaeological proxy for the spread of Anatomically Modern Humans into Europe, is supported by few diagnostic human remains, including those from the Aurignacian site of Les Rois in south-western France. Here we reassess the taxonomic attribution of the human remains, their cultural affiliation, and provide five new radiocarbon dates for the site. Patterns of tooth growth along with the morphological and morphometric analysis of the human remains indicate that a juvenile mandible showing cutmarks presents some Neandertal features, whereas another mandible is attributed to Anatomically Modern Humans. Reappraisal of the archaeological sequence demonstrates that human remains derive from two layers dated to 28–30 kyr BP attributed to the Aurignacian, the only cultural tradition detected at the site. Three possible explanations may account for this unexpected evidence. The first one is that the Aurignacian was exclusively produced by AMH and that the child mandible from unit A2 represents evidence for consumption or, more likely, symbolic use of a Neandertal child by Aurignacian AMH. The second possible explanation is that Aurignacian technologies were produced at Les Rois by human groups bearing both AMH and Neandertal features. Human remains from Les Rois would be in this case the first evidence of a biological contact between the two human groups. The third possibility is that all human remains from Les Rois represent an AMH population with conserved plesiomorphic characters suggesting a larger variation in modern humans from the Upper Palaeolithic.

**Keywords:** Contact, Upper Palaeolithic, Modern Human Variation, Tooth Morphology, Tooth Growth.

## Klima

Jo 2014

Kyoung-nam Jo, Kyung Sik Woo, Sangheon Yi, Dong Yoon Yang, Hyoun Soo Lim, Yongjin Wang, Hai Cheng & R. Lawrence Edwards, *Mid-latitude interhemispheric hydrologic seesaw over the past 550,000 years.* *nature* **508** (2014), 378–382.

n508-0378-Supplement.xlsx

An interhemispheric hydrologic seesaw—in which latitudinal migrations of the Intertropical Convergence Zone (ITCZ) produce simultaneous wetting (increased precipitation) in one hemisphere and drying in the other—has been discovered in some tropical and subtropical regions<sup>1–3</sup>. For instance, Chinese and Brazilian subtropical speleothem (cave formations such as stalactites and stalagmites) records show opposite trends in time series of oxygen isotopes (a proxy for precipitation variability) at millennial to orbital timescales<sup>2,3</sup>, suggesting that hydrologic cycles were antiphased in the northerly versus southerly subtropics. This tropical to subtropical hydrologic phenomenon is likely to be an initial and important climatic response to orbital forcing<sup>3</sup>. The impacts of such an interhemispheric hydrologic seesaw on higher-latitude regions and the global climate system, however, are unknown. Here we show that the antiphasing seen in the tropical records is also present in both hemispheres of the mid-latitude western Pacific Ocean. Our

results are based on a new 550,000-year record of the growth frequency of speleothems from the Korean peninsula, which we compare to Southern Hemisphere equivalents<sup>4</sup>. The Korean data are discontinuous and derived from 24 separate speleothems, but still allow the identification of periods of peak speleothem growth and, thus, precipitation. The clear hemispheric antiphasing indicates that the sphere of influence of the interhemispheric hydrologic seesaw over the past 550,000 years extended at least to the mid-latitudes, such as northeast Asia, and that orbital-timescale ITCZ shifts can have serious effects on temperate climate systems. Furthermore, our result implies that insolation-driven ITCZ dynamics may provoke water vapour and vegetation feedbacks in northern mid-latitude regions and could have regulated global climate conditions throughout the late Quaternary ice age cycles.