



# Europäische Akademie

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

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

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# Newsletter

Akademie-Brief ▪ No. 57 (July 2005)

## Editorial

Unter dem Motto „Kultur und Wissenschaft“ wurde am 6. Mai 2005 mit einem Festakt in Trier der diesjährige Kultursommer Rheinland-Pfalz eröffnet. Im Zentrum der Veranstaltung steht die Frage nach dem wechselseitigen Verhältnis zwischen Kultur und Wissenschaft und nach den Veränderungen von Welt- und Menschenbildern.

Veränderungen, die die Wissenschaft bewirkt, werden oft von der Kunst aufgegriffen. So setzen sich Künstler mit den Fragen unserer Zeit auseinander, mahnen an, reflektieren die Wissenschaft, appellieren an die Verantwortung der Wissenschaftler und artikulieren die Bedenken vor den Folgen des Fortschritts, wobei sie die Wissenschaft nicht verurteilen, sondern den kritischen Blick schärfen und im Sinne der Aufklärung wissenschaftliche Ergebnisse auf gesellschaftliche Folgen hinterfragen.

Auch die Europäische Akademie setzt sich mit diesem wechselseitigen Verhältnis von Wissenschaft und Kultur auseinander und beteiligt sich daher am Kultursommer mit einer Kunstaussstellung der Künstlerin und Wissenschaftlerin Marliese Wagner zum Thema „Verborgenes Spiel – Naturgesetze und Zufall“ sowie einem wissenschaftlichen Vortrag zum Thema „Zufall und Schicksal“ von Professor Dr. Dr. h.c. Gethmann, Direktor der Europäischen Akademie.

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## Focus

### Innovation-driven Science

Gerd Hanekamp

Innovations appear to be the undisputed key drivers of scientific activities, today. Knowledge, truth, wisdom, all this is set aside, with the argument that we first of all have to earn a living and should not waste resources for knowledge, truth and wisdom that does not lead to innovations, i.e. to the market success of new products. Admittedly, it might be hard to find someone who is willing to subscribe to this extreme interpretation of the innovation topos. However, it can well serve as a starting point to carefully analyze the semantics and pragmatics of an innovation-driven science.

Although there are many ways to define 'innovation', it is sensible to start by understanding innovations as the establishment of a new product in a market. With market success, amongst other things, economic growth and more employment is supposed to be achieved. As a consequence, this means establishing a market-criterion for scientific efforts, i.e. a market-criterion for knowledge, truth and wisdom. Thus, the interplay of demand and supply shall serve to navigate the sciences. While exercising their sovereignty, consumers at the same time make sure that the sciences support their wants.

The German philosopher Paul Lorenzen states in his textbook of constructive philosophy of science that it can be presupposed that scientists are convinced to do research in order to facilitate a better mastery of life (Lehrbuch der konstruktiven Wissenschaftstheorie. Mannheim, 1987). To cope with the problems they see themselves confronted with is seen as the root for scientific action.

Jürgen Mittelstraß diagnoses the almost exclusively theoretical orientation of modern technical cultures as a deficit of prac-

tical orientation (Wissenschaft als Lebensform. Frankfurt a.M., 1982). Rather simplistically put, this means the reflection of ends is repressed in favor of a reflection of means in a technical sense. This de-ideologized view of technical cultures coupled with Lorenzen's general presupposition and the market-criterion for science will serve to develop the context of an innovation-driven science.

Part of a better mastery of life is an adequate theoretical orientation. This could consist in the provision of adequate means to cure diseases, to grow food crops in a sufficient quality and quantity or to find and sustainably exploit natural resources. A market mechanism enables the coordination of what people want in terms of quality and quantity, while including more people in the coordination process than could otherwise ever explicitly reach joint decisions on these issues – this is the allocative function of markets. A prerequisite to the functioning of this coordination is that those who demand certain products and services are free to choose (consumer sovereignty).

By a *theoretical orientation* we find out how best to reach our ends, but learn

nothing about the ends themselves. Moreover, *theoretical orientation* does not provide methods to critically assess these ends. This critical assessment, resulting from a *practical orientation*, which may show that the intended ends are, in fact, futile and thus also the means for achieving them, is omitted. Accordingly, therefore, methodical primacy must be given to practical orientation which will result in providing a basis by which the theoretical orientation may be guided.

The idea of creating a market-criterion for science could be to achieve practical orientation through the market forces of supply and demand. What people want is expressed by their demand on the respective markets. This way, the ends that correspond to people's wants serve as the orientation that guides theoretical efforts. Although this reasoning has a certain appeal, many might feel uneasy, even without cognizance of discussions on market failures, adequate legal frameworks for markets or the different forms of misbehavior discussed in business ethics. Particularly, there are two presuppositions that need further scrutiny: 1. The ends are chosen according to what people want. 2. The market mechanism is a mere 'transport' device.

1. If one presupposes that there is a difference between what we *want* and what we *need* or between what we *want* and what we *really want* then we might object to our factually expressed demands being taken as practical orientation. Instead, we might prefer to think carefully about these ends, bearing in mind all aspects that we deem relevant, in order to decide. Another aspect that could evoke doubts is the potential, temporal instability of demands.

2. The market mechanism leads to a constant modification of wants or preferences. The objective of suppliers is to obtain as much demand as possible for their product or service and they accordingly promote their products in order to create demand. The mechanism thus is structurally biased. This bias is part of the market mechanism. Other distortions like those of the legal frameworks or the distribution of means to participate are contingent with respect to the market mechanism but hardly avoidable. In other words, the market has a life of its own that makes it unsuitable as a simple 'transport' device. Thus, the market-criterion of science appears to be unsuitable to provide practical orientation. The practical orientation of the sciences has to come from somewhere else. According to Lorenzen, the sciences are supposed to work for a better *mastery of life*. What we deem a better mastery is a

question of practical orientation itself. The above mentioned examples might be uncontroversial. However, to determine what are *adequate* means, what is a *sufficient* quality and quantity, what is a *sustainable* exploitation is a task that has to be fulfilled before a market is installed, a task that is concerned with the (regulatory) framework of a market and sets the criteria for its functioning. Of course, the result of this type of reflection can be that a market is not the suitable means of coordination in a particular case.

Another approach to practical orientation is that, in a democratic polity, it is a political obligation. Art. 5(3) of the German Basic Law concedes the 'freedom of research and teaching' as a constitutional right. Nevertheless, the state can allocate means to research activities it considers to be of prior importance. It can decide that innovations are of prior importance and allocate more means in fields where it expects innovations to take place. Accordingly, innovations are one of the ends according to which means for research activities are allocated. The question is how does the state know where innovations are to be expected.

A chemist in the pharmaceutical industry synthesizes substances that potentially have effects of pharmacological interest. The focus will be on those effects that lie in the fields of activities of the particular firm. These fields are chosen according to the market strength of the firm and the foreseeable market potentials in order to reach the best possible performance of the company in the particular markets. As a consequence, the objective of the chemist is not only to develop a medication to cure a certain disease but to develop a drug that can compete on a global market. The performance of the firm has to guarantee returns that satisfy its major shareholders. The firm is a specialist for pharmaceutical innovations in a specific field of pharmaceutical activities. To develop the know-how is costly and can only be sustained if the firm is successful, i.e. successfully establishes new products on a regular basis. This is the Schumpeterian idea of dynamic competition preferably used today in Porterian terminology as comparative competitive advantages (Joseph Schumpeter. *Capitalism, Socialism and Democracy*. New York, 1942; Michael E. Porter. *Competitive Advantage*. New York, 1985).

For the state to channel its science funding successfully, at least partly, towards innovations, it would need the aggregate know-how of all firms operating in its territory. So even if we accept the obvious analogy to the private firm that the state

funds research and requests returns, e.g. higher tax payments, less unemployment or more investments, the state does not have the means to execute this approach. The straight forward analogy misunderstands the role of the state in terms of the role of an investor.

More precisely, the state would need even better know-how than the 'aggregate firm', since it is supposed to direct research beginning with basic research. Those occupied with the allocation of state funds to research activities are well aware of this problem. There are several strategies to cope with the corresponding uncertainties. Usually, the state tends to fund research rather broadly and tries not to miss fields that are fashionable on an international level. The latter strategy minimizes competitive advantages of other states in the particular field. Another strategy is to allocate means in fields where the attainment of other ends is likely. This could be called a double dividend approach for decisions subject to profound uncertainty.

Whenever, in a particular field of research, there is an obvious chance to make a good private investment, private money 'takes over' with the possibility for joint financing. These private take-overs are welcome spin-offs of publicly funded scientific efforts. They are welcome, that is the important message and, as a consequence, the awareness of these potential spin-offs must be raised and support for patents and new products needs to be further augmented.

A certain fear of missed opportunities in Germany is nurtured by some key examples where the know-how for a new product was developed in Germany but the products were developed and marketed in other countries (fax, data-compression). The numbers of counter-examples are legion. However, the interfaces between the publicly funded sciences and business still appear to be under-developed in Germany and some might think, even today, that for a 'real scientist' the involvement in private business activities is a dubious adventure.

This seems to be the proper context for an innovation-driven science. The innovation criterion could thus read: Have an eye on innovations! An innovation-driven science is one that is aware that marketable products are supporting a better mastery of life. Innovations, here, are part of the practical orientation of the sciences.

Dr. phil. Gerd Hanekamp, Dipl.-Chem., is Vice-Director of the Europäische Akademie.



## Working Groups

### Nanomaterials, Nanodevices, Nanocomputing. Standortbestimmung und Perspektiven

The project group „Nanomaterials, Nanodevices, Nanocomputing. Standortbestimmung und Perspektiven“ held its last meeting in Bad Neuenahr-Ahrweiler from 9 to 10 June 2005. On this occasion, the group decided to re-arrange the chapter sequence of the upcoming book, whose title will be "Nanotechnology. Assessment and Perspectives". Chapter 1 will now give an appraisal of the study's results and will also list recommendations to decision makers. These recommendations can roughly be grouped as belonging either to the areas of research organisation, commercial implementation or societal coverage. After this prelude, introductory chapter 2 will start off the remaining part of the book. At the end, short summaries of each chapter will be given in German and English.

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### Environmental Noise

On its recent progress meetings on 23 May and 20 June the project group discussed early conclusions from its interdisciplinary efforts as well as further draft recommendations for the actors' level of future traffic and noise policy. The discussions reflected also new perspectives and insights gained from the just finished academy's spring conference on "Living with noise?".

Summarizing selected conclusions one may state that clinical health problems from traffic noise impacts could not be proved so far although their contribution to the genesis of complex diseases seem still possible. However, empirical evidence of adverse noise effects to human life-quality and performance is actually given and should therefore guide primarily respective mitigation measures. There are numerous mitigation potentials for all classes of noise emitting vehicles, which should be consequently exploited. Supporting procedures for licensing and regular technical monitoring of crafts as well as for contracting of certain traffic services may serve this goal. Further incentives might be directed towards the accelerated replacement of yet noisy but long-lived vehicles, thus enabling a faster diffusion of innovative technology on the market of

traffic services. Finally, adequate instruments for influencing choices of noisy mobility will be considered in the course of the project.

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## Conferences

### „TA und Politik“

On 30 May 2005 the Austrian „Institut für Technikfolgenabschätzung“ held its annual conference in Vienna. The organiser's main goal was to review and discuss problems and perspectives of Technology Assessment for policy advice. The questions arised centred on the adequate coherence of Technology Assessment and politics. Dr. Stephan Lingner contributed to the event with a case-study report on the issue of climate protection, which concluded with the thesis that reasonable Technology Assessments should be oriented along scientific standards rather than on questionable impacts on the level of politics.

## News

### Study Presentation

At the occasion of the 22<sup>nd</sup> regular meeting of the Subsidiary Bodies of the Parties to the UN Climate Convention a side event on "The ultimate objective of UNFCCC" was held on 21 May 2005 in Bonn. Members of the working group of the 2004 concluded academy's study on "Reasoning goals of climate protection" presented their recommendations for the specification of the Convention's ultimate goal from an ethical view. Based on the practical convergence of most ethical theories, an overall argument for relatively low stabilization targets were made, which received considerable attention by the international audience.

### Berufung

Carl Friedrich Gethmann ist in das Gutachtergremium zur Begutachtung von Projektanträgen zu den ethischen, rechtlichen und sozialen Aspekten der Biomedizin berufen worden. Die Anträge beziehen

sich auf eine entsprechende Ausschreibung des Bundesministeriums für Bildung und Forschung.

### Arbeitskreis Medizinethik

Am 6. Juni 2005 tagte der Arbeitskreis ‚Medizinethik‘ mit einem sowohl interessanten als auch schwierigen Thema: „Umgang mit Fehl- und Totgeburten“. Aufgrund des speziellen Themas war die Einladung hauptsächlich an Personen gerichtet, die im Bereich der Geburtshilfe tätig sind, wobei die Teilnehmer diesmal auch aus dem Kölner und Düsseldorfer Raum kamen.

Die Referentin, Frau Dr. Petra Jasker, (Pathologin aus dem Bethesda-Krankenhaus in Duisburg) erläuterte die rechtlichen Probleme des Umgangs mit Fehl- und Totgeburten und gab einen Einblick in die praktische Umsetzung des Bethesda-Krankenhauses, Fehl- und Totgeburten menschenwürdig zu beerdigen. Hierbei ging sie detailliert auf die neue Rechtssituation in Nordrhein-Westfalen zur Bestattung von Totgeburten ein.

Der Vortrag enthielt viele praktische Anregungen, die auch an anderen Einrichtungen Umsetzung finden könnten.

Die anschließende Diskussion wurde sehr engagiert geführt und machte deutlich, dass es zu diesem Problem noch viele offene Fragen zu klären gibt. Die Teilnehmer plädierten für eine Fortsetzung der Auseinandersetzung mit diesem Themenkreis.

### Kultursommer Rheinland-Pfalz

Im Rahmen des Kultursommers Rheinland-Pfalz hat am 9. Juni 2005 um 19.30 Uhr Professor Dr. Dr. h.c. Carl Friedrich Gethmann, Direktor der Europäischen Akademie, in den Räumen der Akademie einen Vortrag zum Thema „Zufall und Schicksal. Aspekte menschlicher Kontingenzbewältigung“ gehalten.

Menschliche Selbst- und Welterfahrung ist geprägt durch die Erfahrungen der eigenen Begrenztheit und der Begrenztheit der anderen (Kontingenz). Diese Erfahrungen sind vielgestaltig und darum interpretationsbedürftig. Sie umfassen Erfahrungen der Bedürftigkeit, der Störanfälligkeit, der Sterblichkeit und der Phasenhaftigkeit des Lebens. Ihr gemeinsames Merkmal ist, dass sie nicht als (mögliche) Folgen des eigenen Handelns erfahren werden, sondern als unabänderliche „Widerfahrnisse“ Die Erscheinungsformen dieser Widerfahrnisse ändern sich

aufgrund natürlicher und kultureller Rahmenbedingungen zwar erheblich. Derzeit scheint sich allerdings in vielen Lebensbereichen wie im Bereich der Ernährung oder der Heilung von Krankheiten das Zielbild zu entwickeln, der Mensch könne solche ihm widerfahrenen Ereignisse grundsätzlich vermeiden oder sogar überwinden. Im Grenzfall scheint z.B. die Erfahrung der Bedürftigkeit durch Befriedigung und Erfüllung von Bedürfnissen sogar zu verschwinden. Das ist allerdings nur ein Schein. Widerfahrnisse vom Typ der Kontingenzerfahrungen lassen sich weder vermeiden noch überwinden. Dies lässt sich am Beispiel der Phasenhaftigkeit des menschlichen Lebens illustrieren.

### Scientific Advisory Board

On 6 July 2005 the Scientific Advisory Board of the Europäische Akademie held its 20th meeting at the premises of the academy in Bad Neuenahr-Ahrweiler. The agenda included among others the two projects "European Social Policy" and "Nanomaterials, Nanodevices, Nanocomputing. Determination of Present Position and Perspectives" which are currently finalised.

### Managing Committee/ Partners of the Europäische Akademie

The 18th meeting of the Managing Committee and the Partners of the Europäische Akademie took place in Bad Neuenahr-Ahrweiler on 11 July 2005.

During this meeting the accountant's report as well as the report on the situation of 2004 were stated and the managing director was released for the financial year 2004.

The accountant's report was accepted by the auditors' firm without any restrictions.

### Lectures

Carl Friedrich Gethmann

9.6.05 „Zufall und Schicksal. Aspekte menschlicher Kontingenzbewältigung“, Europäische Akademie Bad Neuenahr-Ahrweiler im Rahmen des Kultursommers Rheinland-Pfalz

16.6.05 „Der moralische Status des Embryo“, Residenzvorlesung an der Universität Würzburg

7.7.05 „Was ist so moralisch verwerflich am reproduktiven Klonen?“, Fachgespräch „Rechtliche und ethische Probleme der Reproduktionsmedizin“, FernUniversität Hagen

### Publications

Thorsten Galert

*Vom Schmerz der Tiere. Grundlagenprobleme der Erforschung tierischen Bewusstseins*, Paderborn: Mentis, 2005

Carl Friedrich Gethmann

„Visionen vom Altern. Phasenhaftigkeit und Identität menschlicher Existenz“, in: *Die Politische Meinung* 50, 2005, 33 – 41

„Zur Amphibolie des Krankheitsbegriffs“, in: Gethmann-Siefert, Annemarie/Gahl, Klaus/Henckel, Ulrike: *Wissen und Verantwortung, Bd II, Studien zur medizinischen Ethik*, Freiburg im Breisgau 2005, 105 – 114

Ulrike Henckel

Gethmann-Siefert, Annemarie/Gahl, Klaus/Henckel, Ulrike: *Wissen und Verantwortung, Bd II, Studien zur medizinischen Ethik*, Freiburg im Breisgau 2005

### Personalities



Wolfgang Rathgeber started his studies of Electrical Engineering at the Universität Erlangen-Nürnberg in 1991. In 1993, he took a one year's break to complete his naval reserve officer's training. When re-entering university in 1994, he also enrolled in Romanistics, Theatre Science and History of Art. His further studies included a three month internship at the Universidade Estadual de Campinas, Sao Paulo, Brazil and an abroad semester at the Universidad Politecnica de Valencia, Valencia, Spain. His diploma thesis, written at Siemens AG, Transportation Systems, dealt with the symmetrization of single phase loads in three phase grids. Rathgeber received his diploma degree in 1998 and his doctoral degree in 2005, both in Electrical Engineering. He approved his doctoral thesis on "Superresolution by means of Spectral Estimation Techniques in Synthetic Aperture Radar Signal Processing" by the Universität Karlsruhe.

In 1999, Dr.-Ing. Rathgeber joined the Institute of Radio Frequency Engineering and Radar Systems of the German Aerospace Center (DLR) in Oberpfaffenhofen. Since 2003, he has been with the Europäische Akademie as scientific staff member. His tasks, among others, are the management of the project "Nanomaterials, Nanocomputing, Nanodevices. Determination of Present Position and Perspectives" and the coordination of IT activities. Dr.-Ing. Rathgeber's research interests include Systems' Theory, Radar Engineering and Spectral Estimation.

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