

References

Aktuell

CALVO-AGUDO 2019

Miguel Calvo-Agudo, Joel González-Cabrera, Yolanda Picó, P. C.-V., Alberto Urbaneja, Marcel Dicke & Alejandro Tena, *Neonicotinoids in excretion product of phloem-feeding insects kill beneficial insects*. *PNAS* **116** (2019), 16817–16822.

[pnas116-16817-Supplement.pdf](#)

Pest control in agriculture is mainly based on the application of insecticides, which may impact nontarget beneficial organisms leading to undesirable ecological effects. Neonicotinoids are among the most widely used insecticides. However, they have important negative side effects, especially for pollinators and other beneficial insects feeding on nectar. Here, we identify a more accessible exposure route: Neonicotinoids reach and kill beneficial insects that feed on the most abundant carbohydrate source for insects in agroecosystems, honeydew. Honeydew is the excretion product of phloem-feeding hemipteran insects such as aphids, mealybugs, whiteflies, and psyllids. We allowed parasitic wasps and pollinating hoverflies to feed on honeydew from hemipterans feeding on trees treated with thiamethoxam or imidacloprid, the most commonly used neonicotinoids. LC-MS/MS analyses demonstrated that both neonicotinoids were present in honeydew. Honeydew with thiamethoxam was highly toxic to both species of beneficial insects, and honeydew with imidacloprid was moderately toxic to hoverflies. Collectively, our data provide strong evidence for honeydew as a route of insecticide exposure that may cause acute or chronic deleterious effects on nontarget organisms. This route should be considered in future environmental risk assessments of neonicotinoid applications.

Keywords: environmental risk assessment | thiamethoxam | honeydew | pollinators | biological control agents

Miguel Calvo-Agudo, Joel González-Cabrera, Yolanda Picó, Alberto Urbaneja, Marcel Dicke & Alejandro Tena

Significance: The use of insecticides in agriculture is one of the suggested causes of the decline in insect populations. Neonicotinoids are among the most widely used insecticides. However, they have important negative side effects, especially for pollinators and other beneficial insects feeding on floral nectar and pollen. We identified an exposure route: Neonicotinoids reach and kill beneficial insects when they feed on the most abundant carbohydrate source for insects in agroecosystems, honeydew. Honeydew is the excretion product of phloem-feeding hemipteran insects such as aphids, mealybugs, whiteflies, or psyllids. This route of exposure is likely to affect a much wider range of beneficial insects and crops than contaminated nectar. Therefore, it should be included in future environmental risk assessments of neonicotinoids.

TAVITS 2019

Margit Tavits & Efrén O. Pérez, *Language influences mass opinion toward gender and LGBT equality*. *PNAS* **116** (2019), 16781–16786.

[pnas116-16781-Supplement.pdf](#)

To improve gender equality and tolerance toward lesbian, gay, bisexual, and transgender (LGBT) communities, several nations have promoted the use of

gender-neutral pronouns and words. Do these linguistic devices actually reduce biases that favor men over women, gays, lesbians, and transgender individuals? The current article explores this question with 3 large-scale experiments in Sweden, which formally incorporated a gender-neutral pronoun into its language alongside established gendered pronouns equivalent to he and she. The evidence shows that compared with masculine pronouns, use of gender-neutral pronouns decreases the mental salience of males. This shift is associated with individuals expressing less bias in favor of traditional gender roles and categories, as reflected in more favorable attitudes toward women and LGBT individuals in public life. Additional analyses reveal similar patterns for feminine pronouns. The influence of both pronouns is more automatic than controlled.

Keywords: language | gender-neutral pronouns | gender equality | LGBT equality | automatic/controllable processes

Significance: Evidence from 3 survey experiments traces the effects of gender-neutral pronoun use on mass judgments of gender equality and tolerance toward lesbian, gay, bisexual, and transgender (LGBT) communities. The results establish that individual use of gender-neutral pronouns reduces the mental salience of males. This shift is associated with people expressing less bias in favor of traditional gender roles and categories, as manifested in more positive attitudes toward women and LGBT individuals in public affairs.

Biographie

NERNST 1957

Walter Nernst & Lotte Warburg, *Zwischen Raum und Zeit*. [Physikalische Blätter](#) **13** (1957), 564–565.

Das erste Märchen aus Raum und Zeit, das keinen geringeren als Walter Nernst zum Mitautor hat und das uns Frau Gertrud von Wartenberg in dankenswerter Weise zur Verfügung gestellt hat, handelt von einer Metallkugel, die mit zwei Menschen in den Weltraum fliegt. Geschrieben wurde die kleine Geschichte 1912 zur Zeit der sich durchsetzenden Relativitätstheorie, aber wer wird heute nicht in seinen Gedanken in die Gegenwart zurückgeführt?

WARBURG 1939

Lotte Warburg (als Züs Colonna), *Satirischer Nachruf auf Walt[h]er Nernst*. [Museumsbrief der Göttinger Chemie](#) **19** (2000), 18–24. Geschrieben noch zu Lebzeiten 1939, zwei Jahre vor Nernst' Tod.

Datierung

BRYANT 2000

Vaughn M. Bryant Jr., *Does Pollen Prove the Shroud Authentic?* [Biblical Archaeology Review](#) **26** (2000), vi, 36–44.

As a botanist, I have been trained to be skeptical. As a palynologist, I am especially skeptical of pollen data that are not derived from multispecies comparisons. That is why I am not convinced by the pollen evidence reported in *Flora of the Shroud of Turin*.

All this makes me very skeptical that anyone can positively identify all of the pollen the authors claim to have identified from sticky tape samples taken more than 20 years ago.

KOHLBECK 1986

Joseph A. Kohlbeck & Eugenia L. Nitowski, *New Evidence May Explain Image on Shroud of Turin*. [Biblical Archaeology Review 12 \(1986\), iv, 18–29](#).

Whether or not we can prove that the heat of the body and mercerization will cause an image like that on the shroud, this is surely a naturally produced possibility that must be considered by all who are studying this puzzling relic.

VIKAN 1998

Gary Vikan, *Debunking the Shroud, Made by Human Hands*. [Biblical Archaeology Review 24 \(1998\), vi, 27–29](#).

The Shroud of Turin was created to deceive. It was manufactured at a time, in western Europe especially, when relics meant pilgrimage and pilgrimage meant money. The competition for both, among rival cities and towns, was intense. And stealing and forgery were both part of the business.

He pleads with the Pope to end its public display. The Pope's written reply is cautious but clear; the shroud may still be displayed, but only on the condition that a priest be in attendance to announce to all present,

“in a loud and intelligible voice, without any trickery, that the aforesaid form or representation [the shroud] is not the true burial cloth of Our Lord Jesus Christ, but only a kind of painting or picture made as a form or representation of the burial cloth.”

This was the true verdict—the correct verdict—from the Pope, issued less than four decades after the shroud was painted. And isn't it ironic that it has taken 600 years to get essentially the same answer—but this time from the offices of an international team of scientists?

WILD 1984

Robert A. Wild, *The Shroud of Turin, Probably the Work of a 14th-Century Artist or Forger*. [Biblical Archaeology Review 10 \(1984\), ii, 30–46](#).

Given all these various difficulties, especially the implausibility of the blood-stains, the iconographic and anatomical irregularities, the anomalies with respect to the Biblical evidence, and the early history—or lack of it—of the shroud, I find the authenticity of this object quite suspect. On the other hand, no one has provided a completely satisfactory explanation of how the image on the shroud was produced. In the absence of such an explanation, despite massive modern scientific efforts to produce one, the inference is drawn that it was somehow produced by a miracle.

ZUGIBE 1989

Frederick T. Zugibe, *Has the Shroud of Turin Been Dated—Finally?* [Bible Review 5 \(1989\), ii, 38–39](#).

Energie

MASSON 2019

O. Masson, G. Steinhauser & D. Zok et al., *Airborne concentrations and chemical considerations of radioactive ruthenium from an undeclared major nuclear release in 2017*. [PNAS 116 \(2019\), 16750–16759](#).

pnas116-16750-Supplement.pdf

Significance: A massive atmospheric release of radioactive ^{106}Ru occurred in Eurasia in 2017, which must have been caused by a sizeable, yet undeclared nuclear accident. This work presents the most compelling monitoring dataset of this release, comprising 1,100 atmospheric and 200 deposition data points from the Eurasian region. The data suggest a release from a nuclear reprocessing facility located in the Southern Urals, possibly from the Mayak nuclear complex. A release from a crashed satellite as well as a release on Romanian territory (despite high activity concentrations) can be excluded. The model age of the rutherenium supports the hypothesis that fuel was reprocessed ≤ 2 years after discharge, possibly for the production of a high-specific activity ^{144}Ce source for a neutrino experiment in Italy.

O. Masson, G. Steinhäuser, D. Zok, O. Saunier, H. Angelov, D. Babić, V. Bečková, J. Bieringer, M. Bruggeman, C. I. Burbidge, S. Conil, A. Dalheimer, L.-E. De Geer, A. de Vismes Ott, K. Eleftheriadis, S. Estier, H. Fischer, M. G. Garavaglia, C. Gasco Leonarte, K. Gorzkiewicz, D. Hainz, I. Hoffman, M. Hýža, K. Isajenko, T. Karhunen, J. Kastlander, C. Katzlberger, R. Kierepko, G.-J. Knetsch, J. Kövendiné Kónyi, M. Lecomtea, J. W. Mietelski, P. Min, B. Møller, S. P. Nielsen, J. Nikolic, L. Nikolovska, I. Penev, B. Petrinc, P. P. Povinec, R. Querfeld, O. Raimondi, D. Ransby, W. Ringer, O. Romanenko, R. Rusconi, P. R. J. Saey, V. Samsonov, B. Šilobritienė, E. Simion, C. Söderström, M. Šoštarić, T. Steinkopff, P. Steinmann, I. Sýkora, L. Tabachnyi, D. Todorovic, E. Tomankiewicz, J. Tschiersch, R. Tsibranski, M. Tzortzis, K. Ungar, A. Vidic, A. Weller, H. Wershofen, P. Zagyvai, T. Zalewska, D. Zapata García & B. Zorko

Abstract In October 2017, most European countries reported unique atmospheric detections of aerosol-bound rutherenium (^{106}Ru). The range of concentrations varied from some tenths of Bq/m^3 to more than $150 \text{ mBq}/\text{m}^3$. The widespread detection at such considerable (yet innocuous) levels suggested a considerable release. To compare activity reports of airborne ^{106}Ru with different sampling periods, concentrations were reconstructed based on the most probable plume presence duration at each location. Based on airborne concentration spreading and chemical considerations, it is possible to assume that the release occurred in the Southern Urals region (Russian Federation). The ^{106}Ru age was estimated to be about 2 years. It exhibited highly soluble and less soluble fractions in aqueous media, high radiopurity (lack of concomitant radionuclides), and volatility between 700 and $1,000 \text{ }^\circ\text{C}$, thus suggesting a release at an advanced stage in the reprocessing of nuclear fuel. The amount and isotopic characteristics of the rutherenium release may indicate a context with the production of a large ^{144}Ce source for a neutrino experiment.

Keywords: environmental radioactivity | ruthenium | nuclear forensics | environmental release | accidental release

Klima

MONCKTON 2006

Monckton of Brenchley, *Apocalypse cancelled, Discussion, calculations and references*. [Sunday Telegraph 2006, Nov. 5](#).

Mathematik

NERNST 1895

W. Nernst & A. Schönflies, *Einführung in die mathematische Behand-*

lung der Naturwissenschaften, *Kurzgefaßtes Lehrbuch der Differential- und Integralrechnung mit besonderer Berücksichtigung der Chemie.* (München 1895).

Neolithikum

ZEDER 1994

Melinda A. Zeder, *After the Revolution, Post-Neolithic Subsistence in Northern Mesopotamia.* *American Anthropologist* **96** (1994), 97–126.

Over the past two decades there has been a proliferation of studies that reveal a far greater diversity in the pathways to food production worldwide than would have been predicted by traditional models of the Neolithic Revolution. It would now appear that, while there are certain universal elements in the origins of food production, each instance of the incorporation of domestic resources into the subsistence economy is shaped by highly localized social and natural forces. It is perhaps not surprising, then, to find that the times after the Neolithic Revolution do not conform to earlier uniformitarian conceptions of the origin of food production as either a technological blessing or an environmental blight that locked people into an economy based solely on domestic resources. This examination of subsistence at Umm Qseir, one small post-Neolithic community in the Khabur Drainage of Northern Mesopotamia, highlights the remarkable degree of flexibility and individualized response in post-Neolithic economies in the Near East, especially in marginal areas. The incorporation of both domestic and wild resources into the economy of inhabitants of this site is further shown not to be just an isolated curiosity. Rather, Umm Qseir joins a number of other post-Neolithic communities situated in marginal areas, persisting several millennia after the first introduction of domestic crops and animals, that also fashioned highly individualized subsistence economies based on both wild and domestic resources. In the Khabur Drainage, the blending of domestic and wild resources in the subsistence of people situated in more arid areas is replaced by a more “conventional” agropastoral economy only with development of urbanism and the imposition of an agricultural economy of scale on this fragile environment.

Physik

NERNST 1918

Walther Nernst, *Die theoretischen und experimentellen Grundlagen des neuen Wärmesatzes.* (Halle ²1924).

Religion

DESCHNER 1988

Karlheinz Deschner, *Kriminalgeschichte des Christentums, Band 2: Die Spätantike: bis zur Ausrottung der arianischen Wandalen und Ostgoten unter Justinian I. (527–565).* (Reinbek ⁵2013).

Von den katholischen „Kinderkaisern“ bis zur Ausrottung der arianischen Wandalen und Ostgoten unter Justinian I. (527–565)

DESCHNER 1990

Karlheinz Deschner, *Kriminalgeschichte des Christentums, Band 3: Die alte Kirche: Fälschung, Verdummung, Ausbeutung, Vernichtung*. (Reinbek ⁴2013).

DESCHNER 1994

Karlheinz Deschner, *Kriminalgeschichte des Christentums, Band 4: Frühmittelalter: von König Chlodwig I. (um 500) bis zum Tode Karls „des Großen“ (814)*. (Reinbek ⁴2014).

DESCHNER 1997

Karlheinz Deschner, *Kriminalgeschichte des Christentums, Band 5: 9. und 10. Jahrhundert: von Ludwig dem Frommen (814) bis zum Tode Ottos III. (1002)*. (Reinbek ³2013).

PRESTON 2010

Jesse Lee Preston, Ryan S. Ritter & J. Ivan Hernandez, *Principles of Religious Prosociality, A Review and Reformulation*. [Social and Personality Psychology Compass 4 \(2010\), 574–590](#).

Historically, religion and religious belief have often been credited as the source of human morality. But what have been the real effects of religion on prosocial behavior? A review of the psychological literature reveals a complex relation between religious belief and moral action: leading to greater prosocial behavior in some contexts but not in others, and in some cases actually increasing antisocial behavior. In addition, different forms of religious belief are associated with different styles of co-operation. This body of evidence paints a somewhat messy picture of religious prosociality; however, recent examinations of the cognitive mechanisms of belief help to resolve apparent inconsistencies. In this article, we review evidence of two separate sources of religious prosociality: a religious principle associated with the protection of the religious group, and a supernatural principle associated with the belief in God, or other supernatural agents. These two principles emphasize different prosocial goals, and so have different effects on prosocial behavior depending on the target and context. A re-examination of the literature illustrates the independent influences of religious and supernatural principles on moral action.