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# References

## Aktuell


Branch 2019

Oliver Branch & Volker Wulfmeyer, *On the sustainability of large-scale desert plantations as a partial solution for climate change, Reply to Wang and D'Odorico*. PNAS **116** (2019), 24927–24928.

To assess potential based solely on water balances is to oversimplify the system. Rain enhancement is only one potential of plantation systems. To illustrate this systems thinking, an example tradeoff would be that carbon emissions offsetting would "pay" for marine desalination. Ultimately, unpacking such complexity will probably require life cycle assessment or similar analyses.

Clark 2019

Jeff Clark, *An escape into fiction*. science **366** (2019), 918.

I arrived home from work, my mind racing. I was scheduled to perform an experiment using a pricey piece of equipment—one that I'd be unlikely to gain much access to again during my Ph.D.—and I needed it to go flawlessly. "Will the x-rays transmit correctly?" I wondered. "What's my backup plan if things go wrong?" I had spent the whole day fretting about the experiment, and I wanted to shut off my anxious thoughts. So after dinner, I made a cup of hot chocolate, curled up on my sofa, and cracked open a novel I'd been reading. Almost immediately, my mind left behind the details of experimental design and parachuted into a land of dæmons, magic dust, and armored bears. It was exactly what I needed.

Frederick 2019

Eva Frederick, *Bacterial toxin linked to severe alcoholic liver disease*. science **366** (2019), 784.

In mice, viruses known as phages reduced alcohol-related liver problems by eliminating a gut microbe.

Li 2019

Jiangnan Li et al., *Capture of nitrogen dioxide and conversion to nitric acid in a porous metal–organic framework*. Nature Chemistry **11** (2019), 1085–1090.

NatChem11-1085-Supplement.pdf

Air pollution by nitrogen oxides, NOx, is a major problem, and new capture and abatement technologies are urgently required. Here, we report a metal–organic framework (Manchester Framework Material 520 (MFM-520)) that can efficiently confine dimers of NO2, which results in a high adsorption capacity of 4.2 mmol g–1 (298 K, 0.01 bar) with full reversibility and no loss of capacity over 125 cycles. Treatment of NO2@MFM-520 with water in air leads to a quantitative conversion of the captured NO2 into HNO3, an important feedstock for fertilizer production, and fully regenerates MFM-520. The confinement of N2O4 inside nanopores was established at a molecular level, and the dynamic breakthrough experiments using both dry and humid NO2 gas streams verify the excellent stability and selectivity of MFM-520 and confirm its potential for precious-metal-free deNOx technologies.

Jiangnan Li, Xue Han, Xinran Zhang, Alena M. Sheveleva, Yongqiang Cheng, Floriana Tuna, Eric J. L. McInnes, Laura J. McCormick McPherson, Simon J. Teat, Luke L. Daemen, Anibal J. Ramirez-Cuesta, Martin Schröder 1 & Sihai Yang

Manning 2019

Peter Manning, *Piling on the pressures to ecosystems.* science **366** (2019), 801.

Identifying dangerous combinations of assaults could prevent ecosystem collapse.

Rillig 2019

Matthias C. Rillig et al., *The role of multiple global change factors in driving soil functions and microbial biodiversity.* science **366** (2019), 886–890.

s366-0886-Supplement.pdf

Soils underpin terrestrial ecosystem functions, but they face numerous anthropogenic pressures. Despite their crucial ecological role, we know little about how soils react to more than two environmental factors at a time. Here, we show experimentally that increasing the number of simultaneous global change factors (up to 10) caused increasing directional changes in soil properties, soil processes, and microbial communities, though there was greater uncertainty in predicting the magnitude of change. Our study provides a blueprint for addressing multifactor change with an efficient, broadly applicable experimental design for studying the impacts of global environmental change.

Matthias C. Rillig, Masahiro Ryo, Anika Lehmann, Carlos A. Aguilar-Trigueros, Sabine Buchert, Anja Wulf, Aiko Iwasaki, Julien Roy & Gaowen Yang

Saunier 2019

O. Saunier, D. Didier, A. Mathieu, O. Masson & J. Dumont Le Brazidec, *Atmospheric modeling and source reconstruction of radioactive ruthenium from an undeclared major release in 2017.* PNAS **116** (2019), 24991–25000.

pnas116-24991-Supplement.pdf

In October 2017 unusual 106Ru detections across most of Europe prompted the Institut de Radioprotection et de Surete Nucleaire (IRSN) to analyze the event in order to locate the origin and identify the magnitude of the release. This paper presents the inverse modeling techniques used during the event to achieve this goal. The method is based on a variational approach and consists of using air concentration measurements with the ldX long-range dispersion model included in the IRSN's C3X operational platform. The method made it possible to quickly identify the southern Urals as the most likely geographical origin of the release. Despite uncertainties regarding the starting date of the release, calculations show that it potentially began on 23 September, while most of the release was emitted on 26 September. Among the nuclear plants identified in the southern Urals, the Mayak complex is that from which the dispersion of the 106Ru plume is most consistent with observations. The reconstructed 106Ru source term from Mayak is ≈250 TBq. In total, it was found that for 72 % of the measurements simulated and observed air concentration agreed within a factor of 5. In addition, the simulated deposition of 106Ru agrees with the observed deposition. Outside the southern Urals, the simulations indicate that areas with highest deposition values are located in southern Scandinavia and southeastern Bulgaria and are explained by rainfall events occurring while the plume was passing over.

Keywords: inverse modeling | ruthenium detection | atmospheric dispersion modeling | source reconstruction

Significance: In October 2017, most European networks involved in the monitoring of atmospheric radioactive contamination measured small 106Ru air concentrations. One of the particularities of the event was that the location and the magnitude of the source were unknown at the time when the first detections were reported. This paper describes the use of inverse modeling techniques combining an atmospheric transport model with environmental measurements in order to identify the origin of the 106Ru detections and to assess the magnitude of the 106Ru emissions. The method, easily embedded for operational use, made it possible to quickly point out the southern Urals in the Russia Federation as the most likely geographical origin of the release.

Wang 2019

Lixin Wang & Paolo D'Odorico, *Water limitations to large-scale desert agroforestry projects for carbon sequestration*. PNAS **116** (2019), 24925–24926.

Deserts exhibit high atmospheric water demand relative to water supply. Even if agroforestry could increase rainfall, it is essential to compare the increased rainfall amount to water consumption by the planted trees to evaluate the sustainability of such a practice in desert regions. If plant water consumption exceeds the generated rainfall, agroforestry will not be sustainable.

When utilizing groundwater as a major water source, desert plantations serve as a "biological water pump" and unsustainably deplete the limited desert groundwater resources.

## Archäologie

Cline 2019

Eric H. Cline, *Dirt, Digging, Dreams, and Drama: Why Presenting Proper Archaeology to the Public is Crucial for the Future of Our Field, Plenary Address – The American School of Oriental Research 2019 Annual Meeting – November 20–23, 2019*. (2019). <http://www.asor.org/wp-content/uploads/2019/12/ASOR-2019-Plenary-Address-for-publication-12.4.2019-.pdf>.

I'm sure that I'm not alone in having such encounters; undoubtedly, they happen to many of you as well, but I offer these as three examples of members of the general public. Ivan, Reuben, and Smelly Mike should be our target audience, but when they go to the bookstore or online to Amazon, for the most part they don't see books written by us that are meant for them, so instead they're buying the books that are written by non-archaeologists, most of whom have learned how to write for the general public. This must change. It's as simple as that.

There are others of you out there as well, and I apologize for not having time to highlight each of you by name. However, more of us – many more of us – need to bring our work to life for the public far more than we are currently doing. As I have said, it is time for us to once again begin to tell our own stories about our findings and our takes on the ancient world. Our livelihoods, and the future of the field, depend upon it, for this is true not only for our lectures and writings for the general public but also in our classrooms.

You are all aware that the humanities are currently under attack and are threatened by funding cuts at many of our institutions, including at my own university. If we are unable to successfully engage our own students, and to show both

them and the university administrators that good research goes hand in hand with good teaching, lecturing, and writing, we will not only risk the future of our departments but will also fail to cultivate the next generation of archaeologists. And I think we would all agree that we don't want that to happen.

## Bibel


den Hertog 2003

Cornelis G. den Hertog, Ulrich Hübner & Stefan Münger (Hrsg.), *Saxa loquentur – Studien zur Archäologie Palästinas/Israels, Festschrift für Volkmar Fritz zum 65. Geburtstag.* Alter Orient und Altes Testament 32 (Münster 2003).

Miller 1993

Robert J. Miller, *The Gospels that Didn't Make the Cut.* Bible Review **9** (1993), iv, 14–25, 56.

That later centuries judged these gospels to be incompatible with official church doctrine does not alter the fact that, in the contexts of their own times, these gospels expressed the religious convictions of sincere Christians. If there is one thing that the past century of biblical scholarship has taught us it is that early Christianity was diverse. Some of this diversity is evident within the New Testament itself. If we study texts outside the New Testament as well, we can learn about early Christianity in all of its remarkable variety.

Eusebius, a fourth-century historian, catalogued many different Christian writings at a time when the contours of the New Testament canon were still a matter of debate. [...] Eusebius characterized the rejected writings as "absolutely out of harmony with true orthodoxy" and as "altogether monstrous and impious." Such language is rooted in a mentality that perceives theological diversity as a threat to the fabric of Christianity. But what about those Christians on the other side of the boundary drawn by the self-proclaimed orthodox? The communities that produced and preserved works such as the gospels of Peter and Thomas obviously did not think they were monstrous or unholy. Such texts nourished the faith of generations of Christians who sincerely believed them to carry the revealed truth about the identity, significance and teaching of Jesus. The "other" gospels open a window for us to another side of early Christianity.

One question that naturally arises is whether the noncanonical gospels contain information about the historical Jesus. [...] Using historical-critical methods, the seminar found virtually nothing outside the canonical tradition that could be traced back to Jesus, except in the Gospel of Thomas, a surprisingly rich source of historical Jesus material.


## Biologie


Davis 2019

Kyle Frankel Davis, Ashwini Chhatre, Narasimha D. Rao, Deepti Singh, Suparna Ghosh-Jerath & Ruth DeFries et al., *Assessing the sustainability of post-Green Revolution cereals in India.* PNAS **116** (2019), 25034–25041.

pnas116-25034-Supplement.pdf

Sustainable food systems aim to provide sufficient and nutritious food, while maximizing climate resilience and minimizing resource demands as well as negative environmental impacts. Historical practices, notably the Green Revolution, prioritized the single objective to maximize production over other nutritional and environmental dimensions. We quantitatively assess outcomes of alternative production decisions across multiple objectives using India's rice-dominated monsoon cereal production as an example. We perform a series of optimizations to maximize nutrient production (i.e., protein and iron), minimize greenhouse gas (GHG) emissions and resource use (i.e., water and energy), or maximize resilience to climate extremes. We find that increasing the area under coarse cereals (i.e., millets, sorghum) improves nutritional supply (on average, +1 % to +5 % protein and +5 % to +49 % iron), increases climate resilience (1 % to 13 % fewer calories lost during an extreme dry year), and reduces GHGs (-2 % to -13 %) and demand for irrigation water (-3 % to -21 %) and energy (-2 % to -12 %) while maintaining calorie production and cropped area. The extent of these benefits partly depends on the feasibility of switching cropped area from rice to coarse cereals. Based on current production practices in 2 states, supporting these cobenefits could require greater manure and draft power but similar or less labor, fertilizer, and machinery. National- and state-level strategies considering multiple objectives in decisions about cereal production can move beyond many shortcomings of the Green Revolution while reinforcing the benefits. This ability to realistically incorporate multiple dimensions into intervention planning and implementation is the crux of sustainable food production systems worldwide.

Keywords: Green Revolution | sustainable agriculture | India | cereals | tradeoffs

Kyle Frankel Davis, Ashwini Chhatre, Narasimha D. Rao, Deepti Singh, Suparna Ghosh-Jerath, Anvi Mridul, Miguel Poblete-Cazenave, Nabin Pradhan & Ruth DeFries

Significance: Substantial growth in food production has occurred from a narrowing diversity of crops over the last 50 y. Agricultural policies have largely focused on the single objective of maximizing production with less attention given to nutrition, climate, and environment. Decisions about sustainable food systems require quantifying and assessing multiple dimensions together. In India, diversifying crop production to include more coarse cereals, such as millets and sorghum, can make food supply more nutritious, reduce resource demand and greenhouse gas emissions, and enhance climate resilience without reducing calorie production or requiring more land. Similar multidimensional approaches to food production challenges in other parts of the world can identify win–win scenarios where food systems meet multiple nutritional, environmental, and climate resilience goals.

## Klima

### Orland 2019

Ian J. Orland, Feng He, Miryam Bar-Matthews, Guangshan Chen, Avner Ayalon & John E. Kutzbach, *Resolving seasonal rainfall changes in the Middle East during the last interglacial period*. PNAS **116** (2019), 24985–24990.

pnas116-24985-Supplement1.pdf, pnas116-24985-Supplement2.xlsx

Paleorainfall proxy records from the Middle East have revealed remarkable patterns of variability since the penultimate glacial period (140 ka), but the seasonality of this signal has been unresolvable. Here, seasonal-resolution oxygen isotope data from Soreq Cave speleothems suggest that summer monsoon rainfall periodically reaches as far north as Israel—well removed from the modern monsoon—at

times (≈125, 105 ka) that overlap with evidence for some of the earliest modern human migrations out of Africa. These seasonal proxy data are corroborated by seasonalresolution model output of the amount and oxygen-isotope ratio of rainfall from an isotope-enabled climate model. In contrast to the modern regional climate where rainfall is delivered predominantly in winter months along westerly storm tracks, the model suggests that during extreme peaks of summer insolation—as occurs during the last interglacial (e.g., 125, 105 ka)—regional rainfall increases due to both wetter winters and the incursion of summer monsoons. This interpretation brings clarity to regional paleoproxy records and provides important environmental context along one potential pathway of early modern human migration.

Keywords: paleoclimate | seasonal-resolution | oxygen isotopes | data-model comparison

Significance: The Middle East was a gateway for early human migration out of Africa, and it is likely that the region's climate played an important role in this anthropogenic transition. This study is motivated by conflicting interpretations of rainfall seasonality from regional paleoenvironmental records. Specifically, we address whether summer monsoon rainfall may have expanded northward into the Middle East in the past. Today, the region has dry summers and relatively wet winters; the northern limit of the modern monsoon is far to the south. Here, we combine climate modeling with seasonal-resolution geochemical analysis of cave carbonates from Israel and find evidence for summer monsoon rainfall during recurrent intervals of the last interglacial period, which overlaps with archeological indicators of human migration.

Sinha 2019

Ashish Sinha, Harvey Weiss & Adam W. Schneider et al., *Role of climate in the rise and fall of the Neo-Assyrian Empire*. Science Advances **5** (2019), eaax6656. DOI:10.1126/sciadv.aax6656.

SciAdv05-eaax6656-Supplement.pdf

Northern Iraq was the political and economic center of the Neo-Assyrian Empire (c. 912 to 609 BCE)—the largest and most powerful empire of its time. After more than two centuries of regional dominance, the Neo-Assyrian state plummeted from its zenith (c. 670 BCE) to complete political collapse (c. 615 to 609 BCE). Earlier explanations for the Assyrian collapse focused on the roles of internal politico-economic conflicts, territorial overextension, and military defeat. Here, we present a high-resolution and precisely dated speleothem record of climate change from the Kuna Ba cave in northern Iraq, which suggests that the empire's rise occurred during a two-centuries-long interval of anomalously wet climate in the context of the past 4000 years, while megadroughts during the early-mid seventh century BCE, as severe as recent droughts in the region but lasting for decades, triggered a decline in Assyria's agrarian productivity and thus contributed to its eventual political and economic collapse.

Ashish Sinha, Gayatri Kathayat, Harvey Weiss, Hanying Li, Hai Cheng, Justin Reuter, Adam W. Schneider, Max Berkelhammer, Selim F. Adalý, Lowell D. Stott & R. Lawrence Edwards

## Kultur

Selover 2015

Stephanie Lesan Selover, *Excavating War, The Archaeology of Conflict in Early Chalcolithic to Early Bronze III Central and Southeastern Anatolia*. Dissertation, University of Chicago (Chicago 2015).

From the start of the Chalcolithic to end of the Early Bronze Age, settlements in Anatolia transformed from simple farming communities to early complex societies. It was during this era that war intensified and became codified as a part of civilization. This dissertation questions how warfare affected this change, and vise versa. An overview of the political history of Chalcolithic and Early Bronze Age Anatolia is presented in order to more fully evaluate the environment and conditions under which this alteration occurred in both central and southeastern Anatolia, before delving into a detailed look at all available areas of archaeological evidence.

## Methoden

Müller 1997

Johannes Müller & Andreas Zimmermann (Hrsg.), *Archäologie und Korrespondenzanalyse*, *Beispiele, Fragen, Perspektiven*. Internationale Archäologie 23 (Espelkamp 1997).

Sibbertsen 2012

Philipp Sibbertsen & Hartmut Lehne, *Statistik*, *Einführung für Wirtschafts- und Sozialwissenschaftler*. (Berlin 2012).

Strien 2019

Hans-Christoph Strien, *'Robust chronologies' or 'Bayesian illusion'? Some critical remarks on the use of chronological modelling*. Documenta Praehistorica **46** (2019), 204–215.

DocPrae46-204-Supplement.pdf

The explanatory power of Bayesian chronological modelling is often overestimated, leading to an uncritical belief in the reliability of each isolated model without the necessary look at archaeological connections between different models. The methodical pitfalls of this approach, especially in combination with inaccurate use of typochronological methods, are highlighted for Linear Pottery Culture (ger. Linienbandkeramik – LBK) and Middle Neolithic chronological models from Central Europe (Jakucs et al. 2016; Denaire et al. 2017; Bánffy et al. 2018). A more critical approach to Bayesian modelling, considering possible mathematical artefacts and the deficits of the actual calibration curve as well as the inherent imprecision of the used typochronological dates, seems to be required.

Keywords: 14C | Bayesian modelling | Correspondence Analysis | Central Europe | Early Neolithic | chronology

## Neolithikum

Dietrich 2019

Laura Dietrich, Dörte Rokitta-Krumnow & Oliver Dietrich, *The meaning of projectile points in the Late Neolithic of the Northern Levant, A case study from the settlement of Shir, Syria*. Documenta Praehistorica **46** (2019), 340–350.

Our contribution explores the possibilities of inferring the functions of Late Neolithic projectile points from the settlement of Shir, Syria. Use-wear and metrical values are applied to differentiate between arrowheads, darts and thrusting spears,

followed by a discussion of hints for use for hunting or as weapons for interpersonal conflict. Weapons get larger and more visible exactly in the moment when hunting declines as a basis for subsistence. This economical transformation would have produced considerable change for individuals who previously defined themselves as hunters. The social practice of hunting may (at least partially) have been substituted by prowess in interpersonal conflict.

Keywords: Neolithic | Near East | projectile points | Shir | warfare

## Neolithikum Religion

FILIPOVIĆ 2019

Dragana Filipović, Jan Piet Brozio, Jan Kaczmarek, Johannes Müller & Wiebke Kirleis, *Food transformed? Taphonomical investigation into a potentially symbolic role of crops at two Neolithic settlements in northern Germany*. Prähistorische Zeitschrift **94** (2019), 31–59.

The two studied Neolithic sites in northern Germany, Oldenburg LA232 and Oldenburg LA191, yielded remains of residential architecture and evidence of everyday activities, including food storage and processing. None of the excavated features were attributed a symbolic or ritual meaning. However, in more than one case relatively large amounts of food have been found in contexts unlikely to contain food, even as a result of post-depositional disturbance. These contexts are postholes, and this phenomenon is also seen at some other sites in the region from this and later periods. Was food intentionally deposited in these features and was it given a different meaning? Was it transformed into a symbolic object, perhaps with a role in a ritual performed during house construction or demolition? We try to answer these questions by studying the quantity and taxonomic range of the plant remains recovered from these and other plant-rich deposits at the two sites, and by analysing the nature of the context and of the associated ecofacts and artefacts. We highlight possible symbolic or ritual aspects of behaviour by the residents of the two Neolithic settlements and we put forward the idea of a potential house closure act in which plants seem to have played a part.

Keywords: Neolithic | northern Germany | archaeobotany | food | plant symbolism

Die in dieser Studie untersuchten neolithischen Fundplätze Oldenburg LA232 und Oldenburg LA191 zeichnen sich durch Hausgrundrisse und Hinweise auf Aktivitäten des täglichen Lebens, einschließlich der Lagerung und Verarbeitung von Nahrungsmitteln, aus. Obwohl bei keinem der Befunde Hinweise auf symbolische oder rituelle Bedeutungen vorlagen, wurden in mehreren Fällen verhältnismäßig hohe Anteile von Nahrungsmitteln in Kontexten gefunden, bei denen eine primäre Funktion als Depot von Nahrungsmitteln als unwahrscheinlich anzusehen ist oder diese Beobachtungen nicht auf jüngere taphonomische Prozesse zurückzuführen sind. Dabei stellt dies ein Phänomen dar, welches auch an anderen zeitgleichen oder jüngeren Fundstellen in der Region dokumentiert ist und zu folgenden Fragestellungen führt: Wurden Lebensmittel intentionell in diesen Befunden deponiert und damit einem Bedeutungswandel unterzogen? Erfolgte ein Bedeutungswandel von einem profanen zu einem symbolischen Objekt während des Hausbaus oder der Aufgabe von Gebäuden? Eine Annäherung erfolgt methodisch durch die Analyse der Menge und der Diversität der Pflanzenreste aus Pfostenlöchern und weiteren pflanzreichen Befunden im Bereich der beiden Fundplätze sowie der vergleichenden Analyse der Öko- und Artefakte von einzelnen Befunden. Mögliche symbolische oder rituelle Handlungen der Bewohner der beiden Siedlungen werden diskutiert,

mit dem Resultat, dass Pflanzenteile bei einer Zeremonie rund um die Aufgabe von Häusern wahrscheinlich rituell deponiert wurden.

Keywords: Neolithikum | Norddeutschland | Archäobotanik | Lebensmittel | Pflanzensymbolik.

## Religion

Czachesz 2017

István Czachesz, *Theologische Innovation und Sozialstruktur im Urchristentum, Eine kognitive Analyse seiner Ausbreitungsdynamik.* In: Gerd Theissen, Common Lung Pun Chan & István Czachesz (Hrsg.), *Kontraintuitivität und Paradoxie, Zur kognitiven Analyse des urchristlichen Glaubens.* Beiträge zum Verstehen der Bibel 29 (Münster 2017), 111–126.

Dieser Aufsatz will mit Hilfe eines mehrdimensionalen evolutionären Ansatzes die Entstehung und den Erfolg einer neuen Religion deuten. Evolutionär ist an ihm die Annahme selektiver Prozesse, durch die sich weltweit nur wenige Religionen durchgesetzt haben. Konkret werden wir untersuchen, wie theologische Innovationen und soziale Strukturen im Urchristentum gegenseitig aufeinander eingewirkt und den Weg für den langfristigen Erfolg dieser Bewegung gebahnt haben.

Meine Hypothese, die in Zukunft noch ausgearbeitet werden muss, ist, dass sich die Theologie des Urchristentums entwickelte, um während einer Phase schneller geographischer Expansion in der Mitte des ersten Jahrhunderts für symbolische Identitätszeichen zu sorgen. Viel spricht dafür, dass eine unterdrückte Gruppe Zeichen benutzen muss, die von Insidern leicht, von Außenstehenden aber nur schwer identifizierbar sind.

Wenn eine Religion Symbole anbietet, die eine großräumige Kooperation leichter und effektiver machen, wird auch die Gruppe erfolgreicher sein und ihre symbolischen Identitätszeichen werden auch von anderen Gruppen übernommen werden. Die spätere Einführung des Christentums als Staatsreligion kann als Beleg dafür angesehen werden, dass die römische Elite ihr Potenzial erkannte, großräumige soziale Kooperation sicher zu stellen.

Czachesz 2017

István Czachesz, *Kontraintuitive Ideen im urchristlichen Denken, Welche Überzeugungen haben sich im frühen Christentum durchgesetzt?* In: Gerd Theissen, Common Lung Pun Chan & István Czachesz (Hrsg.), *Kontraintuitivität und Paradoxie, Zur kognitiven Analyse des urchristlichen Glaubens.* Beiträge zum Verstehen der Bibel 29 (Münster 2017), 147–185.

Schon das Neue Testament umfasst ein weites Spektrum christologischer Konzeptionen, die im Laufe der Jahrhunderte als "Belegstellen" für verschiedene Positionen innerhalb der theologischen Auseinandersetzungen dienten. Einige Konzeptionen werden in den kanonischen Schriften deutlich bevorzugt, während viele alternative Konzeptionen nur in nicht-kanonischen Quellen erscheinen. Dafür gibt es zwei gängige Erklärungen: eine apologetisch motivierte, die besagt, dass die im Neuen Testament enthaltenen Vorstellungen älter und authentischer als die nichtkanonischen sind, und eine alternative, die besagt, dass nur die Schriften ins Neue Testament aufgenommen wurden, die den Positionen der Entscheidungsträger in der Alten Kirche entsprachen.

In meinem Beitrag vertrete ich die These, dass christologische Konzeptionen in der Tat eine bedeutende Rolle spielten – einerseits bei der Entstehung der Hauptströmung des Christentums, wie sie im Neuen Testament dokumentiert ist, andererseits bei der Ausbildung von "häretischen" Varianten des Christentums. Damit verbunden ist die These, dass die Faktoren, die diese sozialen und literarischen Trennungsprozesse verursacht haben, eher psychologisch und unbewusst als bewusst theologisch oder kirchenpolitisch waren.

## Czachesz 2017

István Czachesz, *God in the Fractals, Recursiveness as a Key to Religious Behavior*. In: Gerd Theissen, Common Lung Pun Chan & István Czachesz (Hrsg.), *Kontraintuitivität und Paradoxie, Zur kognitiven Analyse des urchristlichen Glaubens*. Beiträge zum Verstehen der Bibel 29 (Münster 2017), 263–285.

I suggest that Faculty of Religion in the Narrow Sense (FRN) does not depend on finding an adaptive function of religion. Moreover, the dilemma of adaptive versus by-products explanations seems misguided in the case of religion, which is a highly complex cognitive and cultural phenomenon. As Ilkka Pyysiäinen and Marc Hauser argued recently, some components of religion might be adaptive and others by-products. Further, we can add that it could change during human evolution which components belonged to which category: evolution is famously known to be a "tinkerer." Elementary forms of religion could be very early in human evolution: we can expect several mental structures underlying human religiosity to occur (in some form) in other species, as well, including hypersensitive agent-detection, Theory of Mind, innate ontological categories (e.g., expecting plants to behave differently from animals), or superstitious conditioning. These cognitive abilities constitute the Faculty of Religion in a Broad Sense (FRB).