



# EUROPÄISCHE AKADEMIE

zur Erforschung von Folgen wissenschaftlich-technischer Entwicklungen  
Bad Neuenahr-Ahrweiler GmbH

Direktor: Professor Dr. Dr. h. c. Carl Friedrich Gethmann

## NEWSLETTER

AKADEMIE-BRIEF • NO 91

JULY 2009

### EDITORIAL

■ From July to September 2009 Professor Doris Schröder, Ph.D., is visiting the Europäische Akademie GmbH for a sabbatical as a research fellow. She is Professor of Moral Philosophy and Director of the Centre for Professional Ethics at the University of Central Lancashire (England) and Professorial Fellow at the Centre for Applied Philosophy and Public Ethics at the University of Melbourne (Australia). Her fields of interest are: international justice, mainly with respect to benefit sharing with developing countries and access to essential medicines, and human rights to health as well as applied ethics, in particular global and food ethics. During her stay Schröder aims to complete her book on "Dignity" and prepare possible future collaborations with the academy. She also intends to participate in the Medical Ethics Programme of the Europäische Akademie. On 20 July Schröder will give a lecture at the academy on "Equity in Governance – Challenges for Indigenous Peoples' Trusts" together with Roger Chennells, LL.M. (legal adviser and founding partner of Chennells Albertyn in Stellenbosch and Cape Town/South Africa). The Research Fellowship Programme of the Europäische Akademie offers highly qualified researchers the opportunity to work at the academy investigating the consequences of scientific and technological advances for a period of several months. The research projects should be related to those of the academy.

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Further information: [www.ea-aw.de/en/research.html](http://www.ea-aw.de/en/research.html)

### FOCUS

#### The next pandemic please: Swine flu f(or)ever

Michael Bölker

Whether the world is facing a global catastrophe or whether the current outbreak of a novel type of swine flu fever will follow the normal trend of the annual flu season is still unclear. The WHO has declared the current outbreak a pandemic, and flu preparedness plans were initiated in many countries around the world. This has not only prompted tremendous media coverage but also many reactions that were more or less justified. While in Japan several thousand schools were closed, the culling of all pigs was ordered in Egypt. The difficulty of predicting the pandemic risk of the current outbreak and the limitation in our means to prevent and to control influenza virus infections prompts many questions concerning the perception and communication of risks and how this may help to better prepare for major influenza outbreaks in the future.

#### A pandemic in real time

In March and April this year, a new influenza virus emerged in Mexico and after that in several countries all over the world. This new type of virus was of swine origin and carries the characteristic subtype H1N1. Although the symptoms of the disease turned out to be quite mild, a number of deaths were reported from Mexico, the US and later some European countries. Since the new virus can be transmitted between humans, it may spread throughout the entire population. Therefore the WHO increased the pandemic alert to the highest level. This threatening perspective created wide media coverage, often echoing the big pandemic of 1918/19 with its high death toll, also caused by influenza A subtype H1N1 but of avian origin. What makes influenza viruses so dangerous and the predictions of its virulence and epidemic potential so difficult?

Influenza A viruses have a segmented genome composed of eight single-stranded RNA molecules that each encode one or two proteins. Influenza A is endemic to humans, pigs and birds, in particular water fowl. Normally, interspecies

transmission is rare and the different influenza strains are restricted to their hosts. But occasionally, novel types occur both by reassortment and genetic recombination. In the recent past, many new viruses emerged from South East Asia where water fowl is held in numerous small ponds which often receive faeces from pigs living nearby. The actual 2009 H1N1 swine-origin influenza virus can be traced to a triple reassortment, including segments from swine, avian and human influenza viruses. It is apparently transmissible between humans and virulence in humans is still low, but this can change by spontaneous mutation or genetic recombination. Comparative genetic analysis of virus strains has allowed the identification of pathogenicity markers that determine the severity of the illness in humans. The 2009 H1N1 swine flu virus does not carry a polybasic cleavage site in the hemagglutinin (HA) protein which serves as an indicator for increased virulence in humans. This marker, however, was present in the 1997 avian H5N1 virus which caused several deaths in Hongkong and could also be detected in the genome sequence of the virus

that caused the 1918 pandemic of Spanish flu. This large pandemic killed between 35 and 100 million people worldwide and therefore demonstrates that influenza viruses can belong to the deadliest pathogens. The death toll in the Western world was about 2% of the whole population and was especially high among young people, often soldiers in military camps. The symptoms of the disease were very severe and many patients died within two days. Since at that time neither vaccinations nor antibiotics were available to prevent viral propagation and opportunistic bacterial infections, it is difficult to predict how virulent this strain would have been if it had recurred today.

To prevent and control influenza, both vaccines and antiviral drugs have been used in the past. However, it is not clear whether a full-fledged pandemic can be controlled with the existing drugs and vaccines. The supply of antiviral drugs may not be sufficient and viruses may acquire resistance. The neuraminidase inhibitor 'Tamiflu' is effective enough against swine flu, but only recently the first Tamiflu resistant virus infection was reported in Denmark. Vaccination may be the most effective strategy for prevention, but development of vaccines to newly emerging strains requires 3–6 months. Within this time a pandemic virus can spread globally. Another problem will be to provide enough supply of vaccines, since influenza viruses are produced in embryonated chicken eggs which may become limited in case of a worldwide pandemic. Cell-culture based production of influenza A virus was recently approved for use in humans and may overcome this problem, but only very few production plants exist to date.

Are we, thus, facing a pandemic that may strain not only human health but also the global economy? We are becoming more and more used to follow catastrophes in real time. When the earth shook in China, hotels were attacked in Mumbai and demonstrators were killed in the streets of Tehran, images and videos reached us immediately. While it is difficult to watch the spreading of a virus on TV, we can follow the swine flu fever on the internet. The 'official' Flu page (Flu.gov) allows 'One-stop access to U.S. Government H1N1, avian and pandemic flu information'. Even Google has installed a Flu Trends webpage ([www.google.org/flutrend](http://www.google.org/flutrend)) which reports actual flu activity around the world. It uses aggregated Google search data derived from certain search terms. According to Google, this strategy estimates flu activity around the world two weeks faster than traditional systems. The public media coverage veers between scaring us to death and declarations that we are overreacting. Still the deaths are counted one by one and not by the hundreds or thousands, and yet it is completely

unclear: Is the catastrophe already among us or still to come? How should we deal with it, what do we want to know and what will we be allowed to know?

#### What is the risk?

The big pandemic of the Spanish flu in 1918/19 killed about 2% of the population worldwide and even in the US case mortality in the age group between 25 and 45 was 8–13%. These are scary numbers and we have every reason to panic. However, many of the "normal" influenza outbreaks typically record a mortality of around 0.1%. Is this an unbearably high risk and should we therefore panic at the start of each flu season?

Perception of risks by humans is quite irrational and clearly does not correlate with the value of these small numbers. Decision-making in our everyday life is only rarely based on statistical calculations. What does it help to know that there is a chance of 0.32% to reach a certain goal? Is that a good chance and should I go for it or is it rather improbable? Especially for low risks we do not have a good sense; we tend to think mostly in 'yes/no' and 'always/never' categories. Thus, we cross streets without calculating any risk (otherwise we would not do it that often), but most of us feel at least a bit unsafe sitting in a plane 10,000 feet above sea level. Does it help to know from statistics that using an airplane is the safest way to travel? Maybe this 'irrational' behaviour results from the fact that our own life is not reproducible. Statistics are derived from large numbers, but we have got only one life. This was impressively illustrated in Volker Schlöndorff's adaptation of Max Frisch's novel "Homo faber" in which the daughter of the main character was bitten by a poisonous snake. Her mother was told by a doctor that this kind of snake bite is predicted to be fatal only in 1 out of 50 cases. The mother, however, replied that if she had 50 daughters, then maybe only one of them would die; however, she had only one daughter who would either be dead or alive. Thus, communication of risks is a difficult business and often fails.

Alerting the people of future risks was the traditional business of the prophets of doom. But the higher the predicted risk the lower was the chance that people believed in them. Or, in other words, it is a trivial truth that doomsday prophets are always lying. This results from the fact that for the one case they were right, no one will be left to acknowledge it. That is the fate of all prophets: No one knows whether this time they tell the truth, but for sure people are not willing to believe what they are trying to tell us. Cassandra was not the first and will not be the last one of her kind. Communicating a future risk is difficult, especially in times of war when the truth is always the first victim. Microbial

and viral infections were always regarded as an attack of an invisible but dangerous enemy, and therefore we can declare wars also against viruses. It is, thus, not surprising that during the big pandemic of 1918/19 the same strategies that were developed to disseminate news from the Great War, were also used to communicate about the flu pandemic. A contemporary statement (Barry 2004, p. 126) described the essence of that strategy: "Truth and falsehood are arbitrary terms [...]. There is nothing in experience to tell us one is always preferable to the other [...]. The force of an idea lies in its inspirational value. It matters little if it is true or false." Reflections of this strategy might be seen in the reports of correspondents that were allowed to report during the Iraq war only when embedded in the US army. In the recent past it became evident that communication will be paramount in fighting a pandemic disease. During the 2003 SARS infection the Chinese government initially tried to cover up the number of cases and to diminish the actual risk. This may have caused more political and economic damage to the region than just truly reporting the actual cases. Therefore, we have to face the truth and depend on learning the actual risk, even if we do not have enough means to control it.

#### Biological truisms

Humankind has survived all pandemics and probably will survive many more to come. Traces of past pandemics can still be found in our genome. It has been known for quite a while that the high incidence of sickle cell anaemia within the African American population results from past selection by malaria infections. Individuals carrying a single allele of this fatal genetic disease were protected against plasmodium infections that cause malaria. In the European population cystic fibrosis is the most prevalent genetic disease. The high frequency of such a deleterious allele can only be explained by a selective advantage in the past. Experiments with knockout mice confirmed this assumption, since animals heterozygous for the cystic fibrosis allele are less susceptible to typhoid fever. Thus, during long periods of its history survival of humankind depended largely on biological co-evolution of resistance genes in an 'arms race' between virulence and resistance traits. While this strategy was quite effective in preventing the human species from becoming extinct, it always took its toll: the number of deaths during these pandemics was huge. The collective memory of the black plague is still part of our culture. Since we cannot exclude either major influenza outbreaks or other pandemics in the future, we have at least to be prepared for it, better not only by developing vaccines and antiviral drugs, but also by rethinking and preparing communication strategies to tell the truth.

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**Professor Dr. rer. nat. Michael Bölker** is Professor of Genetics at the Philipps-Universität Marburg and member of the project group "The Research-Guiding Function of Metaphors from the Information Sciences and their Impact on the Idea of Man" (duration: 9/06–9/09) of the Europäische Akademie GmbH and the Universität Marburg.  
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## WORKING GROUPS

■ Project group "Radioactive waste. Technical and normative aspects of its disposal": 22–23/6/2009 in Bad Neuenahr-Ahrweiler

■ Project group "Deep brain stimulation in psychiatry. Guidance for responsible research and application": 25–26/6/2009 in Bonn

### Presentation: "Potentials and risks of psychopharmaceutical enhancement"

■ On 12 October 2009 the Europäische Akademie GmbH will present the research results of its project "Potentials and Risks of Psychopharmaceutical Enhancement" in Berlin. As currently this topic is subject of wide-spread debate in science and society, the members of the working group decided to publish their memorandum in the well-known journal "Gehirn&Geist", Spektrum der Wissenschaft Verlagsgesellschaft (No 11/2009).

The authors of this memorandum are: Christoph Bublitz, LL.B., Hamburg; Dr. phil. Thorsten Galert, M.A., Bad Neuenahr-Ahrweiler; Professor Dr. med. Isabella Heuser, Berlin; Professor Dr. jur. Reinhard Merkel, Hamburg; Dimitris Repantis, M.D., Berlin; Professor Dr. med. Bettina Schöne-Seifert, Münster, and Davinia Talbot, M.A., Münster.

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### Project group "Radioactive waste. Technical and normative aspects of its disposal"

■ Having discussed the general questions during the first two meetings, at the third meeting of the project group "Radioactive waste. Technical and normative aspects of its disposal" on 22/23 June 2009 structure and content of the study projected appeared on the agenda. Thereafter it is planned to give a survey of the options, conditions and restrictions of the disposal of radioactive waste from a technical and scientific point of view, and to make explicit the normative presuppositions inevitable for any decision-making even in such, *prima facie* pure "empirical", questions like these. Furthermore, the group will work on the factual and the nor-

mative conditions of legitimising depositions of radioactive waste from a juridical, ethical, as well as a political point of view. The next meeting of the project group will take place in Hanover on 15 September 2009.

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## CONFERENCES

### Is there an "adequate point in time" for technology assessment?

■ When to do technology assessment (TA)? Is there an "adequate point in time" in the development and value chain of a new technology? When is it most appropriate to undertake an assessment? Does this question make any sense after all and – if so – how could it be answered? Is this question of particular pertinence in an age of technoscience? Such were the questions asked at the 9<sup>th</sup> Austrian Conference on Technology Assessment which took place on 8 June 2009 in Vienna.

In 1980 the British chemist David Collingridge diagnosed in his book "The social control of technology" a fundamental dilemma of TA: "[...] the social consequences of a technology cannot be predicted early in the life of the technology. By the time undesirable consequences are discovered, however, the technology is often so much part of the whole economic and social fabric that its control is extremely difficult. This is the *dilemma of control* [italics in the original; KS]. When change is easy, the need for it cannot be foreseen; when the need for change is apparent, change has become expensive, difficult and time consuming" (p. 11). Long since Collingridge has become eponymous to this dilemma, the pertinence of which often seems to be taken for granted in the area of TA. Several theoretical and practical attempts to overcome the Collingridge dilemma have been formulated, for instance by approaches such as "constructive" and "realtime TA". However, given the current hypothesis that technology development and science have merged into what has become labelled "technoscience", i. e. – to give a very broad and rudimentary definition – the increasing entanglement of basic research and technology development, it has to be asked for the appropriate answers to be given by TA. If in today's innovation processes technical artefacts and applications are already being contrived during research, "pure" research almost being foreclosed, how can TA make a difference? When is the right moment for TA to interpose itself between research and development?

At the Vienna conference key note speaker Alfred Nordmann, Professor of Philosophy at the Technische Universität Darmstadt, focussed his talk on the relationship of TA and technoscience. First he discussed the notion of "technoscience": Traditionally, the concept of science has been based on a distinction of theoretical description of the world on the one hand ("pure science") and technical interventions into the course of the world on the other. According to Nordmann this dichotomous view prevailed for a long time even if "technoscience" already existed "avant la lettre". Today, however, we not only have to realise the existence of "technoscience" but can also speak of a corresponding "age of technoscience" in which the merger of science and technology cannot only be perceived "de facto" but becomes a normative endeavour supposed to be promoted intentionally. Nordmann posited TA as a consequence or even product of the advent of the technoscientific age. He criticised some of the objectives of TA as being "speculative ethics" and the "futile idea" of a "social shaping of technology" as hubris. Still he insisted in the ensuing discussion that he did not presuppose any technological determinism but supported a form of political and ethical decisionism. Finally, Nordmann defended the thesis that technoscience (itself a consequence of technology) has to become an object of TA. His answer to the initial question, thus, was that the role of TA in an age of technoscience is to assess and study technoscience as a consequence of scientific and technological advances. Technoscience being seen as a "Wunscherfüllungsmaschine" (literally: "machine to satisfy wishes"), for Nordmann TA has to become a forensic science, i.e. "forensics of human desires". While TA is increasingly being concerned with "vision assessment", Nordmann called for a kind of "hermeneutic turn" of TA. Thus, in the end he is not too far from what other TA theorists have recently proposed. The Vienna conference finished with these theoretical reflections – the floor is wide open to further discussion.

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 For more conference coverage please refer to:

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### Conferences on traffic and society

■ On 16 June 2009 around 200 experts from academia and practice discussed current questions and developments on the issue of tunnel safety and protection at the premises of the Federal Highway Research Institute (BAST/ Bundesamt für Straßenwesen) near Cologne. Dr. Stephan Lingner was invited to participate in this event with respect to its leading responsibility for an ongoing academy study on the

evaluation of the joint research project “Protection of crucial bridges and tunnels of road traffic (SKRIBT)”, co-ordinated by the BASt. Main topics of the symposium were new technological prospects for tunnel safety and advanced methods for risk assessment as well as related challenges from human attitudes in crisis situations. The issues were discussed in the context of the implementation of respective European and national tunnel guidelines and addressed the relevant public and private stakeholders. Another conference with relation to the study task mentioned above took place at the Eidgenössische Technische Hochschule Zürich on 25 June 2009. It centred on the societal consequences of traffic and transport automation under the title “Die Revolution der Automation”. The interdisciplinary conference opened with a critical historical overview of the dynamics of automation in technology, society and individual life. This overview was followed by projections of further future trends of automation and mobility. Finally, the conference closed with a discussion on balancing the benefits of automation against the preferences, values and principles at stake comprising the issues of comfort, safety, efficiency, control and autonomy.

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NEWS

**Opening of an art exhibition**

■ The Sponsors' Club of the Europäische Akademie invites to the private viewing of the paintings by Christiane Stahl from Birresborn/Eifel region on 1 October 2009. Christiane Hamann,

art historian and art educator in Weißenseifen, a village of artists and craftspeople in the Eifel region, will introduce Stahl's work.

It is the artist's aim to combine the character of a property (immovable), its furnishings (movable) and the room use. To express this, Stahl creates her paintings for each room separately according to its function and the person working there and uses different sizes of frames; the material is mainly acrylic on canvas. The paintings will be presented for several months from autumn 2009 onwards; the exhibition can be visited during the opening hours of the academy between 09.00 hrs and 15.00 hrs.

*Venue: Europäische Akademie GmbH, Wilhelmstraße 56, 53474 Bad Neuenahr-Ahrweiler*

**Publication on global remote sensing systems and security**

■ The Graue Reihe No 49 (June 2009) has been published: “Globale Fernerkundungssysteme und Sicherheit. Beiträge durch neue Sicherheitsdienstleistungen?” (Global remote sensing systems and security. How can innovative security services contribute?). Editors are Dr. Stephan Lingner (Europäische Akademie GmbH) and Dr. Wolfgang Rathgeber (ESPI/European Space Policy Institute). The book refers to the Autumn Conference 2008 organised by Europäische Akademie and ESPI and deals with satellite-based navigation systems which are a permanent feature of everyday life. On the one hand, these systems provide new potentials for a comprehensive early detection of natural or man-made risks and space-based crisis response; on the other, questions arise as to the quality and validity of such earth observation data and the protection of sensitive locations and institutions as well as privacy protection.

*Download: [www.ea-au.de/en/publications.html](http://www.ea-au.de/en/publications.html)*

PERSONALITIES



■ Stefan Latussek, born in Hamm/North Rhine-Westphalia in 1962, has been a member of the Managing Committee of the Europäische Akademie GmbH since 2007. He studied law at the universities of Trier and Cologne and has been legal practitioner admitted to the bar since 1994. He was employed as consultant at the Bundesamt für den Zivildienst (Federal Office of Civilian Service) in Cologne from 1993 onwards. In 1994 he became scientific member of staff of the Deutsche Agentur für Raumfahrtangelegenheiten GmbH (DARA/German Space Agency) in Bonn; since 1996 he was head of its legal department. Furthermore, Latussek managed the merger between DARA and the Deutsches Zentrum für Luft- und Raumfahrt (DLR/German Aerospace Center) in Cologne. Since 1997 he has been employed with the DLR, one of the Europäische Akademie's fellow partners. At the same time, he was in charge of ministerial science controlling at the Federal Ministry of Education and Research (1997–1999). At present Latussek is head of the DLR's department of Internal Auditing and Joint Venture Management in which the risk-orientated controlling and consulting tasks of an internal revision are connected with controlling tasks of the affiliates of the DLR. Latussek holds numerous controlling and managing positions in subsidiary companies of the DLR and the Federal German Government.

*Stefan Latussek is member of the Managing Committee of the Europäische Akademie GmbH.*

**Publisher:**

Europäische Akademie zur Erforschung von Folgen wissenschaftlich-technischer Entwicklungen Bad Neuenahr-Ahrweiler GmbH, Wilhelmstraße 56, 53474 Bad Neuenahr-Ahrweiler, Germany

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**Typesetting/Layout:**

Heim für angewandte Grafik, Heidelberg, Mannheim, [info@heimzentrale.de](mailto:info@heimzentrale.de)

**Print:**

Lambertz Druck, Köln, Bornheim, [info@lambertzdruck.de](mailto:info@lambertzdruck.de)  
ISSN 1432-0150, frequency of publication: 8–10 times per year, 2.700 copies, reproduction is permitted with reference to the source, please send two voucher copies.

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