

Literatur

Aktuell

SHANNON 2011

Benjamin J. Shannon et al., *Premotor functional connectivity predicts impulsivity in juvenile offenders*. [PNAS 108 \(2011\), 11241–11245](#).

Benjamin J. Shannon, Marcus E. Raichle, Abraham Z. Snyder, Damien A. Fair, Kathryn L. Mills, Dongyang Zhang, Kevin Bache, Vince D. Calhoun, Joel T. Nigg, Bonnie J. Nagel, Alexander A. Stevens and Kent A. Kiehl

Teenagers are often impulsive. In some cases this is a phase of normal development; in other cases impulsivity contributes to criminal behavior. Using functional magnetic resonance imaging, we examined resting-state functional connectivity among brain systems and behavioral measures of impulsivity in 107 juveniles incarcerated in a high-security facility. In less-impulsive juveniles and normal controls, motor planning regions were correlated with brain networks associated with spatial attention and executive control. In more-impulsive juveniles, these same regions correlated with the default-mode network, a constellation of brain areas associated with spontaneous, unconstrained, self-referential cognition. The strength of these brain-behavior relationships was sufficient to predict impulsivity scores at the individual level. Our data suggest that increased functional connectivity of motor-planning regions with networks subserving unconstrained, self-referential cognition, rather than those subserving executive control, heightens the predisposition to impulsive behavior in juvenile offenders. To further explore the relationship between impulsivity and neural development, we studied functional connectivity in the same motor planning regions in 95 typically developing individuals across a wide age span. The change in functional connectivity with age mirrored that of impulsivity: younger subjects tended to exhibit functional connectivity similar to the more-impulsive incarcerated juveniles, whereas older subjects exhibited a less-impulsive pattern. This observation suggests that impulsivity in the offender population is a consequence of a delay in typical development, rather than a distinct abnormality.

self-control | psychopathy | functional MRI

Anthropologie

DOMÍNGUEZ-RODRIGO 2002

Manuel Domínguez-Rodrigo, *Hunting and Scavenging by Early Humans: The State of the Debate*. [Journal of World Prehistory 16 \(2002\), 1–54](#).

During the last 25 years, there has been a shift towards the belief that early humans were scavengers instead of hunters. This revisionist interpretation has brought a reconciliation with the Darwinian paradigm of gradual progressive evolution that has traditionally guided (and very often, misled) an important part of anthropological thinking. However, empirical support for the scavenging hypothesis is still lacking. Recent data based on bone surface modifications from archaeological faunas suggest, in contrast, that hominids were primary agents of carcass exploitation. Meat seems to have been an important part of Plio-Pleistocene hominid diets. Passive scavenging scenarios show that this kind of opportunistic strategy cannot afford significant meat yields. Therefore, the hunting hypothesis has not yet been disproved. This makes the hunting and scavenging issue more controversial than before, and calls for a revision of the current interpretive frameworks and ideas about early human behavior.

KEY WORDS: human evolution; Plio-Pleistocene; East Africa; meat-eating; hunting; scavenging.

DOMÍNGUEZ-RODRIGO 2003

Manuel Domínguez-Rodrigo & Travis Rayne Pickering, *Early Hominid Hunting and Scavenging: A Zooarcheological Review*. [Evolutionary Anthropology](#) **12** (2003), 275–282.

Before the early 1980s, the prevailing orthodoxy in paleoanthropology considered Early Stone Age archeological sites in East Africa to represent a primitive form of hominid campsites. The faunal evidence preserved in these sites was viewed as the refuse of carcass meals provided by hominid males in a social system presumptively characterized by sexual division of labor. This interpretation of early hominid life ways, commonly known as the “Home Base” or “Food Sharing” model, was developed most fully by Glynn Isaac.¹⁻⁴ As Bunn and Stanford⁵ emphasized, this model was greatly influenced by a paradigm that coalesced between 1966 and 1968, referred to as “Man the Hunter.”⁶

DUBREUIL 2010

Benoît Dubreuil, *Paleolithic public goods games: why human culture and cooperation did not evolve in one step*. [Biology and Philosophy](#) **25** (2010), 53–73.

It is widely agreed that humans have specific abilities for cooperation and culture that evolved since their split with their last common ancestor with chimpanzees. Many uncertainties remain, however, about the exact moment in the human lineage when these abilities evolved. This article argues that cooperation and culture did not evolve in one step in the human lineage and that the capacity to stick to long-term and risky cooperative arrangements evolved before properly modern culture. I present evidence that *Homo heidelbergensis* became increasingly able to secure contributions from others in two demanding Paleolithic public good games (PPGGs): cooperative feeding and cooperative breeding. I argue that the temptation to defect is high in these PPGGs and that the evolution of human cooperation in *Homo heidelbergensis* is best explained by the emergence of modern-like abilities for inhibitory control and goal maintenance. These executive functions are localized in the prefrontal cortex and allow humans to stick to social norms in the face of competing motivations. This scenario is consistent with data on brain evolution that indicate that the largest growth of the prefrontal cortex in human evolution occurred in *Homo heidelbergensis* and was followed by relative stasis in this part of the brain. One implication of this argument is that subsequent behavioral innovations, including the evolution of symbolism, art, and properly cumulative culture in modern *Homo sapiens*, are unlikely to be related to a reorganization of the prefrontal cortex, despite frequent claims to the contrary in the literature on the evolution of human culture and cognition.

Keywords: Cooperation | Imitation | Culture | Social norms | Public goods game | Prefrontal cortex | Inhibition | Human evolution | Mid-pleistocene

Klima

BINDSCHADLER 1998

Robert Bindschadler, *Future of the West Antarctic Ice Sheet*. [science](#) **282** (1998), 428–429.

A linear fit to the grounding-line retreat data implies an average rate of retreat of 100 m/year. At this rate, the grounding line would reach the ice divide in another 7000 years, supplying a sustained contribution of 0.8 mm/year to rising sea level. A second-order fit

to the grounding-line retreat data results in an accelerating retreat model. This model, however, predicts a 4000-year lifetime for the ice sheet, a current retreat rate of 150 m/year, and a current sea-level contribution of 1.3 mm/year. The West Antarctic Ice Sheet has undergone much larger changes than the adjacent East Antarctic Ice Sheet and has raised sea level 11 m over more than the past 14,000 years at an average rate of 0.8 mm/year.

CREMASCHI 2006

Mauro Cremaschi, Manuela Pelfini & Maurizio Santilli, *Cupressus dupreziana: a dendroclimatic record for the middle-late Holocene in the central Sahara*. [The Holocene 16 \(2006\), 293–303](#).

Dendroclimatology of *Cupressus dupreziana*, the Tassili cypress, has been attempted on samples obtained from the door beams of the old cities of Ghat and Barkat located at the foot of the Tassili, where the cypress still lives. The tree rings of 20 samples were measured and dated by 24 AMS 14C dates. A mean ring-width chronology has thus been obtained, spanning, though discontinuously, 5220 to 100 14C BP (5990-65 cal. BP). As the tree-ring width in dry lands depends mainly on water availability, the mean ring-width chronology represents a detailed record of changes in rainfall on a decade scale for the middle and late Holocene of the central Sahara. It indicates main drought spells at 5200-5000 14C BP (5900-5760 cal. BP) and at 4350 BP (5120 cal. BP), followed by phases of enhanced precipitation and by the onset of extreme arid conditions at 1550 14C BP (1500 cal. BP).

Key words: Climatic change, dendroclimatology, drought, Tassili cypress, *Cupressus dupreziana*, central Sahara, desert onset, Holocene.

JOUGHIN 2002

Ian Joughin & Slawek Tulaczyk, *Positive Mass Balance of the Ross Ice Streams, West Antarctica*. [science 295 \(2002\), 476–480](#).

We have used ice-flow velocity measurements from synthetic aperture radar to reassess the mass balance of the Ross Ice Streams, West Antarctica. We find strong evidence for ice-sheet growth (126.8 gigatons per year), in contrast to earlier estimates indicating a mass deficit (220.9 gigatons per year). Average thickening is equal to 25% of the accumulation rate, with most of this growth occurring on Ice Stream C. Whillans Ice Stream, which was thought to have a significantly negative mass balance, is close to balance, reflecting its continuing slowdown. The overall positive mass balance may signal an end to the Holocene retreat of these ice streams.

KEMP 2011

Andrew C. Kemp, Benjamin P. Horton, Jeffrey P. Donnelly, Michael E. Mann, Martin Vermeer, & Stefan Rahmstorf, *Climate related sea-level variations over the past two millennia*. [PNAS 108 \(2011\), 11017–11022](#).

We present new sea-level reconstructions for the past 2100 y based on salt-marsh sedimentary sequences from the US Atlantic coast. The data from North Carolina reveal four phases of persistent sea-level change after correction for glacial isostatic adjustment. Sea level was stable from at least BC 100 until AD 950. Sea level then increased for 400 y at a rate of 0.6 mm/y, followed by a further period of stable, or slightly falling, sea level that persisted until the late 19th century. Since then, sea level has risen at an average rate of 2.1 mm/y, representing the steepest century-scale increase of the past two millennia. This rate was initiated between AD 1865 and 1892. Using an extended semiempirical modeling approach, we show that these sea-level changes are consistent with global temperature for at least the past millennium.

climate | ocean | late Holocene | salt marsh

KROM 2002

Michael D. Krom, J. Daniel Stanley, Robert A. Cliff & Jamie C. Woodward, *Nile River sediment fluctuations over the past 7000 yr and their key role in sapropel development*. *Geology* **30** (2002), 71–74.

The provenance pattern of Nile River sediments can be used as a proxy for paleoclimatic changes in East Africa. The $^{87}\text{Sr}/^{86}\text{Sr}$ ratios are particularly appropriate for such provenance investigations, because the White Nile drains predominantly crystalline basement rocks, whereas the Blue Nile and Atbara flow off the Ethiopian Highlands, which consist of Tertiary volcanic rocks. A high-resolution profile of $^{87}\text{Sr}/^{86}\text{Sr}$ and Ti/Al ratios from a well-dated core in the Nile Delta shows a close correspondence with known changes in Nile flow over the past 7000 yr. At times of higher river flow there was markedly decreased input of Blue Nile-derived and total sediment. This change was caused by northward movement of the Inter Tropical Convergence Zone, resulting in increased vegetative cover in the Ethiopian Highlands due to higher rainfall and a longer wet season. This inverse relationship between Nile River flow and sediment flux may have had important implications in the development of agricultural technology in ancient Egypt. The marked minimum in $^{87}\text{Sr}/^{86}\text{Sr}$ at 4200–4500 yr B.P. is coincident with the end of the Old Kingdom in Egypt and provides independent evidence that demise of the Old Kingdom might have been associated with an extended period of catastrophic low floods. During the Quaternary and late Neogene, there was periodic deposition of organic-rich sediments (sapropels) in the eastern Mediterranean that represent important indicators of major environmental change. Evidence from the Ti/Al ratio suggests that the pattern of erosion and sediment supply from the Nile catchment observed in this study also occurred throughout much of the Neogene and Quaternary. The reduced inputs of Blue Nile sediment during times of sapropel formation contributed to the increased primary productivity by reducing the amount of phosphate removed on particles and to the observed change to N limitation in the eastern Mediterranean, which are important characteristics of sapropel deposition. Keywords: paleoclimate, Nile catchment, $^{87}\text{Sr}/^{86}\text{Sr}$, sediment provenance, sapropels, primary productivity.

STANLEY 1997

Daniel J. Stanley & Glenn A. Goodfriend, *Recent subsidence of the northern Suez canal*. *nature* **388** (1997), 335–335.

We obtained 11 AMS dates from core S-21 ranging from $6,480 \pm 40$ yr BP (radiocarbon dates are all calibrated calendric ages unless otherwise noted) at a depth of 45 m in the lower part of the Holocene mud section, to modern dates near the core top. There was a remarkably consistent pattern of sediment accumulation between 6,500 and 950 yr BP at a depth of 14 m.

Calibrated radiocarbon dates (for D R40; that is, the worldwide value for the marine radiocarbon reservoir age, R, is assumed) from Nile delta core S-21, in relation to depth.

Kultur

BALDASSARRI 2011

Delia Baldassarri & Guy Grossman, *Centralized sanctioning and legitimate authority promote cooperation in humans*. *PNAS* **108** (2011), 11023–11027.

Social sanctioning is widely considered a successful strategy to promote cooperation among humans. In situations in which individual and collective interests are at odds, incentives to free-ride induce individuals to refrain from contributing to public goods provision. Experimental evidence from public goods games shows that when endowed with sanctioning powers, conditional cooperators can discipline defectors, thus leading to greater levels of cooperation. However, extant evidence is based on peer punishment

institutions, whereas in complex societies, systems of control are often centralized: for instance, we do not sanction our neighbors for driving too fast, the police do. Here we show the effect of centralized sanctioning and legitimate authority on cooperation. We designed an adaptation of the public goods game in which sanctioning power is given to a single monitor, and we experimentally manipulated the process by which the monitor is chosen. To increase the external validity of the study, we conducted lab-in-the-field experiments involving 1,543 Ugandan farmers from 50 producer cooperatives. This research provides evidence of the effectiveness of centralized sanctioning and demonstrates the causal effect of legitimacy on cooperation: participants are more responsive to the authority of an elected monitor than a randomly chosen monitor. Our essay contributes to the literature on the evolution of cooperation by introducing the idea of role differentiation. In complex societies, cooperative behavior is not only sustained by mechanisms of selection and reciprocity among peers, but also by the legitimacy that certain actors derive from their position in the social hierarchy.

MEES 2007

Allard Mees, *Der Sternenhimmel vom Magdalenenberg, Das Fürstengrab bei Villingen-Schwenningen – ein Kalenderwerk der Hallstattzeit*. [Jahrbuch des Römisch-Germanischen Zentralmuseums 54 \(2007\), 217–264.](#)

The general excavation map of the Hallstatt period tumulus of Magdalenenberg near Villingen-Schwenningen shows 136 tombs arranged in a circle around the ruler's tomb at the center. The composition of these graves exactly reflects the constellations observable at the moment of the summer solstice. The posts installed before the erection of the barrow were used to record the lunar nodes' cycles. The earliest evidence for recording lunar nodes' cycles occurs in the Hallstatt period (as at the Glauberg). The historical astronomical data attest to a construction of the calendar during the summer of 618 B.C. This coincides with the existing dendrochronological datings.

Der Gesamtplan des hallstattzeitlichen Tumulus vom Magdalenenberg bei Villingen-Schwenningen zeigt insgesamt 136 Gräber, die kreisförmig um das zentrale Fürstengrab in den Hügel eingelassen sind. Die Anordnung dieser Gräber lässt genau diejenigen Sternbilder erkennen, die zum Zeitpunkt der Sommersonnenwende sichtbar sind. Die bereits vor der Hügelaufschüttung angebrachten Stangensetzungen dienten zur Erfassung der Mondwenden. In der Hallstattzeit sind (wie am Glauberg) erstmals Mondwendenerfassungen nachweisbar. Die historischen astronomischen Daten sprechen für eine Anlage des Kalenderwerks im Sommer des Jahres 618 v. Chr., was mit den überlieferten Dendrodatierungen übereinstimmt.

RAHMSTORF 2007

Lorenz Rahmstorf & Christopher Pare, *Zu Gewichtsteinen der Späthallstatt- und Latènezeit*. [Jahrbuch des Römisch-Germanischen Zentralmuseums 54 \(2007\), 265–295.](#)

Metrological weights of the Late Hallstatt and the Early La Tène Period are hardly known up to now. Concerning the emergence of the Late La Tène monetary system and the connected metrology no precursors have hitherto been proven. In this paper stone objects with iron lugs, especially from the periods Ha D3 and LT A, are discussed as potential balance-weights. Because of their size and mass, they could be termed pound- or mina-weights, not fine weights. This identification is supported by formal analogies with weights with lugs from the Late Bronze Age of Central Europe and Italy and with Iron Age weights with iron lugs from Italy, Spain and England. A clear clue is provided by the Late La Tène hoard from the oppidum Pohanská near Plavecké Podhradie in Moravia, where beside numerous iron tools there were also found the balance-beam of a steelyard together with such a stone weight with iron lug. The equipoised balances with markings on the beam from Hochdorf and Satricum demonstrate that the development

of the principle of the steelyard with sliding weight had already begun in the 6th / 5th century B.C. Possibly the lugged weights were employed in iron trading. A definite proof for the use of Late Hallstatt and Early La Tene lugged weights as metrological weights is for the time being still pending.

Metrologische Gewichte der Späthallstatt- und Frühlatènezeit sind bislang kaum bekannt. Für das Aufblühen des spätlatènezeitlichen Münzwesens und der damit verbundenen Metrologie lassen sich bislang keine Vorstufen anführen. In diesem Beitrag werden Steinobjekte mit Eisenöse vor allem aus den Stufen Ha D3 und Lt A als potentielle Waaggewichte diskutiert. Aufgrund ihrer Größe und Masse könnten sie als Pfundoder Minengewichte angesprochen werden, nicht als Feingewichte. Diese Identifikation wird durch formale Analogien zu Gewichten mit Öse aus der Spätbronzezeit Mitteleuropas und Italien und durch eisenzeitliche Gewichte mit Eisenöse aus Italien, Spanien und England unterstützt. Einen klaren Hinweis liefert der spät-latènezeitliche Hort vom Oppidum Pohanská bei Plavecké Podhradie in Mähren, in dem sich neben zahlreichen Eisenwerkzeugen auch der Waagebalken einer Schnellwaage und ein solches Steingewicht mit Eisenöse zusammen fanden. Die gleicharmigen Waagen mit Markierungen auf einem Schenkel aus Hochdorf und Satricum zeigen an, dass die Entwicklung zum Prinzip der Schnellwaage mit Laufgewicht bereits im 6.-5. Jahrhundert v. Chr. begonnen hatte. Möglicherweise wurden die Ösengewichte beim Eisenhandel verwendet. Ein eindeutiger Beweis für die Nutzung der späthallstatt- und frühlatènezeitlichen Ösengewichte als metrologische Gewichte kann einstweilen aber nicht erbracht werden.

Neolithikum

GEHLEN 2003

Birgit Gehlen & Werner Schön, *Das "Spätmesolithikum" und das initiale Neolithikum in Griechenland, Implikationen für die Neolithisierung der alpinen und circumalpinen Gebiete*. [Archäologische Informationen 26 \(2003\), 255–273](#).

As far as both the Mesolithic and early Neolithic are concerned, the area that is now Greece provides the missing link between Asia Minor and the Balkans on the one hand and the western Mediterranean on the other. It is thus the key region for any discussion of the Neolithic transition in Central and Western Europe. By approx. 7000 calBC, at the latest, cultural developments in Greece included rectangular microliths, the production of regular blades by the pressure technique, the cultivation of cereals, animal domestication and pottery. Indeed, the results of the most recent research even point towards the conclusion that all these innovations may have already been introduced into the region 1000 years earlier. Consequently, the initial Neolithic "package" there can be dated as being much earlier than in the rest of Europe. An important condition for this assumption is the fact that the wild forms of einkorn, barley and legumes, and probably also goats and sheep, were indigenous to the area of present-day Greece. Judging from the silex artefacts, it would seem that during this period at least the coastal populations had contacts with the Mediterranean coast of Turkey and the Black Sea region.

The initial Neolithic in Greece is contemporaneous with the whole of the so-called "Late Mesolithic" in the Alpine region and the circumalpine areas in present-day Italy, southwestern Germany, France and Switzerland, where the earliest find assemblages date to approx. 7000-6800 calBC. The technical innovations in the manufacture and use of stone artefacts and the first systematic use of cereals from then onwards, reflect probably indirect contacts between these populations and the eastern Mediterranean. Even if there is little analysable archaeological evidence from that area – partially due to the dramatic rise in sea level after this period – the cultural contact zone between Greece and the Alpine region must be sought in the Adriatic and its hinterland.

Keywords – Neolithic transition in Europe, initial Neolithic, late Mesolithic, Greece, Adriatic, Alpine and circumalpine regions, use of cereals, human impact, animal domestication, silex artefacts, pottery

Das Gebiet des heutigen Griechenland liefert sowohl für die mesolithische als auch die frühneolithische Zeit die missing links zwischen Kleinasien und dem Balkan auf der einen sowie dem westlichen Mittelmeerraum auf der anderen Seite. Es ist damit die wichtigste Schlüsselregion für die Diskussionen um die Neolithisierung Zentral- und Westeuropas. Spätestens ab ca. 7000 calBC gehören in Griechenland viereckige Mikrolithen, in Drucktechnik hergestellte regelmäßige Klingen, Getreideanbau, Viehzucht und Keramik zu den kulturellen Errungenschaften. Neueste Arbeitsergebnisse lassen sogar den Schluß zu, daß regional schon 1000 Jahre früher mit all diesen Innovationen zu rechnen ist. Dieses initial-neolithische “Paket” datiert dort also deutlich früher als im restlichen Europa. Wichtige Voraussetzung dafür ist, daß die Wildformen von Einkorn, Gerste und Hülsenfrüchten sowie möglicherweise von Ziege und Schaf im Gebiet des heutigen Griechenlands heimisch gewesen sind. Nach Ausweis der Silexartefakte sind zumindest für die Küstenbevölkerungen Kontakte an die türkische Mittelmeerküste und in die Schwarzmeer-Region schon vor 7000 calBC zu vermuten.

Das initiale Neolithikum Griechenlands ist zeitgleich mit dem gesamten sog. “Spätmesolithikum” in den alpinen und circumalpinen Gebieten des heutigen Italien, Südwestdeutschlands, Frankreichs und der Schweiz, dessen ältesten Fundkomplexe zwischen ca. 7000 und 6800 calBC datieren. Die technischen Innovationen in der Steinartefaktherstellung und ihrem Gebrauch sowie die frühen Nachweise von Getreidenutzung in den alpinen und circumalpinen Gebieten ab ca. 7000 calBC spiegeln wahrscheinlich mittelbare Kontakte dieser Bevölkerungen mit dem östlichen Mittelmeerraum. Auch wenn bisher von dort kaum verwertbare archäologische Nachweise vorliegen – was teilweise mit dem dramatischen Meeresspiegelanstieg nach dieser Zeit zusammenhängt – so muß die kulturelle Kontaktzone zwischen Griechenland und dem Alpenraum in der Adriaregion und ihrem Hinterland gesucht werden.

Schlüsselwörter – Neolithisierung Europas, initiales Neolithikum, Spätmesolithikum, Griechenland, Adriaregion, alpine und circumalpine Gebiete, Getreidenutzung, human impact, Haustierhaltung, Silexartefakte, Keramik

REINGRUBER 2005

Agathe Reingruber & Manfred Rösch, *Bemerkungen zu dem Aufsatz von Birgit Gehlen und Werner Schön, das “Spätmesolithikum” und das initiale Neolithikum in Griechenland. Archäologische Informationen 28 (2005), 111–121.*

The first settlements with a sedentary life-style have been documented in the area of the Fertile Crescent in the Near East. In the course of several millennia (10th to 7th mill. BC) new ideas and resources made their way to Europe, reaching due to the proximity to Anatolia, Greece first. But not all Greek landscapes were involved simultaneously and in the same intensity in the transition from hunting/gathering to herding/harvesting. ¹⁴C-dates show that the oldest settlements were founded in Thessaly between 6500 and 6300 cal BC. But only after sites like Nea Nikomedeia or Hoca Çeşme came into being in the Northern Aegean (ca. 6100 BC) did the Neolithisation of the Balkans and consequently of Middle Europe take place.

Neolithic sites dating to the early 7th millennium are not known in the southern part of Europe either. The Early Neolithic settlements in the Adriatic Region or Italy are not older than 6000 BC. For this reason pollen diagrams from the Alpine and Circumalpine Region which were dated back to Mesolithic times stirred the attention of scholars quite early. But it is especially these sensitive data which have to be scrutinized and analysed carefully.

Key words – Mesolithic, Initial Neolithic / Early Neolithic, Neolithisation process, pollen profiles, domesticates, ¹⁴C-data, Greece, Alpine and Circumalpine Region

Zusammenfassung – Der Ursprung der neolithischen Lebens- und Wirtschaftsweise liegt im Gebiet des fruchtbaren Halbmondes im Vorderen Orient. Im Laufe von mehreren Jahrtausenden (10.–7. Jt. v. Chr.) gelangten neues Ideengut und neuartige Nahrungsgrundlagen nach Europa, dank der Nähe zu Anatolien zuerst nach Griechenland. Doch nicht in allen griechischen Landschaften erfolgte der Wandel in der Lebensweise gleichzeitig und mit der gleichen Intensität. ¹⁴C-Daten legen nahe, dass sich die ältesten sesshaften Gemeinschaften in Magnesien und Thessalien in der Zeit zwischen 6500 und 6300 v. Chr. niederließen. Doch erst mit der Gründung der Siedlungen Nea Nikomedeia oder Hoca Çeşme in der Nord-Ägäis um oder kurz vor 6100 cal BC erfolgte der Anstoß zur Neolithisierung des Balkan und danach Mitteleuropas.

Auch aus dem Adria-Gebiet und aus Süditalien sind keine frühneolithischen Siedlungen aus der ersten Hälfte des 7. Jahrtausends bekannt. Die ältesten Gründungen datieren in die Zeit um oder nach 6000 v. Chr. Im circumalpinen Gebiet sind die ältesten Bauern archäologisch erst im fortgeschrittenen 6. Jt. fassbar. Pollendiagramme, die wesentlich älter zu datieren scheinen, haben aus diesem Grund schon sehr früh die Aufmerksamkeit der Forscher erregt. Doch müssen gerade derart sensible Daten sorgfältig geprüft und hinterfragt werden.

Mesolithikum, Initialneolithikum/Frühneolithikum, Neolithisierung, Pollenprofile, Getreide, Domestikation, ¹⁴C-Daten, Griechenland, circumalpiner Raum

SCHIER 2009

Wolfram Schier, *Extensiver Brandfeldbau und die Ausbreitung der neolithischen Wirtschaftsweise in Mitteleuropa und Südkandinavien am Ende des 5. Jahrtausends v. Chr.* *Prähistorische Zeitschrift* **84** (2009), 15–43.

The Neolithication process of Europe is divided into three chronologically distinct stages composed of two phases each. The article differentiates between the cultivation practices of the second (Linear Pottery Culture) and the third stage (beginning of the Late Neolithic in the Alpine foreland and Early Neolithic in the Nordic region) of European Neolithication. In this third stage, slash-and-burn cultivation is believed to have played an important role in exploiting suboptimal farming sites and hence in expanding agriculture beyond established settlements. Palynological as well as pedological and experimental-archaeological data are introduced to substantiate this hypothesis. Finally, possible reasons for the delayed adoption of cultivation practices in the south-west Baltic region are discussed.

Neolithication; slash-and-burn cultivation; economic archaeology; archaeobotany; history of agriculture.

Der Neolithisierungsprozess Europas wird in drei chronologisch deutlich voneinander unterscheidbare Stadien mit je zwei Abschnitten untergliedert. Der Artikel differenziert zwischen der landwirtschaftlichen Produktionsweise des zweiten (Linearbandkeramik) und des dritten Stadiums (frühes Jungneolithikum im Alpenvorland und nordisches Frühneolithikum) der europäischen Neolithisierung. Für dieses dritte Stadium wird dem Brandfeldbau als extensivem Anbausystem eine besondere Rolle bei der Erschließung suboptimaler Ackerbaustandorte und damit bei der Ausweitung der Landwirtschaft über die Altsiedellandschaften hinaus zugeschrieben. Hierfür werden palynologische sowie neue bodenkundliche und experimentalarchäologische Daten erörtert und als Argumente herangezogen. Schließlich werden mögliche Gründe für die verzögerte Übernahme der bäuerlichen Wirtschaftsweise im südwestlichen Ostseeraum diskutiert.

Neolithisierung; Brandfeldbau; Wirtschaftsarchäologie; Archäobotanik; Agrargeschichte.

VAN WILLIGEN 2006

Samuel van Willigen, *Die Neolithisierung im nordwestlichen Mittelmeerraum.*

Ostasien

ASANO 2011

Kenji Asano et al., *Artificial selection for a green revolution gene during japonica rice domestication*. [PNAS 108 \(2011\), 11034–11039](#).

[pnas108-11034-Supplement1.docx](#), [pnas108-11034-Supplement2.docx](#), [pnas108-11034-Supplement3.docx](#), [pnas108-11034-Supplement4.doc](#), [pnas108-11034-Supplement5.docx](#)

Kenji Asano, Masanori Yamasaki, Shohei Takuno, Kotaro Miura, Satoshi Katagiri, Tomoko Ito, Kazuyuki Doi, Jianzhong Wu, Kaworu Ebana, Takashi Matsumoto, Hideki Innan, Hidemi Kitano, Motoyuki Ashikari and Makoto Matsuoka

The semidwarf phenotype has been extensively selected during modern crop breeding as an agronomically important trait. Introduction of the semidwarf gene, semi-dwarf1 (*sd1*), which encodes a gibberellin biosynthesis enzyme, made significant contributions to the “green revolution” in rice (*Oryza sativa* L.). Here we report that SD1 was involved not only in modern breeding including the green revolution, but also in early steps of rice domestication. We identified two SNPs in *O. sativa* subspecies (*ssp.*) japonica SD1 as functional nucleotide polymorphisms (FNPs) responsible for shorter culm length and low gibberellin biosynthetic activity. Genetic diversity analysis among *O. sativa ssp. japonica* and *indica*, along with their wild ancestor *O. rufipogon* Griff, revealed that these FNPs clearly differentiate the japonica landrace and *O. rufipogon*. We also found a dramatic reduction in nucleotide diversity around SD1 only in the japonica landrace, not in the indica landrace or *O. rufipogon*. These findings indicate that SD1 has been subjected to artificial selection in rice evolution and that the FNPs participated in japonica domestication, suggesting that ancient humans already used the green revolution gene.

PATERSON 2011

Andrew H. Paterson & Zhi-Kang Li, *Paleo-Green Revolution for rice*. [PNAS 108 \(2011\), 10931–10932](#).

If SD1-EQ was so advantageous as to be selected to near-fixation in paddy (*japonica*) rice, why does it occur at very low frequency in upland (*indica*) rice? We suspect that the answer to this question may also be related to the observation that most modern semidwarf (*sd1*) rice cultivars perform poorly under the rainfed ecosystems of Asia and Africa that occupy $\approx 30\%$ of world rice lands, where drought, submergence, low soil fertility, and other abiotic stresses are commonplace. If *sd1* mutations were directly responsible for poor adaptation to rainfed upland conditions, then both *sd1* itself and its *qCL1a* allele might be selected against in *indica* rice. Indeed, failure of the prior Green Revolution to adequately address food security in regions dependent on low-input production has been an important factor in asserting the need for a second Green Revolution, particularly one that is aimed at rainfed areas of Asia and Africa. If our hypothesis is correct, such a second Green Revolution may need to take a fundamentally different approach from the first.