



EUROPÄISCHE AKADEMIE

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

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

RESEARCHPROGRAMME

NOVEMBER 2006



EUROPÄISCHE AKADEMIE

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

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

RESEARCHPROGRAMME

NOVEMBER 2006

The Europäische Akademie zur Erforschung von Folgen wissenschaftlich-technischer Entwicklungen gGmbH is concerned with the scientific study of the consequences of scientific and technological advance for individual and social life and for the natural environment. The main focus is the examination of foreseeable mid- and long-term processes that are especially influenced by natural- and engineering sciences and the medical disciplines. As an independent scientific institution, the Europäische Akademie pursues a dialogue with politics and society.

The Europäische Akademie bases its work on the assumption that the sciences have the task, beyond providing specialized scientific information, of also making *orientational knowledge* available. Therefore, an *interdisciplinary* approach is required, bringing together the results from natural sciences, engineering sciences and medical disciplines with thematically relevant studies in philosophy, jurisprudence, economics and social sciences. In addition, the foreseeable results of research and development are related *transdisciplinarily* to expected societal needs and positions.

Within its work, the Europäische Akademie takes up and develops approaches of Technology Assessment and the various fields of Applied Ethics.

AIMS

The Europäische Akademie seeks to assist in finding a rational way for society to deal with the consequences of scientific and technological developments. This aim is mainly achieved by developing and recommending options upon which to act, with respect to longterm societal acceptance.

The rational resolution of conflicts in the area of science and technology is an important prerequisite for longterm, reliable science and technology policy.

In the course of its scientific work the Europäische Akademie ensures that the responsibility of the scientific community towards the whole of society finds its due fulfilment.

TARGET GROUPS

The results of the Europäische Akademie's scientific work address the relevant scientific disciplines, and also political authorities in the fields of science and technology in Europe. Beyond that, its work addresses the public potentially affected by the consequences of science and technology.

The Europäische Akademie expects its scientific work to have repercussions on the conception of science itself. By rationally reflecting the consequences of science and technology, the scientist's responsibility as an important factor in the selfregulation of the scientific system shall be strengthened.

The work of the Europäische Akademie is mainly conducted by temporary interdisciplinary project teams. Members of these *project groups* are recognized scientists from universities and non-university research organisations in Europe. In specific cases, representatives from other areas of society, e.g. from industry, can also be nominated. From their group, the members elect a chairperson.

Transdisciplinary issues, relevant for several or all project groups, are dealt with in *study groups* by the staff of the Europäische Akademie.

Through participation of European scientists, European cooperation with corresponding advisory bodies, through participation in relevant networks and through specific regard to European aspects within the projects, consideration of the European perspective is ensured.

The results of the project- and study groups and conferences are made available as a basis for advice and decisionmaking in the form of subject-related studies and conferences.

The *Doctorate Programme* of the Europäische Akademie supports young scientists in different scientific fields to complete their dissertation at the academy in Ahrweiler. Furthermore, with the *Research Fellowship Programme* the Europäische Akademie invites qualified foreign scholars to carry out research projects in the field of the study of the consequences of scientific and technological advances.

ORGANISATION

The European Academy for the Study of the Consequences of Scientific and Technological Advance was constituted in 1996 as a 'gemeinnützige Gesellschaft mit beschränkter Haftung', i.e. a non-profit corporation with limited liability. Its partners are the Bundesland Rheinland-Pfalz and the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt e.V., DLR). The Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF) contributes to the financing of the Europäische Akademie in the form of its project funding. Furthermore, orders and grants from individual sponsors help finance the projects of the Europäische Akademie.

Managing director of the company as well as director of the academy is Professor Dr. phil. Dr. phil.h.c. Carl Friedrich Gethmann, who is full professor of Applied Philosophy at the Universität Duisburg-Essen.

The *Partners' Assembly* (Gesellschafterversammlung, p. 48) has formed a *Managing Committee* (Geschäftsführender Ausschuss, p. 48) to which two representatives of the partners belong. It also nominated a *Scientific Advisory Board* (Wissenschaftlicher Beirat, p. 48) which supports the Europäische Akademie in elaborating scientific goals and projects as well as in evaluating research results. The members of the different working groups form the *Council* (Kollegium, p. 49–52) of the academy which is a forum for scientific exchange on subjects concerning the activities of the Europäische Akademie.

The subject areas for the projects of the Europäische Akademie are, among others, environment, health, energy and transport. Core concepts in investigating and assessing the consequences of scientific and technical developments such as 'risk', 'innovation', 'prognosis' or 'responsibility' and the related conceptual and procedural questions are dealt with interdisciplinarily and are incorporated in sets of instruments for 'Rational Technology Assessment'. The projects listed below are currently in operation (p. 8–13) or already completed (p. 14–32).

Furthermore the research programme reports about the activities of the Europäische Akademie such as the Master Programme on ethics of medicine (p. 33), Studies (p. 34–38), Study Groups (p. 39–41), the Research Fellowship Programme (p. 42), the Doctorate Programme (p. 43–47) and Publications (p. 54–61).

PROJECT GROUP

THE RESEARCH GUIDING FUNCTION OF METAPHORS FROM THE INFORMATION SCIENCES AND THEIR RELEVANCE TO THE TRANSFORMATION OF THE PHILOSOPHY OF MAN (CURRENT)

The project deals with the question as to which influence natural scientific research has on the philosophical conception of man. The aim is to work out an integrative conception of man based in philosophical anthropology which is accepted both in the humanities and in natural sciences and which is to support a societal dialogue with the humanities. It will be examined in what kind natural scientific research has influenced the conception of man and how the achieved results can be integrated into an integrative conception of man or in how far it has to be modified.

The project is carried out by four independent research groups and will be coordinated by the Europäische Akademie GmbH. The Europäische Akademie is scientifically involved in this project by accumulating and presenting the present state of research of philosophical anthropology.

Project Group:

Professor Dr. rer. nat. Michael Bölker, Marburg • Thomas Engel, M.A. • Professor Dr. phil. Dr. rer. nat. Mathias Gutmann (PD), Marburg • Ulrike Henckel, Dipl.-Päd. • Professor Dr. rer. nat. Wolfgang Hesse, Marburg

Project Coordination: Thomas Engel, M.A.

Tel./e-mail: +49 (0) 2641 973-317 • thomas.engel@ea-aw.de

Dipl.-Päd. Ulrike Henckel

Tel./e-mail: +49 (0) 2641 973-310 • ulrike.henckel@ea-aw.de

Duration: 9/06–2/09

Funding: Federal Ministry of Education and Research (BMBF): "Humanities in the Societal Dialogue"

FUEL CELLS AND VIRTUAL POWER PLANTS AS
ELEMENTS FOR A SUSTAINABLE DEVELOPMENT
INNOVATION BARRIERS AND IMPLEMENTATION STRATEGIES
(CURRENT)

One major aspect of sustainable development in society represents an assured, efficient and sustainable energy supply. Fuel cell systems are effective high-technological energy conversion systems. They show a good performance with respect to energy efficiency, own energy consumption, and greenhouse gas emissions, and can therefore contribute to a sustainable development. In order to ensure a better exploitation and a warranty of energy supply even in situations of high peak consumption which could not be covered by a single facility, individual fuel cell facilities can be coupled to virtual power plants. The introduction of the technology on the market is accompanied by barriers which will hamper its concrete realisation particularly on a local and regional level.

The aim of the project is to identify factors which interfere with the introduction and implementation of the technology in the market and to develop strategies to change these with adequate effort and consequences. In order to reach this aim, the project team will start its work by analysing innovation potentials of fuel cell and virtual power plant, before general conditions will be investigated concerning their impact as innovation barriers. Based on this analysis, strategies for the removal of barriers will be elaborated. Furthermore, it will be discussed which contribution the technology can make to a sustainable development. The projekt aims at elaborating project is to concretize the results worked out in the former project "Sustainable Development and Innovation in the Energy Sector" of the Europäische Akademie GmbH.

Project Group:

Professor Dr. jur. Joh.-Christian Pielow, Bochum • Professor Dr.-Ing. Ingo Romey, Essen • Professor Dr. rer. pol. Thomas Ziesemer, Maastricht

Dipl.-Ing. Holger Berg, Essen (Junior Scientist) • Dr.-Ing. Bert Droste-Franke, Dipl.-Phys., Bad Neuenahr-Ahrweiler (Head of the Junior Scientist Group) • Dr. rer. pol. Karsten Mause, Dipl.-Pol., Bad Neuenahr-Ahrweiler (Junior Scientist) • N.N.

Project Coordination: Dr.-Ing. Bert Droste-Franke, Dipl.-Phys.
Tel./e-mail: +49 (0) 2641 973-324 • bert.droste-franke@ea-aw.de

Duration: 7/06–12/08

Funding: Federal Ministry of Education and Research (BMBF): "Competition for interdisciplinary junior scientist groups within the framework of innovation and technology analysis"

PROJECT GROUP

POTENTIALS AND RISKS OF PSYCHOPHARMACEUTICAL ENHANCEMENT (CURRENT)

The concept of enhancement lies at the heart of a growing debate about possibilities to improve emotional wellbeing and cognitive performance beyond what is considered “normal” or “natural” in healthy individuals. While a part of this debate focuses on future possibilities of transcending human limitations by neuro-bionic implants and other advanced technical devices, other means to obtain cognitive and mood enhancement respectively seem to be readily available nowadays: Certain antidepressants are said to help people without any mood disorder to feel “better than well”, and other drugs whose primary aim is to delay the gradual loss of cognitive functioning in patients with dementia may also boost memory or attention in the cognitively unimpaired. In most cases, the enhancement properties of approved psychopharmaceutical drugs have not been confirmed by rigorous testing. But even without scientific proof, a growing number of people are apparently ready to consume psychotropic substances for enhancement purposes.

This collaborative project is meant to explore the emerging trend towards psychopharmaceutical enhancement from an interdisciplinary perspective. In a first step, conceptual ambiguities surrounding the term enhancement need to be resolved. On this basis, the available evidence on the possibilities and risks of enhancing mental functions by pharmaceutical agents will be reviewed from the point of view of medical science. This review will deliver the background against which ethical and legal issues can be addressed that may arise depending on the further development in the field of psychopharmaceutical enhancement.

Project Group (Co-project supervisors):

Dr. phil. Thorsten Galert, M.A., Bad Neuenahr-Ahrweiler, (Project Coordination: Tel./e-mail: +49 (0) 2641 973-307 / thorsten.galert@ea-aw.de) • Professor Dr. med. Isabella Heuser, Berlin • Professor Dr. jur. Reinhard Merkel, Hamburg • Professor Dr. med. Bettina Schöne-Seifert, Münster

Project associates: Dr. phil. Edgar Dahl, Gießen • Dimitris Repantis M.D., Berlin • Davinia Talbot, M.A., Münster

Duration: 7/06–12/08

Funding: Federal Ministry of Education and Research (BMBF): “Research on ethical, legal and social aspects in biomedicine”

PHARMING

GENETICALLY MODIFIED PLANTS AND ANIMALS AS
FUTURE PRODUCTION SITE OF PHARMACEUTICALS?
(CURRENT)

Pharming is a new branch of biotechnology that uses transgenic plants or animals as living “factories” to produce human or animal pharmaceuticals. The class of drugs manufactured with pharming technology is called biopharmaceuticals. These are pharmaceutical compounds – in most cases therapeutic proteins – that cannot be produced by conventional chemical synthesis. Instead, they can be isolated from biological material (i.e. blood plasma) or they can be produced in living systems. However, the current method to produce biopharmaceuticals by fermenter grown recombinant cell cultures is costly and inefficient. Also, an increasing demand for biopharmaceuticals has caused a shortage in production capacity and first cases of patient-waiting-lists. It is hoped that with pharming the enlargement of production capacities (e.g. growing more transgenic crops or breeding more transgenic animals) may be quicker, cheaper, and more flexible compared to current production processes. In addition, by overcoming technical or financial limitations, pharming may also enable the development of new therapeutic compounds.

The potential of pharming is widely judged to be high, both in terms of medical impact and in terms of economic profits. On the other hand, pharming raises a number of ethical, legal and social questions that should be discussed in parallel to its further development. The project will evaluate the potentials and risks of pharming and aims at determining the need and means of legal regulation and policy action for the responsible further development of pharming.

Project Group:

Rikke Bagger Jørgensen, Ph.D., Roskilde • Professor Rafael Pardo Avellaneda, Ph.D., Madrid • Professor Dr. jur. Eckhard Rehbinder, Frankfurt • Professor Angelika Schnieke, Ph.D., Weihenstephan • N.N.

Dr. phil. Margret Engelhard, Dipl.-Biol., Bad Neuenahr-Ahrweiler (Junior Scientist) • Kristin Hagen, Ph.D., Europäische Akademie, Bad Neuenahr-Ahrweiler (Junior Scientist) • Dr. med. Felix Thiele, M.Sc., Europäische Akademie, Bad Neuenahr-Ahrweiler (Head of the Junior Scientist Group)

Project Coordination: Dr. phil. Margret Engelhard, Dipl.-Biol.

Tel./e-mail: +49 (0) 2641 973-305 • margret.engelhard@ea-aw.de

Duration: 7/06–12/08

Funding: Federal Ministry of Education and Research (BMBF): “Competition for interdisciplinary junior scientist groups within the framework of innovation and technology analysis”

PROJECT GROUP

RESPONSIBILITY FOR FUTURE GENERATIONS IMPLEMENTATION OF SUSTAINABILITY IN SCHOOLING (CURRENT)

A successful implementation of the concept of sustainability in social planning and acting presupposes that it is being supported by as many people as possible. Thus the assumption of responsibility for future generations requires a broad development of competences in perceiving, reflecting und solving problems of long-term dimension. Hitherto the advancement of such competences has not yet been a systematic subject of schooling and thus only occasionally it appears in the curricula.

Therefore the implementation of such topics in schooling has become an aim of some programmes and initiatives of the German federal ministry of education and research (BMBF). The project will develop the basis for this implementation as accompanying measures to the program "Research for Climate Protection and Protection from Climate Impacts".

Three special challenges have to be met:

- such as practical philosophy, theory of decision making and risk analysis, which up to now have been marginal in schooling, are central for the work in these areas;
- a special and relatively young field of research – partly discussed controversially within the scientific community – has to be prepared didactically in a suitable way;
- the interdisciplinary character of these topics may demand for a readjustment of methodology.

The adequate treatment of these tasks necessarily requires an interdisciplinary research group. Results should be tested in school practice.

Project Group:

Professor Dr. phil. Gerhard de Haan, Berlin • Professor Dr. phil. Anton Leist, Zürich • Professor Dr. rer. nat. Laura Martignon, Ludwigsburg • Professor Dr. rer. pol. Georg Müller-Christ, Bremen • Professor Dr. rer. pol. Hans G. Nutzinger, Kassel • StD Winfried Sander, Adenau

Project Coordination: Dr. phil. Georg Kamp, M.A.

Tel./e-mail: +49 (0) 2641 973-308 • georg.kamp@ea-aw.de

Duration: 1/06–6/08

Funding: Federal Ministry of Education and Research (BMBF): "Research for Climate Protection and Protection from Climate Impacts" – A contribution to the BMBF-framework programme "Research for Sustainability"

SOCIETAL IMPLICATIONS OF ELECTRICAL POWER GRIDS (CURRENT)

A reliable electricity supply is vital for every modern society, and therefore the energy system has to be able to provide the required amount of electric current preferably without any interruptions. The blackouts in the USA, in London, in South Sweden and Italy in 2003, in Rheinland-Pfalz (Rhineland-Palatinate) and Luxembourg in September 2004, in Nordrhein-Westfalen (North Rhine-Westphalia) in winter 2005 and the recent outages in wide parts of Western Europe at the end of 2006 were caused by deficiencies of the supply mains. There were severe consequences such as: high economic detriments, disturbances and impairments of private and public life.

Problems concerning the supply guarantee emerge from currently changing factors such as: degradation of the capacities of power stations and hence reserve capacities, lack of investment in electrical grids due to deregulation, stability problems on account of the upgrading of the European network and because of the fluctuating feed of renewable energies. The project aims at finding solutions to these problems. The results of the individual work in the fields of energy engineering, economics and jurisprudence are to be brought together in order to give coherent guidelines for the relevant fields of policy and the energy industry, which are also in compliance with the European legislation framework.

Project Group:

Professor Dr. rer. pol. Ulrich Steger, Lausanne (chair) • Professor Dr. jur. Ulrich Büdenbender, Dresden • Professor Dr. phil. Eberhard Feess, Aachen • Professor Dr.-Ing. Dieter Nelles, Kronberg

Project Coordination: Dr. rer. nat. Ruth Klüser, Dipl.-Chem.

Tel./e-mail: +49 (0) 2641 973-312 • ruth.klueser@ea-aw.de

Duration: 1/06–6/08

Funding: Foundation for Innovation Rheinland-Pfalz (Rhineland-Palatinate)

INTERVENING IN THE PSYCHE NOVEL POSSIBILITIES AS SOCIAL CHALLENGES (COMPLETED)

The wealth of insights into the brain's functioning that neuroscience has gained during the last few decades led to the development of new possibilities for intervening in the brain: Central neural prostheses are electronic devices which connect to the nervous system in order to stimulate or record brain activity. Deep brain stimulation is administered by permanently implanted electrodes. Neurotransplantation offers a chance to treat degenerative diseases of the brain by replacing lost neurons.

Although the primary aim of these innovative ways of acting on the brain is to open up new treatment options for neurological and psychiatric diseases, the public response to them has not been entirely positive. As regards therapy, there are concerns that these techniques may inflict severe mental harm on the patients they are applied to, possibly transforming them in radical ways. Further qualms relate to applications which may go "beyond therapy" by aiming at the enhancement of cognitive capacities and emotional well being. Both kinds of concerns have not only been raised with respect to novel neurosurgical procedures, but also regarding new trends in the field of psychopharmacology. Therefore, next to advances in the research areas of neuroprosthetics, neurotransplantation and electrical brain stimulation this project also covered more established ways of influencing brain activity and mental functioning respectively by means of pharmaceutical agents.

The aim of this project was to review the state of the art with respect to each single mentioned kind of intervention, indicate future developments, and address the ethical and legal issues which are common to all of them.

Publication: R. Merkel, G. Boer, J. Fegert, T. Galert, D. Hartmann, B. Nuttin, S. Rosahl: *Intervening in the Brain. Changing Psyche and Society*. Springer-Verlag, Berlin 2007, ISBN: 3-540-46476-X (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 29)

Project Group:

Professor Dr. jur. Reinhard Merkel, Hamburg (chair) • Dr. Gerard Boer, Amsterdam • Professor Dr. med. Jörg Fegert, Ulm • Professor Dr. phil. Dirk Hartmann, Essen • Professor Bart Nuttin M.D., Ph.D., Leuven • Professor Dr. med. Steffen Rosahl, Erfurt

Project Coordination: Dr. phil. Thorsten Galert, M.A.

Tel./e-mail: +49 (0) 2641 973-307 • thorsten.galert@ea-aw.de

Duration: 01/04–06/06

ENVIRONMENTAL NOISE

RISK ASSESSMENT AND REGULATION FOR THE CASE OF
TRAFFIC NOISE
(COMPLETED)

Environmental noise may be seen as dangerous. For besides its subjective valuation, it may also become relevant to human health: Cardiovascular problems or hearing loss are some of the known noise effects. Furthermore, noise constitutes an obstacle to communication and thus to social life.

These problems have raised growing public awareness and, as a consequence thereof, a considerable number of relevant regulations have been enacted at national as well as international levels. Nevertheless, these measures did not eliminate the conflict between those who generate noise and those who are affected by noise. The case of aircraft noise may serve here as a paradigm: Air traffic will be increasingly accepted by travellers and is thus endowed with a high economic potential. Simultaneously, air-travel is a growing noise source, constituting a nuisance to effected communities which seem to become increasingly intolerant to noise.

This problem has given rise to the need for rational assessment of noise risks and of potentials for their mitigation. In conducting this task, the chances for enhancing mobility and its usefulness for society have been co-evaluated. This project aimed at providing reasonable recommendations for the upcoming relevant regulations at national and European level.

Publication: M. Kloepfer, B. Griefahn, A. M. Kaniowski, G. Klepper, S. Lingner, G. Steinebach, H. B. Weyer, P. Wysk: *Leben mit Lärm? Risikobeurteilung und Regulation des Umgebungslärms im Verkehrsbereich*, Springer-Verlag, Berlin 2006 (series Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 28), ISBN-10 3-540-345 09-4

Project Group:

Professor Dr. jur. Michael Kloepfer, Berlin (chair) • Professor Dr. med. Barbara Griefahn, Dortmund • Professor nadzw. Dr. hab. Andrzej M. Kaniowski, Lodz
Professor Gernot Klepper, Ph.D., Kiel • Professor Dr.-Ing. Gerhard Steinebach, Kaiserslautern • Professor Dr.-Ing. Heinrich B. Weyer, Köln • Dr. jur. Peter Wysk, Münster

Project Coordination: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 07/03–06/06

PROJECT GROUP

INCENTIVES FOR ORGAN DONATION

(COMPLETED)

The scarcity of donated organs is an issue of heightened social relevance. Since each year in Germany, some 1,000 patients die while waiting for an organ and another 12,000 patients on the waiting list suffer severely, society must not ignore the scarcity of organs, but consistently has to seek for solutions and discuss diverse approaches without any taboo to tackle this problem.

This study is the result of an interdisciplinary research project. It examines diverse causes of the scarcity of organs and explores ways to alleviate this problem. It therefore addresses scientists, affected persons, health professionals, policy and the interested public. At first the analysis focuses on cadaveric organ donation. Main factors that could lead to rates of increased organ donation are the participation of hospitals in the procurement of cadaveric organs, the coordination of the organ donation process and the permission by the donor or relatives for organ removal. The study pinpoints strategies to influence these factors positively. They range from the removal of financial obstacles for reporting hospitals, to an abolishment of the monopoly of the coordinating institution and to an introduction of the opt-ing-out ("presumed consent") system. For the specific scarcity of kidneys and livers even controversially discussed approaches to expand live organ donation are taken into account.

Publication: F. Breyer, W. van den Daele, M. Engelhard, G. Gubernatis, H. Kliemt, C. Kopetzki, H.J. Schlitt, J. Taupitz: *Organmangel – Ist der Tod auf der Warteliste unvermeidbar?* Springer-Verlag, Berlin 2006, ISBN 3-540-33054-2

Project Group

Professor Dr. rer. pol. Friedrich Breyer, Konstanz (chair) • Professor Dr. jur. Wolfgang van den Daele, Berlin • Professor Dr. med. Gundolf Gubernatis, Wilhelmshaven • Professor Dr. phil. Hartmut Kliemt, Duisburg • Professor Dr. jur. Dr. med. Christian Kopetzki, Wien • Professor Dr. med. Hans Jürgen Schlitt, Regensburg • Professor Dr. jur. Jochen Taupitz, Mannheim

Project Coordination: Dr. phil. Margret Engelhard, Dipl.-Biol.
Tel./e-mail: +49 (0) 2641 973-305 • margret.engelhard@ea-aw.de

Duration: 07/03–06/06

NANOMATERIALS, NANODEVICES, NANOCOMPUTING DETERMINATION OF PRESENT POSITION AND PERSPECTIVES (COMPLETED)

Nanotechnology is considered a key technology of the 21st century. It allows a far-reaching miniaturization and thereby opens ways to new products with enhanced and in some cases completely new functionalities.

Investigating this new technology raises questions that are traditionally dealt with separately by the different scientific disciplines. However, in order to provide decision makers with recommendations for action in the relevant societal sectors such as politics, economy and research, there must be a dialogue among the various scientific departments, transcending the borders between the single disciplines and dealing not only with purely scientific and technological considerations but also including such things as the philosophical aspects of science, as well as the pertinent economic and toxicological implications.

To serve as an example, the project examined which areas of Nanotechnology will assume societal relevance in the near future and how a scientific shaping of this technology development can be realized. In doing so, the definition of Nanotechnology devised by the study group "Miniaturization and New Materials" of the Europäische Akademie has been used.

Publication: G. Schmid, H. Brune, H. Ernst, W. Grünwald, A. Grunwald, H. Hofmann, P. Janich, H. Krug, M. Mayor, W. Rathgeber, U. Simon, V. Vogel, D. Wyrwa: *Nanotechnology. Assessment and Perspectives*. Springer-Verlag, Berlin 2006 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 27), ISBN 3-54032819-X

Project Group:

Professor Dr. rer. nat. Günter Schmid, Essen (chair) • Professor Dr. rer. pol. Holger Ernst, Koblenz • Dr. rer. nat. Werner Grünwald, Stuttgart • Professor Dr. rer. nat. Armin Grunwald, Karlsruhe • Professor Dr.-Ing. Heinrich Hofmann, Lausanne • Professor Dr. phil. Peter Janich, Marburg • Dr. rer. nat. Harald Krug, Karlsruhe • Dr. phil. nat. Marcel Mayor, Karlsruhe • Professor Dr. rer. nat. Ulrich Simon, Aachen • Professor Dr. phil. nat. Viola Vogel, Zürich

Project Coordination: Dr.-Ing. Wolfgang Rathgeber

Contact: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.

Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 7/03–6/06

PROJECT GROUP

EUROPEAN SOCIAL POLICY

(COMPLETED)

The enlargement of the European Union through the inclusion of new member states brings a significant widening of economic gaps as well as structural differences of the political and legal institutions of the national social systems. The needs of coordination and harmonization of the institutions and measures of social policy between the member states and between these and the legal and political actions at Union level will not only augment, but will become increasingly complex as well.

Issues of particular interest in this regard are: the comparison of absolute or uniform versus relational standards of poverty or social need, the effects of different demographic patterns and of international migration and workforce mobility, legal aspects of contribution duties and participation rights in competing social systems, conflicting relations between goals of social justice and aims of economic efficiency, and questions on how, by which community and to what degree equality has to be guaranteed. The project focused on the analysis of the needs of political measures, in terms of available options of action and of feasible objectives, which have to be implemented in order to realize a sufficient level of international harmonization and integration.

The different branches of the social system – e.g. welfare aid, social insurance, unemployment insurance, pension scheme, health insurance, etc. – have been considered from this perspective of needs and opportunities of political action on a national as well as Union level.

Publication: B. v. Maydell, K. Borchardt, K.-D. Heuke, R. Leitner, R. Muffels, M. Quante, P.-L. Rauhala, G. Verschraegen, M. Żukowski: *Enabling Social Europe*. Springer-Verlag, Berlin 2006 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 26, ISBN 3-540-29771-5)

Project Group:

Professor Dr. jur. Bernd Baron von Maydell, Sankt Augustin (chair) • Professor Dr. rer. pol. Klaus-Dirk Henke, Berlin • Professor Dr. Ruud Muffels, Tilburg • Professor Dr. phil. Michael Quante, Essen • Professor Dr. Pirkko-Liisa Rauhala, Ph.D., Helsinki • Dr. Gert Verschraegen, Leuven • Professor Dr. Maciej Żukowski, Poznan

Project Coordination: Dott. Rupert Leitner

Contact: Dr. med. Felix Thiele, M.Sc.

Tel./e-mail: +49 (0) 2641 973-304 • felix.thiele@ea-aw.de

Duration: 1/03–6/05

FUNCTIONAL FOODS

(COMPLETED)

Functional Foods represent the third generation of healthy foods and introduce a new concept in food production: the alteration of the physical structure and the chemical composition of food products in order to achieve particular effects on body functions.

In some cases, these alterations constitute a development on the borderline between food and medicaments (i.e. Nutraceuticals) which specifically target risk reduction of certain diseases. The emergence of these foods will change further common perceptions of food and health and could possibly have important socioeconomic consequences.

The project was designed as an interdisciplinary expert programme that analysed the consequences of the emergence of functional foods in:

- individual health (cardiovascular diseases, cancer, etc.);
- national health programmes (health care costs, productivity, etc.);
- food industry (food manufacturing, retailing, pricing);
- regulations (precautionary principle, health claims, labelling);
- public perceptions (risk evaluations);
- normative questions (acceptability criteria).

Publication: R. Chadwick, S. Henson, G. Koenen, M. Liakopoulos, C. Midden, B. Moseley, A. Palou, G. Rechkemmer, D. Schröder, A. von Wright: *Functional Foods*. Springer-Verlag, Berlin 2004, ISBN 3-540-20120-3 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 20)

Project Group:

Professor Dr. Ruth Chadwick, Lancaster (chair) • Professor Spencer Henson, Ph.D., B.Sc., Guelph • mr. Gerrit Koenen, Den Haag • Professor Dr. Cees Midden, Eindhoven • Professor Dr. Bevan Moseley, Reading • Professor Andreu Palou, Mallorca • Professor Dr. rer. nat. Dr. rer. nat. habil. Gerhard Rechkemmer, München • Dr. Doris Schröder, Preston • Professor Dr. Atte von Wright, Kuopio

Project Coordination: Miltos Ladikas, Ph.D.

Contact: Dr. med. Felix Thiele, M.Sc.

Tel./e-mail: +49 (0) 2641 973-304 • felix.thiele@ea-aw.de

Duration: 1/01–5/04

TAMI

TECHNOLOGY ASSESSMENT (TA) IN EUROPE – BETWEEN METHOD AND IMPACT (COMPLETED)

The main objective of the two year EU-project TAMI was to create and promote a structured dialogue within the Technology Assessment community as well between TA-experts and policymakers. Two groups (method and impact), from thirteen TA-institutes around Europe, worked on a common reference system to identify best practices relative to policy needs.

In detail, the method group worked out a common methodology for Technology Assessment which included a European definition of TA and the framework "from method to impact". According to the definition, "TA is a scientific, interactive and communicative process which aims to contribute to the formation of public and political opinion on societal aspects of science and technology". Based on the TA-definition, the framework "Method to Impact" illustrates the different, often parallel, steps of a TA-project which are the situation appreciation, goal setting, project design and project implementation. The project design should be defined in each individual case and guarantee the quality of the project. The impact group revolved primarily around the issue of the meaning of the term "impact" and its breaking-down into identifiable goals. Impact was defined as "any change with regard to the state of knowledge, opinions held or actions taken by relevant actors in the process of societal debate on technological issues".

To structure the different goals TA can play, the "typology of impact" has been developed which is build up as a matrix. The matrix combines the different dimensions of impact with the different dimensions of issue, e.g. policy analysis differentiates between the roles "policy objectives explored" and "existing policies assessed". Each goal has been additionally illustrated by a case study. In the future, it should be possible to choose the adequate method with respect to the goal a project wants to reach. TAMI has been coordinated by the Europäische Akademie.

Publication: M. Decker, M. Ladikas (eds.): *Bridges between Science, Society and Policy. Technology Assessment – Methods and Impacts*. Springer-Verlag, Berlin 2004, ISBN 3-540- 21283-3 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 22)

Members:

- Europäische Akademie GmbH (EA), Germany
- Parliamentary Office of Science and Technology (POST), England
- Institut für Technologiefolgenabschätzung und Systemanalyse (ITAS), Germany
- Büro für Technikfolgen-Abschätzung beim Deutschen Bundestag (TAB), Germany
- Akademie für Technikfolgenabschätzung in Baden-Württemberg (CTA), Germany
- Danish Board of Technology (DBT), Denmark
- Centre for Science and Technology Studies (TA-SWISS), Switzerland
- Centre of Science, Technology and Society Studies at the Institute of Philosophy of the Academy of Sciences (STS Centre), Czech Republic
- Warsaw School of Economics – Institute of Modern Civilisation (SHG), Poland
- Consejo Superior de Investigaciones Científicas (CSIC), Spain

Additional Membership:

- Rathenau Institute, The Netherlands
- Flemish Institute for Science and Technology Assessment (viWTA), Belgium
- Committee on Industry, External Trade, Research and Energy, European Parliament (EP), Belgium

Project Coordination: Dr. rer. nat. Michael Decker, Dipl.-Phys.
Miltos Ladikas, Ph.D.

Contact: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 1/02–12/03

PROJECT GROUP

EMBRYO EXPERIMENTATION IN EUROPE BIO-MEDICAL, LEGAL AND PHILOSOPHICAL ASPECTS (COMPLETED)

Recent advances in embryology and reproductive biology have opened up new ways to treat a wide range of medical problems. They rank from new options in fertility treatment and preimplantation genetic diagnosis to stem-cell-based therapies for debilitating diseases. Since all these approaches involve the manipulation of human gametes, embryos or embryonic cells, and could also permit more contentious uses, they have stimulated a controversial debate as to what aims are desirable and to what extent experiments on human embryos are morally permissible.

The situation is further complicated by the facts that scientific projects are increasingly realized in international co-operation and that patients are already seeking medical treatment wherever it is available. In view of the European harmonization process and the situation described, the project focused on the question of how research on human embryos can be dealt with on an international or supranational level and, against the background of different cultural identities, whether common international regulations are sensible at all. Besides the biomedical aspects, the study examined the different legal traditions in the member countries and illustrated the public opinion about embryo research.

Publication: D. Solter, D. Beylvelde, M. B. Friele, J. Hołowka, H. Lillie, R. Lovell-Badge, C. Mandla, U. Martin, R. Pardo Avellaneda: *Embryo Research in Pluralistic Europe*. Springer-Verlag, Berlin 2003, ISBN 3-540-20379-6 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 21)

Project Group:

Professor Dr. Davor Solter, M.D., Ph.D., Freiburg (chair) • Professor Dr. jur. Deryck Beylvelde, Sheffield • Professor Dr. med. Axel Haverich, Hannover • Professor Dr. Jacek Hołowka, Warsaw • Professor Dr. jur. Hans Lillie, Halle • Professor Dr. Robin Lovell-Badge, London • Priv.-Doz. Dr. rer. nat. Ulrich Martin, Hannover

Project Coordination: Minou Bernadette Friele, M.A.

Contact: Dr. med. Felix Thiele, M.Sc.

Tel./e-mail: +49 (0) 2641 973-304 • felix.thiele@ea-aw.de

Duration: 1/01–12/03

ENVIRONMENTAL STANDARDS

LOW DOSE EFFECT RELATIONS AND THEIR RISK EVALUATION
(COMPLETED)

The ever-increasing releases of harmful agents due to human activities have led to heavy pollution in some areas of the world. In order to protect human health and the environment, environmental standards that shall limit the release and the concentration of those toxic agents into the environment and hence the exposure to it, have to be established. The related assessment and decisionmaking procedures have to be based on solid, scientific data about the effects and mechanisms of these agents as well as on ethical, social and economic aspects.

For risk evaluation, the knowledge of the dose-response curve is an essential prerequisite. Dose responses without a threshold dose are most critical in this connection. Such dose responses are assumed for mutagenic and carcinogenic effects which, therefore, dominate also the discussion in this book. In the environmentally important low dose range, risk estimation can only be achieved by extrapolation from higher doses with measurable effects. The extrapolation is accompanied by uncertainties which makes risk evaluation as well as risk communication frequently problematic.

In order to ensure rational efficient and fair decisions beyond a sound scientific assessment the dialogue between disciplines, with the affected people and with the general public is necessary. The study addressed the whole range of relevant and essential aspects of risk evaluation and standard setting. Starting with the ethical foundations, the sound analysis of recent scientific findings, the frame for further reflections by theory of cognition, psychosocial sciences, and jurisprudence has been set. The study ends up with concluding recommendations for coping with the recent problems of standard setting in the field of environmentally relevant low doses.

Publication: C. Streffer, H. Bolt, D. Føllesdal, P. Hall, J. G. Hengstler, P. Jakob, D. Oughton, K. Prieß, E. Rehbinder, E. Swaton: *Low Dose Exposures in the Environment. Dose-Effect Relations and Risk Evaluation*. Springer-Verlag, Berlin 2004, ISBN 3-540-21083-0 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 23)

Project Group:

Professor Dr. rer. nat. Dr. h.c. Christian Streffer, Essen (chair) • Professor Dr. med. Dr. rer. nat. Hermann M. Bolt, Dortmund • Professor Dagfinn Føllesdal, Ph.D., Oslo/Stanford • Per Hall, M.D., Ph.D., Stockholm • Priv.-Doz. Dr. med. Jan-Georg Hengstler, Mainz • Dr. rer. nat. Peter Jacob, Neuherberg • Professor Deborah Oughton, Ph.D., Aas/Oslo • Professor Dr. jur. Eckard Rehbinder, Frankfurt a. M. • Dr. phil. Elisabeth Swaton, Wien

Project Coordination: Dr. rer. nat. Kathrin Prieß, M.ès.Sc.

Contact: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.

Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 1/01–5/04

PROJECT GROUP

SUSTAINABLE DEVELOPMENT AND INNOVATION IN THE ENERGY SECTOR

(COMPLETED)

The concept of sustainable development is central for the development and implementation of policies concerning environmental issues. The concept of innovation plays the same role in economic and scientific fields. The terminological specification of these concepts is intended to help those involved in the corresponding discussions to grasp these more precisely and to organize them specifically towards their particular ends. Furthermore it is generally accepted that sustainable development – however defined – has to rely on innovative technologies. To examine this relation more closely the focus is on the energy sector which shows paradigmatically the bias between an enormous resource consumption which makes this sector promising for reduction and the importance for all areas of life which limits the reduction potential dramatically.

The project group structured its work around the question of what can be done in terms of sustainable development with innovations alone. On a solid terminological basis recommendations are given for further research agendas as well as for the relevant policy areas.

Publication: U. Steger, W. Achterberg, K. Blok, W. Frenz, C. Gather, G. Hanekamp, D. Imboden, M. Jahnke, M. Kast, R. Kurz, H. G. Nutzinger, Th. Ziesemer: *Nachhaltige Entwicklung und Innovation im Energiebereich*. Springer-Verlag, Berlin 2002, ISBN 3-540-44295-2 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 18)

Project Group:

Professor Dr. rer. pol. Ulrich Steger, Lausanne (chair) • Professor Dr. phil. Wouter Achterberg, Amsterdam † • Professor Dr. Cornelis Blok, Ph.D., Utrecht • Professor Dr. jur. Walter Frenz, Aachen • Professor Dr. sc. nat. Dieter Imboden, Zürich • Professor Dr. rer. pol. Rudi Kurz, Pforzheim • Professor Dr. rer. pol. Hans G. Nutzinger, Kassel • Professor Dr. rer. pol. Thomas Ziesemer, Maastricht

Project Coordination: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 9/00–12/03

CLIMATE PREDICTION AND CLIMATE PRECAUTIONS (COMPLETED)

The long-term variability of the climate and probable influence thereupon by humans themselves lead us to expect grave repercussions for man and the environment. Findings and projections on the part of research into climate and its consequences to date have for the first time led to the formulation of internationally binding commitments to reduce the emission of greenhouse gases.

The legitimization of appropriate measures, however, is to be reviewed with regard to existing uncertainties of climatological assessments, especially with regard to the consequences of a global change in climate and the conception and implementation of adequate interventionary controls. The interdisciplinary project aimed at critical stock-takings of the current status of scientific knowledge with regard to future climate developments and its consequences for society and the environment. Further reflection from the point of view of science, philosophy of science, political science, ethics, law and the economy analyzed the criteria for action in the climatic context and produced a comparative evaluation. Finally, conclusions for climate research and policy were given.

Publication: M. Schröder, M. Claussen, A. Grunwald, A. Hense, G. Klepper, S. Lingner, K. Ott, D. Schmitt, D. Sprinz: *Klimavorhersage und Klimavorsorge*. Springer-Verlag, Berlin 2002, ISBN 3-540-43239-6 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 16)

Project Group:

Professor Dr. jur. Meinhard Schröder, Trier (chair) • Professor Dr. rer. nat. Martin Claussen, Potsdam • Professor Dr. rer. nat. Armin Grunwald, Karlsruhe • Professor Dr. rer. nat. Andreas Hense, Bonn • Professor Gernot Klepper, Ph.D., Kiel • Professor Dr. phil. Konrad Ott, Greifswald • Professor Dr. rer. pol. Dieter Schmitt, Essen • Detlef Sprinz, Ph.D., Potsdam

Project Coordination: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 12/98–12/01

PROJECT GROUP

ELECTRONIC SIGNATURES CULTURAL RULES AND MORAL RESPONSIBILITY (COMPLETED)

Electronic signatures are broadly seen as the basis-technology of a certain and legally binding digital communication and the E-Commerce. In order to guarantee the reliability and trust-worthiness of the technically mediated communication in open networks also between anonymous partners, high requests are put at the technical and legal formation of the technology.

In addition, the high-complex technology raises up new economic, sociological, psychological and philosophical questions: With the transition from handwritten signature on paper to electronic signature (announce for itself not less than a global culture-change), this formation necessitates an interdisciplinary and international perspective.

Publication: C. J. Langenbach, O. Ulrich (eds.): *Elektronische Signaturen. Kulturelle Rahmenbedingungen einer technischen Entwicklung*. Springer-Verlag, Berlin 2002, ISBN 3-540-42659-0 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 12)

Project Group:

Dr. rer. pol. Otto Ulrich, Bonn (chair) • Professor Dr. sc. phil. Gerhard Banse, Karlsruhe • Dr. jur. Helmut Bäumler, Kiel • Professor Dr. jur. Jos Dumortier, Leuven • Dr. jur. Riccardo Genghini, Mailand • Professor Dr. phil. Andrzej Kiepas, Katowice • Professor Dr. jur. Bernd Lutterbeck, Berlin • Dr. phil. Petr Machleidt, Prag • Professor Dr. rer. nat. Andreas Pfitzmann, Dresden • Professor Dr. phil. Georg Rudinger, Bonn • Professor Dr. sc. pol. Reinhard Voßbein, Wuppertal

Project Coordination: Dr.-Ing. Christian J. Langenbach

Contact: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 9/99–12/01

ROBOTICS

OPTIONS FOR THE SUBSTITUTABILITY OF HUMANS

(COMPLETED)

Robots have already occupied first niches in the service market. Equipped with sensors, mobility and robust control, they assume tasks which otherwise would have to be done by humans. The progress made in robotics' influencing research areas like artificial intelligence, mechatronics and microsystem-technology present the possibility that activities previously executed exclusively by humans may be taken over by machines.

The task was to find criteria suitable to judge the substitution of human beings by artificial agents: Should, can and may human beings be substituted?

Publication: T. Christaller, M. Decker, J.-M. Gilsbach, G. Hirzinger, K. Lauterbach, E. Schweighofer, G. Schweitzer, D. Sturma: *Robotik. Perspektiven für menschliches Handeln in der zukünftigen Gesellschaft*. Springer-Verlag, Berlin 2001, ISBN 3-540-42779-1 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 14)

Project Group:

Professor Dr. rer. nat. Thomas Christaller, Sankt Augustin (chair) • Professor Dr. med. Joachim Gilsbach, Aachen • Professor Dr.-Ing. Gerd Hirzinger, Oberpfaffenhofen • Professor Dr. med. Dr. sc. Karl Lauterbach, Köln • Professor Dr. jur. Dr. soc. oec. Erich Schweighofer, Wien • Professor Dr.-Ing. Gerhard Schweitzer, Zürich • Professor Dr. phil. Dieter Sturma, Essen

Project Coordination: Dr. rer. nat. Michael Decker, Dipl.-Phys.

Contact: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.

Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 2/99–12/01

PROJECT GROUP

ETHICAL QUESTIONS AND SOCIETAL CONSEQUENCES OF HUMAN GENETICS

(COMPLETED)

Research on the human genome and the diagnostic and clinical areas of application of its results pose ethical questions in manifold ways. These questions derive from the obtained multitude of options to act and from the decision uncertainty, resulting from this multitude. For the treatment of many of these questions there are no attuned and accepted societal procedures.

The work of the project group has been focused on the consequences of the application of genetic diagnostics in the health care system. The group investigated to what extent genetic diagnostics should be obtainable on prescription only. Moreover the group dealt with the probable impact of genetic diagnostics on the insurance market.

The project has been carried out as accompanying ethical research in the BioRegion Rhein-Neckar-Dreieck. The task of the project group has been to develop recommendations that will have an effect in and beyond the BioRegion.

Publication: C. R. Bartram, J. P. Beckmann, F. Breyer, G. Fey, C. Fonatsch, B. Irrgang, J. Taupitz, K.-M. Seel, F. Thiele: *Humangenetische Diagnostik. Wissenschaftliche Grundlagen und gesellschaftliche Konsequenzen*. Springer-Verlag, Berlin 2000, ISBN 3-540-67945-6 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 7)

Project Group:

Professor Dr. med. Claus R. Bartram, Heidelberg (chair) • Professor Dr. phil. Jan P. Beckmann, Hagen • Professor Dr. rer. pol. Friedrich Breyer, Konstanz • Professor Dr. phil. Christa Fonatsch, Wien • Professor Dr. rer. nat. Georg Fey, Erlangen • Professor Dr. phil. Dr. theol. Bernhard Irrgang, Dresden • Professor Dr. jur. Jochen Taupitz, Mannheim

Project Coordination: Dr. med. Felix Thiele, M.Sc.

Tel./e-mail: +49 (0) 2641 973-304 • felix.thiele@ea-aw.de

Duration: 4/98–3/00

XENOTRANSPLANTATION OF CELLS,
TISSUES OR ORGANS
SCIENTIFIC DEVELOPMENTS, ETHICAL IMPLICATIONS
AND SOCIAL RELEVANCE
(COMPLETED)

The life-sustaining or quality of life improving substitution of defective human organs by human donor organs is an almost routinely executed medical measure nowadays. The supply of donor organs is, however, still much lower than the demand. As a consequence, in parallel to the further development of organ transplantation techniques, methods involving the transplantation of non-human donor organs are receiving considerable attention. In this context the use of artificial organs, organ restitution and – the most discussed method at that time – xenotransplantation is being considered. The goal of the interdisciplinary project group is to probe the medical possibilities of xenotransplantation, analyze its scientific difficulties, its ethical implications and its social relevance and thus contribute to a professionally well-founded and ethically justified "status quo" report for public discussion.

Publication: J. P. Beckmann, G. Brem, F. W. Eigler, W. Günzburg, C. Hammer, W. Müller-Ruchholz, E. M. Neumann-Held, H.-L. Schreiber: *Xenotransplantation von Zellen, Geweben oder Organen. Wissenschaftliche Entwicklungen und ethisch-rechtliche Implikationen*. Springer-Verlag, Berlin 2000, ISBN 3-540-41376-6 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 8)

Project Group:

Professor Dr. phil. Jan P. Beckmann, Hagen (chair) • Professor Dr. med. vet. Dr. med. vet. habil. Dr. h.c. Gottfried Brem, Wien • Professor Dr. med. Friedrich Wilhelm Eigler, Essen • Professor Dr. med. Dr. rer. nat. habil. Walter H. Günzburg, Wien • Professor Dr. med. Dr. med. vet. Claus Hammer, München • Professor Dr. med. Dr. med. dent. Dr. h.c. Wolfgang Müller-Ruchholz, Kiel • Professor Dr. jur. Dr. h.c. mult. Hans Ludwig Schreiber, Göttingen

Project Coordination: Dr. rer. nat. Eva M. Neumann-Held

Contact: Dr. med. Felix Thiele, M.Sc.

Tel./e-mail: +49 (0) 2641 973-304 • felix.thiele@ea-aw.de

Duration: 4/98–3/00

PROJECT GROUP

BIODIVERSITY

SCIENTIFIC FOUNDATIONS AND SOCIAL RELEVANCE

(COMPLETED)

The destruction of biodiversity is a controversially discussed problem which is closely connected with the development of modern societies. Usually, it is presupposed that the scientific description and quantification of biodiversity is unambiguously clarified. In contrast to this expectation, neither biology nor other disciplines dealing with corresponding parameterisations, e.g. economics, have presented uniform concepts which can serve as a basis for measurability and comparability of biodiversity.

This project focused on the question as to which scientific methods and results are necessary to deal with 'biodiversity' in a well-founded and scientifically justified way.

Publication: P. Janich, M. Gutmann, K. Prieß (eds.): *Biodiversität. Wissenschaftliche Grundlagen und gesellschaftliche Relevanz*. Springer-Verlag, Berlin 2001, ISBN 3-540-42658-2 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 10)

Project Group:

Professor Dr. phil. Peter Janich, Marburg (chair) • Professor Dr. rer. nat. Rudolf Amann, Bremen • Dr. phil. nat. Klaus Ammann, Bern • Professor Dr. rer. nat. Heinz Saedler, Köln • Professor Dr. phil. Fritz F. Steininger, Frankfurt a. M. • Dr. rer. nat. Michael Turkay, Frankfurt a. M. • Professor Dr. jur. Dr. h.c. Rüdiger Wolfrum, Heidelberg

Project Coordination: Dr. phil. Dr. phil. nat. Mathias Gutmann (until 10/99);
Dr. rer. nat. Kathrin Prieß, M.ès.Sc.

Contact: Dr. med. Felix Thiele, M.Sc.

Tel./e-mail: +49 (0) 2641 973-304 • felix.thiele@ea-aw.de

Duration: 10/97–10/99

ENVIRONMENTAL STANDARDS
 COMBINED EXPOSURES AND THEIR EFFECT ON HUMAN
 BEINGS AND THEIR ENVIRONMENT
 (COMPLETED)

Based on a study of the mechanisms involved, criteria are formulated which, in spite of the overwhelming complexity of the problem, provide a guide towards achieving desired environmental quality goals. The study aims to uncover areas where further research is needed and to show possible solutions.

The results are intended to enable the expedient design of policies and economic processes for establishing environmental standards, in regard of combined exposures and taking into account societal norms and perceptions.

Publication: C. Streffer, D. Cansier, C. F. Gethmann, R. Guderian, D. Henschler, G. Pöch, E. Rehbinder, O. Renn: *Umweltstandards. Kombinierte Expositionen und ihre Auswirkungen auf den Menschen und seine Umwelt*. Springer-Verlag, Berlin 2000, ISBN 3-540-66807-1 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 5)

Project Group:

Professor Dr. rer. nat. Dr. med. h.c. Christian Streffer, Essen (chair) • Professor Dr. rer. pol. Dieter Cansier, Tübingen • Professor Dr. phil. Carl Friedrich Gethmann, Bad Neuenahr-Ahrweiler • Professor Dr. agr. Robert Guderian, Essen • Professor Dr. med. Dietrich Henschler, Würzburg • Professor Dr. med. Gerald Pöch, Graz • Professor Dr. jur. Eckard Rehbinder, Frankfurt a. M. • Professor Dr. rer. pol. Ortwin Renn, Stuttgart

Project Coordination: Dr. phil. Gerd Hanekamp, Dipl.-Chem.

Contact: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
 Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 1/97–1/00

PROJECT GROUP

TECHNOLOGY ASSESSMENT OF THE RESEARCH AND DEVELOPMENT OF NEW MATERIALS

(COMPLETED)

It is the task of the Europäische Akademie to establish contacts in Central and Eastern European countries. In this project an inventory of the situation with respect to Technology Assessment, especially in the countries of Poland, the Czech Republic and Hungary, was worked out. The goal is to systematically record relevant information in the areas of fundamental policy decisions and of legal regulations respectively, of institutions and private persons, of subjects and projects as well as of cooperative relationships and publications. In summary, it can be said that, because of the different political, economic, legal, historic etc. conditions, there is a difference in the demands as well as in the methodology of Technology Assessment. These different conditions can lead to new, innovative developments in Technology Assessment.

Publication: H. Harig, C. J. Langenbach (eds.): *Neue Materialien für innovative Produkte: Entwicklungstrends und gesellschaftliche Relevanz*. Springer-Verlag, Berlin 1999, ISBN 3-540-66063-1 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 3)

Project Group:

Professor Dr.-Ing. Helmuth Harig, Bremen (chair) • Professor Dr. rer. nat. Armin Grunwald, Karlsruhe • Professor Dr.-Ing. Heinrich Hofmann, Lausanne • Professor Dr. rer. nat. Wolfgang Kaysser, Köln • Professor Dr.-Ing. Rainer Renz, Kaiserslautern • Professor Dr. rer. nat. Günter Schmid, Essen

Project Coordination: Dr.-Ing. Christian J. Langenbach

Contact: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 1/97–12/99

POST GRADUATE MASTER STUDY PROGRAMME IN
MEDICAL ETHICS

In cooperation with the FernUniversität in Hagen and the Johannes-Gutenberg-Universität Mainz the Europäische Akademie started a post-graduate study programme (M.A. in Medical Ethics) in 2005. This programme takes into consideration that during the past few years the importance of medical ethics has considerably increased as regards clinical practice, medical research and health policy. Due to medical progress as well as societal and economic changes the capability for ethical reflections has turned out to be a required secondary competence for doctors and other people working in medical sectors in their professional workaday routine.

The study programme comprises four-terms of distant learning. The method of distant learning, which has been used successfully at the FernUniversität in Hagen for many years, enables students to acquire and improve their competence in medical ethics parallel to their professional career.

For further information please contact:

Professor Dr. phil. Annemarie Gethmann-Siefert
Institut für Philosophie / Lehrgebiet Philosophie III
FernUniversität in Hagen
Universitätsstraße 41 / ESG
58084 Hagen
Tel.: +49 (0) 2331 9872-748
Fax: +49 (0) 2331 9872-107
e-mail: medizinethik@fernuni-hagen.de
www.medicinethik.eu

Coordination: Dipl.-Päd. Ulrike Henckel

Tel./e-mail: +49 (0) 2641 973-310/ulrike.henckel@ea-aw.de

STUDY

SPATIAL PLANNING AND THE VIRTUALISATION OF LIFE-WORLDS

(CURRENT)

Recently, modern information and communication technology (ICT) became an inevitable factor of human life. An upcoming challenge arises for the public from the emergence of IT into communal life and the development of urban and rural regions. For example, the growing markets for e-shopping or e-working will change respective demands for mobility and housing, significantly. This will have to be considered in the course of rational spatial planning together with other probably interfering megatrends, like the consequences of demographic change in Europe.

This interference might influence the above mentioned demands for spatial planning, substantially. Moreover, spatial planning, IT and social politics will have to deal with the growing virtualisation of daily life. The ambiguity of citizens' expectations towards privacy and societal participation seems to be central, here. The critical reflecting of this ambiguity might offer normative knowledge, which could enable decision makers and planners not to push possibly undesirable developments.

This study is part of an umbrella project on *spatial impacts of virtualisation and its technological and societal preconditions* of the Technische Universität Kaiserslautern (Professor Dr. G. Steinbach). The project is supported by the programme "Wissen schafft Zukunft" of the Federal State Rheinland-Pfalz.

Coordination: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 07/06–06/07

THE RESTORATION AND ENHANCEMENT OF HUMAN CAPACITIES BY NEURONAL IMPLANTS

(CURRENT)

The nervous system belongs to the most important physiological systems of the human body and nearly every organ is under neuronal influence. Disturbances of the neuronal system can have, therefore, far reaching health consequences. In the 1960s it was still hardly conceivable to intervene in this complex system with the aim of restoring failing functions. Due to enormous progress it became possible, for example, to help deaf people with so-called cochlea implants so that 80% to 90% can comprehend spoken language.

Based on this success story it is now being discussed whether such techniques can also be used for not only restoring but also enhancing the capacities of healthy humans.

The study – by way of a doctoral thesis – will examine the ethical, legal and social implications of these developments – including questions on the moral evaluation of enhancement techniques, the assessment of the potential for abuse, safety and liability issue, and problems of fair distribution.

Coordination: Dr. med. Felix Thiele, M.Sc.

Tel./e-mail: +49 (0) 2641 973-304 • felix.thiele@ea-aw.de

Duration: 4/06–3/09

STUDY

MINIATURIZATION AND NEW MATERIALS

(COMPLETED)

The possibilities of Nanotechnology have effects on almost every sector of human existence. However, in the public debate, areas of application in medicine, electronics or materials science that are apparently unfeasible in the near future are outlined as well. As a result, the possibilities of this technology that are already established today, or will be available in the near future, are pushed into the background. The study group shall clarify the question whether the notion "Nano" is overstressed in the current discussion and is only being abused as an instrument to mobilize research funds.

The study examines the transition from the micro- to the nanoworld, referring to physical properties. This leads to the suggestion of a definition which can be used for the classification of scientific endeavours currently accounted for as Nanotechnology.

Documentation: G. Schmid, M. Decker, H. Ernst, H. Fuchs, W. Grünwald, A. Grunwald, H. Hofmann, M. Mayor, W. Rathgeber, U. Simon, D. Wyrwa: *Small Dimensions and Material Properties. A Definition of Nanotechnology*, 11/03 (Graue Reihe 35)

Members:

Professor Dr. rer. nat. Günter Schmid, Essen (chair) • Professor Dr. rer. pol. Holger Ernst, Koblenz • Professor Dr. rer. nat. Harald Fuchs, Münster • Dr. rer. nat. Werner Grünwald, Stuttgart • Professor Dr. rer. nat. Armin Grunwald, Karlsruhe • Professor Dr.-Ing. Heinrich Hofmann, Lausanne • Dr. phil. nat. Marcel Mayor, Karlsruhe • Professor Dr. rer. nat. Ulrich Simon, Aachen

Coordination: Dr. Michael Decker, Dipl.-Phys.

Contact: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.

Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 1/03–6/03

REASONING GOALS OF CLIMATE PROTECTION
 SPECIFICATION OF ART. 2 UN FCCC
 (COMPLETED)

The international climate policy has widely accepted the goal to prevent possible dangers from anthropogenic climate changes to the society and to the environment according to Art. 2 of UN FCCC. Finding of further concrete measures – which are necessary for the upcoming commitment periods of the Kyoto-Protocol – will need a sound base for adequate precaution and fair distribution of residual risks due to climate change.

The project aimed at working out a reasonable and policy compatible methodology to formulate and propose acceptable goals of international climate protection. Moreover, recommendations for an improvement of normative measures were given.

The results of this interdisciplinary effort are based upon the project report “Klimavorhersage und Klimavorsorge” by Schröder et al. (Springer-Verlag, 2002). This research project was conducted on behalf of the Federal Environmental Agency of Germany (Umweltbundesamt, UBA).

Documentation: K. Ott, G. Klepper, S. Lingner, A. Schäfer, J. Scheffran, D. Sprinz: *Konkretisierungsstrategien für Art. 2 der UN Klimarahmenkonvention*, 4/04 (Graue Reihe 37)

Members:

Professor Gernot Klepper, Ph.D., Kiel • Professor Dr. phil. Konrad Ott, Greifswald • Detlef Sprinz, Ph.D., Potsdam

Assistance: Dipl.-Oec. Achim Schäfer, Greifswald • Dr. rer. nat. Jürgen Scheffran, Potsdam

Coordination: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
 Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Duration: 5/02–4/03

STUDY

TECHNOLOGY ASSESSMENT IN CENTRAL EUROPEAN AND EASTERN EUROPEAN COUNTRIES

(COMPLETED)

It is the task of the Europäische Akademie to establish contacts in Central and Eastern European countries. In this project an inventory of the situation with respect to Technology Assessment, especially in the countries of Poland, the Czech Republic and Hungary, was worked out. The goal is to systematically record relevant information in the areas of fundamental policy decisions and of legal regulations respectively, of institutions and private persons, of subjects and projects as well as of cooperative relationships and publications. In summary, it can be said that, because of the different political, economic, legal, historic etc. conditions, there is a difference in the demands as well as in the methodology of Technology Assessment. These different conditions can lead to new, innovative developments in Technology Assessment.

Documentation: G. Banse (ed.): *Technikfolgenbeurteilung in Ländern Mittel- und Osteuropas*, 6/98 (Graue Reihe No. 10 part I and II)

Publication:

G. Banse, C. J. Langenbach, P. Machleidt (eds.): *Towards the Information Society. The Case of Central and Eastern European Countries*. Springer-Verlag, Berlin 2000, ISBN 3-540-41643-9 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 9)

Coordination: Professor Dr. Gerhard Banse, Universität Cottbus

Duration: 3/97–2/99

PRACTICAL PHILOSOPHY (CURRENT)

Each process of Technology Assessment that will assist in preparing political decisions with contributions from the scientific point of view depends on some normative premises: the supposed standards of rationality, the criteria of adequacy for the reconstructive shaping of decision scenarios and, last but not least, general principles for action, that would be chosen by rational actors according to one set of standards or the other. Such standards, criteria and principles have always been a subject of philosophy, especially in disciplines such as the theory of argumentation (logic), the philosophy of science and ethics. The study group "Practical Philosophy" will critically discuss these traditions as relevant contemporary philosophical debates and incorporate its results in the work of the Europäische Akademie and its project groups.

Members:

Dr.-Ing. Bert Droste-Franke, Dipl.-Phys. • Thomas Engel, M.A. • Dr. phil. Margret Engelhard, Dipl.-Biol. • Dr. phil. Thorsten Galert, M.A. • Kristin Hagen, Ph.D. • Dipl.-Päd. Ulrike Henckel • Dr. rer. nat. Ruth Klüser, Dipl.-Chem. • Dr. rer. nat. Stephan Lingner, Dipl.-Geol. • Dr. rer. pol. Karsten Mause, Dipl.-Pol. • Dr. med. Felix Thiele, M.Sc.

Coordination: Dr. phil. Georg Kamp, M.A.

Tel./e-mail: +49 (0) 2641 973-308 • georg.kamp@ea-aw.de

STUDY GROUP

ETHICS IN SPACE

(COMPLETED)

In the last four decades space technology has achieved a high capability which led to the building of orbital stations and satellites for communications, earth observation and the positioning of earth-based mobile communicators. Germany has early played an active role in space research. With the participation in the new international space station Germany will open up new possibilities for space based experiments.

The main goal of the use of space technology is to obtain information, energy or material to enhance the quality of life on earth. This global dimension of scientific and technological development contains benefits but also new risks which involve the need to protect humans with the help of social, legal, ethical research based on moral reasoning in identifying ethical dilemmas. Within the framework of the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) a working group on the Ethics of Outer Space was set up. The study group supported the scientific work of this working group considering, in particular, ethical questions, the spatial limits of human action, the exploration of space, the scientific research of space, and the commercial utilization of outer space.

The study group finished its own work and its presentations by reporting about the UNESCO-project "The Ethics of Outer Space".

Publication: A. Pompidou: "The Ethics of Space Policy", Proceeding, UNESCO-COMEST and ESA, 4/00, C. F. Gethmann: "Humans in Space" and "Manned Space Travel as a Cultural Mission", Papers, Seminar of Paris on The Ethics of Outer Space, UNESCO-ESA, 9/99

Members:

Professor Dr. phil. Dr. phil. h.c. Carl Friedrich Gethmann • Dr. rer. nat. Stephan Lingner, Dipl.-Geol.

Coordination: Dr.-Ing. Christian J. Langenbach

Contact: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.

Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

PREVENTIVE SOIL PROTECTION
 MONITORING CONCEPTS AND ETHICAL ASPECTS
 (COMPLETED)

Almost unnoticed the land use practised up to now has led to a loss of soil quality which cannot meet future possibly higher demands posed on the soil.

The project dealt with the assessment of processes and aims of diagnosis, control and prevention of soil degradation on the basis of sustainability notions in current environmental politics. Corresponding goals with respect to environmental quality were assessed according to technical and ethical points of view. With regard to remote sensing, research was being carried out on the technical and strategic potential for the observation of soil damage or its indicators and for the verification of possible soil protection measures. Focal points of the research were new application areas for satellite-based, remote sensing systems and integrated data products. Parallel to this, research on the moral legitimation of a prudent land use was conducted.

Preliminary results have already been made public in various scientific publications and oral presentations.

Documentation: S. Lingner, E. Borg: *Präventiver Bodenschutz. Problemdimensionen und normative Grundlagen*, 9/00 (Graue Reihe 23)

Members:

Dipl.-Ing. Erik Borg, Deutsches Zentrum für Luft- und Raumfahrt • Professor Dr. rer. nat. Armin Grunwald, Karlsruhe • Dipl.-Biol. Ulrich Rehberg, Koblenz-Neuwied

Coordination: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
 Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

RESEARCH FELLOWSHIP PROGRAMME

The research fellowship programme offers highly qualified researchers from European countries the opportunity to work for three to sixth month at the Europäische Akademie on the consequences of scientific and technological advance. The research projects should be related to research projects of the Europäische Akademie.

Precondition for an application is:

- doctor's degree and additional research experience, which is to be documented by publications in recognized scientific journals
- adequate knowledge of the German or English language

Applications may be submitted at any time by presenting the following documents:

- Curriculum Vitae
- Certificate of the doctor's degree
- List of publications
- Exposé of the planned project
- Statement of existing financial support

Please address your application to:

Europäische Akademie Bad Neuenahr-Ahrweiler GmbH
Dr. phil. Margret Engelhard, Dipl.-Biol.
Wilhelmstraße 56
53474 Bad Neuenahr-Ahrweiler

Contact: Dr. phil. Margret Engelhard, Dipl.-Biol.

Tel./e-mail: +49 (0) 2641 973-305 • margret.engelhard@ea-aw.de

ANTHROPOLOGICAL BASICS OF MEDICAL ETHICS

(Dipl.-Päd. Ulrike Henckel; current)

The modern demand for giving ethics an anthropological basis means for medical ethics that physicians' act must have its basics in an understanding of humans as an acting character.

This anthropology aims at an integrate definition of human beings and has to be a fundamental basis for medicine as a natural science of humans. The purposes of medical actions have to be discussed and the medical techniques have to be subordinated to them. The example will be the relation between the physician and the patient, particularly the relationship between the physician and the patient who is not able to decide for himself. This requires a conception of a tutorial acting.

The Ph.D.-thesis by Dipl.-Päd. Ulrike Henckel is being supervised by Professor Dr. Annemarie Gethmann-Siefert at the FernUniversität Hagen.

Contact: Dipl.-Päd. Ulrike Henckel

Tel./e-mail: +49 (0) 2641 973-310 • ulrike.henckel@ea-aw.de

DOCTORATE PROGRAMME

EXPLANATORY PATTERNS AND THEORETICAL STRUCTURES IN GENETICS

THE PERSPECTIVE OF PHILOSOPHY OF SCIENCE

(Dr. rer. nat. Klaus-M. Seel, Dipl.-Phys.; thesis 2003)

At the moment genetics is a scientific discipline society is very interested in. This is due to the fact that new scientific knowledge is still growing very fast, and that there is a necessity to discuss the ethical aspects of its application. Additionally, there is a high intensity of discussion, after all the existence and development of all species have to be taken into consideration. With the ability to manipulate genes human beings have reached a new stage in evolution. The aim of the Ph.D.-thesis is not to answer ethical questions but to investigate into the discipline genetics from the point of view taken by a philosopher of science. In this connection statements are made about today's capabilities of getting knowledge and manipulation. In addition, the future development of these capabilities will be predicted. This procedure is to help to eliminate non-realistic expectations often connected with gene-technology, to reveal the real problems, and to find their solutions.

The work consists of three parts. Preliminary, the first part is to provide the methods of philosophy of science as applied in the second part. Terms like description, explanation, theoretical structure and research programme are discussed in the first part. After that the discipline genetics is analysed in detail. Phenomena which are in need of explanation are pointed out. Then, on the basis of the experimental situation the patterns of explanations and the theoretical structures are investigated. In this respect it is of great interest to find out where chance and where necessity determines genetic events. In the last part conclusions relevant to society are drawn. Besides, the questions as to what extent human beings are determined by their genomes, the usage of genetic tests and the German law protecting embryos are discussed.

The interdisciplinary Ph.D.-thesis by Dipl.-Phys. Klaus-M. Seel was supervised by Professor Dr. Georg H. Fey (Department of Genetics), Professor Dr. Christian Thiel (Department of Philosophy) and Akad. Dir. Dr. Rudolf Kötter (Interdisciplinary Department for Philosophy and History of Science) at the Friedrich-Alexander-Universität Erlangen-Nürnberg.

Contact: Dr. med. Felix Thiele, M.Sc.

Tel./e-mail: +49 (0) 2641 973-304 • felix.thiele@ea-aw.de

POTENTIAL OF THE INTEGRATED NATURE
PROTECTION IN A DENSELY POPULATED AREA
A CASE STUDY IN THE REGION KOBLENZ-NEUWIED, GERMANY
(Dr. rer. nat. Ulrich Rehberg, Dipl.-Biol.; thesis 2002)

As part of the environment programme of the Federal State Rheinland-Pfalz ("Umweltprogramm 1990"), the conservation of species and biotopes aims at protection on larger spatial scales. Similarly, the goals of integrated nature protection are to care for those areas which are under economic use. In this project the conditions for the application of integrated nature protection was investigated using the example of the densely populated area of Koblenz-Neuwied. The methods comprise an analysis of the biogeographic conditions and a socio-ecological analysis of the local farming and of the recreation value of the landscape.

The landscape-management and -exploitation of the densely populated area Koblenz-Neuwied are changing progressively. Increasing urbanisation has changed the cultural landscape. Nature protection becomes more and more difficult. The pressure to exploit by agriculture, gravel-pit operations, local recreation areas and drinking water protection is very high.

The dissertation was written by Dr. rer. nat. Ulrich Rehberg, Dipl.-Biol. and supervised by Professor Dr. H. Karrasch at the Geographical Institute at the Universität Heidelberg. The results of the project were submitted as a doctorate thesis to the Ruprecht-Karls-Universität Heidelberg in autumn 2002.

Contact: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

DOCTORATE PROGRAMME

LIFE CYCLE ASSESSMENT OF NATURAL GAS VEHICLES DEVELOPMENT AND APPLICATION OF SITE-DEPENDENT IMPACT INDICATORS

(Dr.-Ing. Karl-Michael Nigge, Dipl.-Phys.; thesis 2000)

The project is concerned with a comparison of the fuels petrol, diesel and natural gas with regards to their effects on human health and the natural environment. It is suggested to apply the method within a Life Cycle Assessment comparing electric vehicles and fuel cell vehicles to vehicles with combustion engines using diesel, petrol and natural gas. In the case of primary pollutants, the human health impacts per emitted mass will generally be lower for these upstream processes than for the vehicle emissions, in particular if the latter occur in large cities. The method presented would allow us to determine whether this has an effect on the overall results of the comparison. Besides studies on transportation systems, the use of site-dependent indicators for human health impacts appears to be particularly relevant in Life Cycle Assessments of products or services where transportation of goods with Diesel vehicles significantly contributes to the overall emissions. Furthermore, it is suggested to use these indicators in order to calculate average impacts for emissions from specific sectors of industry. These could be useful in connection with the industry averaged emission data that are frequently used in Life Cycle Assessment.

The dissertation was written by Dipl.-Phys. Karl-Michael Nigge and was supervised by Professor Dr.-Ing. Michael F. Jischa (Universität Clausthal); it was completed in spring 2000.

Publication: M. Nigge: *Life Cycle Assessment of Natural Gas Vehicles. Development and Application of Site Dependent Impact Indicators*, Springer-Verlag, Berlin 2000, ISBN 3-540-67273-7 (series: Wissenschaftsethik und Technikfolgenbeurteilung, Vol. 6)

Contact: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

ON THE LEGITIMACY OF SUPRANATIONAL LAW IN EUROPE

(Minou Bernadette Friele, M.A.; funding: 10/99–12/03)

Commercial, scientific and private interactions and cooperations are conducted increasingly across national borders. Well known examples for this process can be found in the sphere of biomedicine – starting from the so called abortion-tourism up to the recent German debate on the import of human embryonic stem cell lines. This tendency to cross cultural-moral respectively legal borders raises questions of the moral and legal legitimacy of such international actions respectively of the legitimacy of national and international regulations to regulate such topics.

Considering the traditional discussion of the relation between morals and the law within the philosophy of law and the more recent debate in political philosophy between liberals and communitarians, the study deals with the scope and limits of institutionalized power. In this context not at least the scope and limits of international norms addressed to already existing sovereign states are to be discussed. The investigation aims at making a philosophical contribution to some of the current socio-political developments of the European harmonization process.

The dissertation by Minou Bernadette Friele, M.A., was supervised by Professor Dr. Dieter Birnbacher at the Institute for Philosophy at the Universität Düsseldorf.

Contact: Dr. med. Felix Thiele, M.Sc.

Tel./e-mail: +49 (0) 2641 973-304 • felix.thiele@ea-aw.de

PARTNERS' ASSEMBLY

Land Rhineland-Palatinate (Land Rheinland-Pfalz),
represented by the Ministry of Finance Rhineland-Palatinate

German Aerospace Center (Deutsches Zentrum für Luft- und
Raumfahrt e.V.),
represented by the Chairman of the Executive Board

MANAGING COMMITTEE

Professor Dr.-Ing. Dr.-Ing. E.h. Dr. h.c.mult. Sigmar Wittig (Chair),
German Aerospace Center (Deutsches Zentrum für Luft- und
Raumfahrt e.V.)

Staatssekretärin Dorothee Dzwonnek (Deputy Chair),
Ministry of Science, Further Education, Research and Culture
Rhineland-Palatinate (Ministerium für Wissenschaft, Weiterbil-
dung, Forschung und Kultur, Rheinland-Pfalz)

Regierungsrat Reinhold Bott,
Ministry of Finance Rhineland-Palatinate (Ministerium der
Finanzen Rheinland-Pfalz)

Dr. rer. soc. Kai-Uwe Schrogl,
German Aerospace Center (Deutsches Zentrum für Luft- und
Raumfahrt e.V.)

SCIENTIFIC ADVISORY BOARD

Professor Dr. jur. Peter Marburger, Trier (Chair)
Professor Dr. phil. Peter Fricker, Bern
Professor Dr. ir. W. J. Geysen, Leuven
Professor Dr. rer. nat. Ursula-Friederike Habenicht, Berlin
Dr.-Ing. Margarethe Hofmann-Antenbrink, Pully
Professor Dr. med. Jörg Michaelis, Mainz
Professor Dr. phil. Jürgen Mittelstraß, Konstanz
Professor Dr. rer. pol. Herbert Paschen, Heidelberg
Professor Dr.-Ing. Norbert Wehn, Kaiserslautern

Professor Dr. phil. Wouter Achterberg †, Amsterdam
Professor Dr. rer. nat. Rudolf Amann, Bremen
Dr. phil. nat. Klaus Ammann, Bern
Professor Dr. sc. phil. Gerhard Banse, Karlsruhe
Professor Dr. med. Claus R. Bartram, Heidelberg
Dr. jur. Helmut Bäuml, Kiel
Professor Dr. phil. Jan P. Beckmann, Hagen
Professor Jos Berghman, Ph.D., Leuven
Professor Dr. jur. Deryck Beyleveld, Sheffield
Professor Kornelis Blok, Ph.D., Utrecht
Gerard Boer, Ph.D., Amsterdam
Professor Dr. med. Dr. rer. nat. Hermann M. Bolt, Dortmund
Professor Dr. rer. nat. Michael Bölker, Marburg
Professor Dr. med. vet. Dr. med. vet. habil. Dr. h.c. Gottfried Brem, Wien
Professor Dr. rer. pol. Friedrich Breyer, Konstanz
Professor Dr. jur. Ulrich Büdenbender, Dresden
Professor Dr. rer. pol. Dieter Cansier, Tübingen
Professor Dr. Ruth Chadwick, Lancaster
Professor Dr. rer. nat. Thomas Christaller, Sankt Augustin
Professor Dr. rer. nat. Martin Claussen, Potsdam
Professor Dr. phil. Gerhard de Haan, Berlin
Professor Dr. jur. Jos Dumortier, Leuven
Professor Dr. med. Dr. h.c. Friedrich W. Eigler, Essen
Professor Dr. rer. pol. Holger Ernst, Koblenz
Professor Dr. phil. Eberhard Feess, Aachen
Professor Dr. med. Jörg Fegert, Ulm
Professor Dr. rer. nat. Georg Fey, Erlangen
Professor Dagfinn Føllesdal, Ph.D., Oslo/Stanford
Professor Dr. phil. Christa Fonatsch, Wien
Professor Dr. jur. Walter Frenz, Aachen
Professor Dr. rer. nat. Harald Fuchs, Münster
Dr. jur. Riccardo Genghini, Mailand
Professor Dr. med. Joachim Gilsbach, Aachen
Professor Dr. med. Barbara Griefahn, Dortmund
Dr. rer. nat. Werner Grünwald, Stuttgart
Professor Dr. rer. nat. Armin Grunwald, Karlsruhe
Professor Dr. med. Gundolf Gubernatis, Wilhelmshaven
Professor Dr. agr. Robert Guderian, Essen
Professor Dr. med. Dr. rer. nat. habil. Walter H. Günzburg, Wien
Professor Dr. phil. Dr. rer. nat. Mathias Gutmann, Marburg
Dr. Per Hall, M.D., Ph.D., Stockholm
Professor Dr. med. Dr. med. vet. Claus Hammer, München

COUNCIL

Professor Dr.-Ing. Helmut Harig, Bremen
Professor Dr. phil. Dirk Hartmann, Essen
Professor Dr. med. Axel Haverich, Hannover
Priv.-Doz. Dr. med. Jan-Georg Hengstler, Mainz
Professor Dr. rer. pol. Klaus-Dirk Henke, Berlin
Professor Dr. med. Dietrich Henschler, Würzburg
Professor Dr. rer. nat. Andreas Hense, Bonn
Professor Spencer Henson, Ph.D., B.Sc., Guelph
Professor Dr. rer. nat. Wolfgang Hesse, Marburg
Professor Dr. med. Isabella Heuser, Berlin
Professor Dr.-Ing. Gerd Hirzinger, Oberpfaffenhofen
Professor Dr.-Ing. Heinrich Hofmann, Lausanne
Professor Dr. Jacek Hołowka, Warschau
Professor Dr. sc. nat. Dieter Imboden, Zürich
Professor Dr. phil. Dr. theol. Bernhard Irrgang, Dresden
Dr. rer. nat. Peter Jacob, Neuherberg
Professor Dr. phil. Peter Janich, Marburg
Rikke Bagger Jørgensen, Ph.D., Roskilde
Professor nadzw. Dr. hab. Andrzej M. Kaniowski, Lodz
Professor Dr. rer. nat. Wolfgang Kaysser, Köln
Professor Dr. phil. habil. Andrzej Kiepas, Katowice
Professor Gernot Klepper, Ph.D., Kiel
Professor Dr. phil. Hartmut Kliemt, Duisburg
Professor Dr. jur. Michael Kloepfer, Berlin
Gerrit Koenen, M.Sc., LL. M., Den Haag
Professor Dr. jur. Dr. med. Christian Kopetzki, Wien
Professor Dr. rer. nat. Harald Krug, Karlsruhe
Professor Dr. rer. pol. Rudi Kurz, Pforzheim
Professor Dr. med. Dr. sc. Karl Lauterbach, Köln
Professor Dr. phil. Anton Leist, Zürich
Professor Dr. jur. Hans Lilie, Halle
Professor Dr. Robin Lovell-Badge, London
Professor Dr. jur. Bernd Lutterbeck, Berlin
Professor Dr. phil. Weyma Lübbe, Leipzig
Professor Dr. sc. techn. ETH Werner K. Lutz, Würzburg
Dr. phil. Petr Machleidt, Prag
Professor Dr. rer. nat. Laura Martignon, Ludwigsburg
Priv.-Doz. Dr. rer. nat. Ulrich Martin, Hannover
Professor Dr. jur. Bernd Baron von Maydell, Sankt Augustin
Professor Dr. phil. nat. Marcel Mayor, Karlsruhe
Professor Dr. jur. Reinhard Merkel, Hamburg
Professor Dr. Cees Midden, Eindhoven
Professor Bevan Moseley, Ph.D., Ph.D., Reading

Professor Dr. rer. pol. Georg Müller-Christ, Bremen
 Professor Dr.med. Dr.med.dent. Dr.h.c. Wolfgang Müller-Ruchholtz, Kiel
 Professor Ruud Muffels, Ph.D., Tilburg
 Professor Dr.-Ing. Dieter Nelles, Kronberg
 Professor Bart Nuttin, M.D., Ph.D., Leuven
 Professor Dr. rer. pol. Hans G. Nutzinger, Kassel
 Professor Dr. phil. Konrad Ott, Greifswald
 Professor Deborah Oughton, Ph.D., Aas/Oslo
 Professor Andreu Palou, Ph.D., Mallorca
 Professor Rafael Pardo Avellaneda, Ph.D., Madrid
 Professor Dr. rer. nat. Andreas Pfitzmann, Dresden
 Professor Dr. jur. Johann-Christian Pielow, Bochum
 Professor Dr. med. Gerald Pöch, Graz
 Professor Dr. phil. Michael Quante, Köln
 Professor Pirkko-Liisa Rauhala, Ph.D., Helsinki
 Professor Dr. rer. nat. Dr. rer. nat. habil. Gerhard Rechkemmer, München
 Professor Dr. jur. Eckard Rehbinder, Frankfurt a. M.
 Professor Dr. rer. pol. Ortwin Renn, Stuttgart
 Professor Dr.-Ing. Rainer Renz, Kaiserslautern
 Professor Dr.-Ing. Ingo Romey, Essen
 Professor Dr. med. Steffen K. Rosahl, Erfurt
 Professor Dr. phil. Georg Rudinger, Bonn
 Professor Dr. rer. nat. Heinz Saedler, Köln
 StD Winfried Sander, Adenau
 Professor Dr. med. Hans Jürgen Schlitt, Regensburg
 Professor Dr. rer. nat. Günter Schmid, Essen
 Professor Dr. rer. pol. Dieter Schmitt, Essen
 Professor Angelika Schnieke, Ph.D., München
 Professor Dr. med. Bettina Schöne-Seifert, Münster
 Professor Dr. jur. Dr. h.c. mult. Hans Ludwig Schreiber, Göttingen
 Doris Schröder, M.A., Ph.D., Preston
 Professor Dr. jur. Meinhard Schröder, Trier
 Professor Dr. jur. Dr. soc. oec. Erich Schweighofer, Wien
 Professor Dr.-Ing. Gerhard Schweitzer, Zürich
 Professor Dr. rer. nat. Ulrich Simon, Aachen
 Professor Davor Solter, M.D., Ph.D., Freiburg
 Detlef Sprinz, Ph.D., Potsdam
 Professor Dr. rer. pol. Ulrich Steger, Lausanne
 Professor Dr.-Ing. Gerhard Steinebach, Kaiserslautern
 Professor Dr. phil. Fritz F. Steininger, Frankfurt a. M.
 Professor Dr. rer. nat. Dr. med. h.c. Christian Streffer, Essen
 Professor Dr. phil. Dieter Sturma, Essen
 Dr. phil. Elisabeth Swaton, Wien

COUNCIL

Professor Dr. jur. Jochen Taupitz, Mannheim
Dr. rer. nat. Michael Türkay, Frankfurt a. M.
Dr. rer. pol. Otto Ulrich, Bonn
Professor Dr. jur. Wolfgang van den Daele, Berlin
Dr. Gert Verschraegen, Leuven
Professor Dr. phil. nat. Viola Vogel, Zürich
Professor Dr. sc. pol. Reinhard Voßbein, Wuppertal
Professor Dr.-Ing. Heinrich B. Weyer, Köln
Professor Dr. jur. Dr. h.c. Rüdiger Wolfrum, Heidelberg
Professor Dr. Atte von Wright, Kuopio
Dr. jur. Peter Wysk, Münster
Professor Dr. rer. pol. Thomas Ziesemer, Maastricht
Professor Dr. Maciej Żukowski, Poznan

Head

Professor Dr. phil. Dr. phil. h.c. Carl Friedrich Gethmann
(*Director*)

Dr. med. Felix Thiele, M.Sc.
(*Vice-Director*)

Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
(*Vice-Director*)

Dipl.-Kff. Margret Heyen
(*Chief Financial Executive and Assistant to the Director*)

Scientific Staff

Dr.-Ing. Bert Droste-Franke, Dipl.-Phys.
Thomas Engel, M.A.

Dr. phil. Margret Engelhard, Dipl.-Biol.

Dr. phil. Thorsten Galert, M.A.

Kristin Hagen, Ph.D.

Dipl.-Päd. Ulrike Henckel

Dr. phil. Georg Kamp, M.A.

Dr. rer. nat. Ruth Klüser, Dipl.-Chem.

Dr. rer. pol. Karsten Mause, Dipl.-Pol.

Organisation and Administration

Katharina Mader, M.A.

Friederike Wütscher
(*Editing, Public Relations*)

Dipl.-Ing. Anja Schlochtermeyer, M.A.
(*Acquisition and administrative support of externally funded, in particular EU-funded, research projects*)

Dipl.-Übers. Margret Pauels
(*Reception, Guest Relations*)

Heidemarie Zimmermann
(*General Administration*)

Maria Icking
(*Accounting*)

Arno Schatz
(*IT-Administration*)

Temporarily absent from office

Dr. phil. Gerd Hanekamp, Dipl.-Chem.

Dipl.-Kfm. Petra Hermann

PUBLICATIONS

BOOK SERIES

The series *Wissenschaftsethik und Technikfolgenbeurteilung* (Ethics of Science and Technology Assessment) serves to publish the results of the Europäische Akademie's work. Besides the final reports of the project groups the series includes Volumes on general questions of the Ethics of Science and Technology Assessment as well as other monographic studies. The book series is published in the *Springer-Verlag*.

Vol. 1: A. Grunwald (ed.):

Rationale Technikfolgenbeurteilung. Konzeption und methodische Grundlagen. Berlin 1998

Vol. 2: A. Grunwald, S. Saupe (eds.):

Ethik in der Technikgestaltung. Praktische Relevanz und Legitimation. Berlin 1999

Vol. 3: H. Harig, C. J. Langenbach (eds.):

Neue Materialien für innovative Produkte. Entwicklungstrends und gesellschaftliche Relevanz. Berlin 1999

Vol. 4: J. Grin, A. Grunwald (eds.):

Vision Assessment. Shaping Technology for 21st Century Society. Berlin 1999

Vol. 5: C. Streffer, J. Bucker, A. Cansier, D. Cansier, C. F. Gethmann, R. Guderian, G. Hanekamp, D. Henschler, G. Pöch, E. Reh binder, O. Renn, M. Slesina, K. Wuttke:

Umweltstandards. Kombinierte Expositionen und ihre Auswirkungen auf den Menschen und seine Umwelt. Berlin 2000

Vol. 6: K.-M. Nigge:

Life Cycle Assessment of Natural Gas Vehicles. Development and Application of Site Dependent Impact Indicators. Berlin 2000

Vol. 7: C. R. Bartram et al.:

Humangenetische Diagnostik. Wissenschaftliche Grundlagen und gesellschaftliche Konsequenzen. Berlin 2000

Vol. 8: J. P. Beckmann et al.:

Xenotransplantation von Zellen, Geweben oder Organen. Wissenschaftliche Entwicklungen und ethisch-rechtliche Implikationen. Berlin 2000

- Vol. 9: G. Banse, C. J. Langenbach, P. Machleidt:
Towards the Information Society. The Case of Central and Eastern European Countries. Berlin 2000
- Vol. 10: P. Janich, M. Gutmann, K. Prieß (eds.):
Biodiversität. Wissenschaftliche Grundlagen und gesellschaftliche Relevanz. Berlin 2001
- Vol. 11: M. Decker (ed.):
Interdisciplinarity in Technology Assessment. Implementation and its Chances and Limits. Berlin 2001
- Vol. 12: C. J. Langenbach, O. Ulrich (eds.):
Elektronische Signaturen. Kulturelle Rahmenbedingungen einer technischen Entwicklung. Berlin 2002
- Vol. 13: F. Beyer, H. Kliemt, F. Thiele (eds.):
Rationing in Medicine, Ethical, Legal and Practical Aspects. Berlin 2002
- Vol. 14: A. Grunwald, M. Gutmann, E. Neumann-Held (eds.):
On Human Nature. Anthropological, Biological and Philosophical Foundations. Berlin 2001
- Vol. 15: T. Christaller et al. (eds.):
Robotik. Perspektiven für menschliches Handeln in der zukünftigen Gesellschaft. Berlin 2001
- Vol. 16: M. Schröder, M. Claussen, A. Grunwald, A. Hense, G. Klepper, S. Lingner, K. Ott, D. Schmitt, D. Sprinz:
Klimavorhersage und Klimavorsorge. Berlin 2002
- Vol. 17: C. F. Gethmann, S. Lingner (eds.):
Integrative Modellierung zum Globalen Wandel. Berlin 2002
- Vol. 18: U. Steger, W. Achterberg, K. Blok, W. Frenz, C. Gather, G. Hanekamp, D. Imboden, M. Jahnke, M. Kast, R. Kurz, H.G. Nutzinger, Th. Ziesemer:
Nachhaltige Entwicklung und Innovation im Energiebereich. Berlin 2002
- Vol. 19: E. Ehlers, C. F. Gethmann (eds.):
Environment Across Cultures. Berlin 2003

PUBLICATIONS

- Vol. 20: R. Chadwick, S. Henson, M. Liakopoulos, B. Moseley, C. Midden, G. Rechkemmer, A. von Wright, G. Koenen:
Functional Foods. Berlin 2003
- Vol. 21: D. Solter, D. Beyleveld, M. B. Friele, J. Hołowka, H. Lillie, R. Lovell-Badge, C. Mandla, U. Martin, R. Pardo Avellaneda:
Embryo Research in Pluralistic Europe. Berlin 2003
- Vol. 22: M. Decker, M. Ladikas (eds.):
Bridges between Science, Society and Policy. Technology Assessment – Methods and Impacts. Berlin 2004
- Vol. 23: C. Streffer, H. M. Bolt, D. Føllesdal, P. Hall, J. G. Hengstler, P. Jacob, D. Oughton, K. Prieß, E. Reh binder, E. Swaton:
Low Dose Effect in the Environment. Dose-Effect Relations and Risk-Evaluation. Berlin 2004
- Vol. 24: R. Ashcraft, F. Thiele (eds.):
Bioethics in a Small World. Berlin 2004
- Vol. 25: H.-R. Duncker, K. Prieß (eds.):
On the Uniqueness of Human Kind. Berlin 2004
- Vol. 26: B. von Maydell, K. Borchardt, K.-D. Henke, R. Leitner, R. Muffels, M. Quante, P.-L. Rauhala, G. Verschraegen, M. Żukowski:
Enabling Social Europe. Berlin 2006
- Vol. 27: U. Schmid, H. Brune, H. Ernst, A. Grunwald, W. Grünwald, H. Hoffmann, H. Krug, P. Janich, M. Mayor, W. Rathgeber, U. Simon, V. Vogel:
Nanotechnology – Assessment and Perspectives. Berlin 2006
- Vol. 28: M. Kloepfer, B. Griefahn, A. M. Kaniowski, G. Klepper, S. Lingner, G. Steinebach, H. B. Weyer, P. Wysk:
Leben mit Lärm? Risikobeurteilung und Regulation des Umgebungslärms im Verkehrsbereich. Berlin 2006
- Vol. 29: R. Merkel, G. Boer, J. Fegert, T. Galert, D. Hartmann, B. Nuttin, S. Rosahl:
Intervening in the Brain. Changing Psyche and Society. Berlin 2007

Also the following studies were published by Springer:

F. Breyer, W. von den Daele, M. Engelhard, G. Gubernatis, H. Kliemt, C. Kopetzki, H. J. Schlitt, J. Taupitz:

Organmangel – Ist der Tod auf der Warteliste unvermeidbar? Berlin 2006

Vol. 18 (Translation):

Sustainable Development and Innovation in the Energy Sector. Berlin 2005

Vol. 5 (Translation):

Environmental Standards. Combined Exposures and Their Effects on Human Beings and Their Environment. Berlin 2003

PUBLICATIONS

POIESIS & PRAXIS

In cooperation with the Springer-Verlag, the Europäische Akademie publishes an international and transdisciplinary journal of Technology Assessment and the ethics of science. The Director of the Europäische Akademie is responsible as editor supported by a scientific editorial board. In accordance with the profile of the journal the editorial board is filled internationally and transdisciplinarily. Beginning in the first quarter of 2002 the journal is published under the title *Poiesis & Praxis. International Journal of Ethics of Science and Technology Assessment*. Managing editor is Dr. rer. nat. Stephan Lingner. One Volume contains four quarterly issues with a total of about 320 pages. Original papers are supplemented by discussion notes and book reviews.

Subjects of the last editions:

Focus "Innovations and Neuroscience" (Vol. 4, No. 2), 2006

Focus "IT and Society" (Vol. 4, No. 1), 2006

Focus "Infectious Disease" (Vol. 2, No. 4), 2005

Focus "Human Nature and the Sciences" (Vol. 3, No. 3), 2005

Editor-in-Chief: Professor Dr. phil. Dr. phil.h.c. Carl Friedrich Gethmann

Managing Editor: Dr. rer. nat. Stephan Lingner, Dipl.-Geol.
Tel./e-mail: +49 (0) 2641 973-306 • stephan.lingner@ea-aw.de

Editorial Assistance: Friederike Wütscher
Tel./e-mail: +49 (0) 2641 973-311 • friederike.wuetscher@ea-aw.de

e-mail: PoiesisAndPraxis@ea-aw.de

www.link.springer.de/link/service/journals/10202/index.htm

GRAUE REIHE

The "Graue Reihe" includes material and documentation on current topics in Technology Assessment and Ethics of Science which are continuously surveyed and analysed by scientists at the Europäische Akademie and from outside. These articles can also be downloaded from the homepage of the Europäische Akademie GmbH (www.ea-aw.de).

- 1 C. F. Gethmann, A. Grunwald: *Technikfolgenabschätzung. Konzeptionen im Überblick*, 9/96; 2nd ed. 7/98
- 2 C. F. Gethmann: *Umweltprobleme und globaler Wandel als Thema der Ethik in Deutschland*, 9/96; 2nd ed. 10/98
- 3 A. Grunwald: *Sozialverträgliche Technikgestaltung. Kritik des deskriptivistischen Verständnisses*, 10/96
- 4 Arbeitsgruppe Neue Materialien: *Technikfolgenbeurteilung der Erforschung und Entwicklung neuer Materialien. Perspektiven in der Verkehrstechnik, Endbericht zum Vorprojekt*, 1/97
- 5 M. Gutmann, P. Janich: *Zur Wissenschaftstheorie der Genetik. Materialien zum Genbegriff*, 4/97
- 6 S. Lingner, C. F. Gethmann: *Klimavorhersage und -vorsorge*, 7/97
- 7 J. P. Beckmann: *Xenotransplantation. Ethische Fragen und Probleme*, 7/97
- 8 M. Decker: *Perspektiven der Robotik. Überlegungen zur Ersetzbarkeit des Menschen*, 11/97; 2nd ed. 5/01
- 9 C. F. Gethmann, N. Plotnikov: *Philosophie in Rußland. Tendenzen und Perspektiven*, 5/98
- 10 G. Banse (ed.): *Technikfolgenbeurteilung und Wissenschaftsethik in Ländern Ostmitteleuropas*, 6/98; 2nd ed. 4/00
- 11 M. Gutmann, W. Barthlott (eds.): *Biodiversitätsforschung in Deutschland. Potentiale und Perspektiven*, 11/98; 2nd ed. 4/00
- 12 T. Galert: *Biodiversität als Problem der Naturethik. Literaturreview und Bibliographie*, 12/98
- 13 G. Banse, C. J. Langenbach (eds.): *Geistiges Eigentum und Copyright im multimedialen Zeitalter. Positionen, Probleme, Perspektiven*, 2/99; 2nd ed. 5/99

PUBLICATIONS

- 14 K.-M. Nigge: *Materials Science in Europe*, 3/99
- 15 M. Schröder, S. Lingner (eds.): *Modelling Climate Change and its Economic Consequences. A review*, 6/99
- 16 M. Decker (ed.): *Robotik. Einführung in eine interdisziplinäre Diskussion*, 9/99
- 17 O. Ulrich: *"Protection Profile" – Ein industriepolitischer Ansatz zur Förderung des "neuen Datenschutzes"*, 11/99
- 18 U. Müller-Herold, M. Scheringer: *Zur Umweltgefährdungsbewertung von Schadstoffen und Schadstoffkombinationen durch Reichweiten- und Persistenzanalyse*, 12/99
- 19 C. Streffer et al.: *Environmental Standards. Combined Exposures and their Effects on Human Beings and their Environment (Summary)*, 1/00
- 20 F. Thiele (ed.): *Genetische Diagnostik und Versicherungsschutz. Die Situation in Deutschland*, 1/00; 2nd ed. 2/01
- 21 M. Weingarten: *Innovation und Entwicklung*, 5/00
- 22 R. Amann, R. Rosello-Mora: *Species Concepts in Prokaryotic Taxonomy*, 8/00
- 23 S. Lingner, E. Borg: *Präventiver Bodenschutz. Problemdimensionen und normative Grundlagen*, 9/00
- 24 M. B. Friele (ed.): *Embryo Experimentation in Europe. Bio-medical, Legal, and Philosophical Aspects*, 2/01
- 25 F. Thiele (ed.): *Tierschutz als Staatsziel? Naturwissenschaftliche, rechtliche und ethische Aspekte*, 2/01
- 26 V. G. Gorokhov: *Technikphilosophie und Technikfolgenforschung in Russland*, 2/01
- 27 C. B. Backes: *Klimaschutz in den Niederlanden*, 3/01
- 28 G. Hanekamp, U. Steger (eds.): *Nachhaltige Entwicklung und Innovation im Energiebereich*, 7/01
- 29 T. Christaller, M. Decker (eds.): *Robotik. Perspektiven für menschliches Handeln in der zukünftigen Gesellschaft*, 11/01

- 30 M. Selgelid: *Societal Decision Making and the New Eugenics*, 4/02
- 31 B. Irrgang: *Humangenetik auf dem Weg in eine neue Eugenik von unten?*, 2/02
- 32 M. Schröder et al.: *Climate Prediction and Climate Precautions, Executive Summary*, 6/02
- 33 U. Steger et al.: *Sustainable Development and Innovation in the Energy Sector. Executive Summary*, 2/03
- 34 C.F. Gethmann, S. Lingner (eds.): *Zukünftige Klimaänderungen als Herausforderung für die deutsche Wirtschaft*, 7/03
- 35 G. Schmid et al.: *Small Dimensions and Material Properties. A Definition of Nanotechnology*, 11/03
- 36 J. Guerra González (ed.): *Environmental Noise. Main Focus: Aircraft Noise*, 3/04
- 37 K. Ott et al.: *Konkretisierungsstrategien für Art. 2 der UN-Klimarahmenkonvention*, 3/04
- 38 A. Gethmann-Siefert, St. Huster (eds.): *Recht und Ethik in der Präimplantationsdiagnostik*, 7/05

NEWSLETTER

The Newsletter (*Akademie-Brief*) gives an overview of current activities of the Europäische Akademie and its running and future projects. It is published mostly in English and appears free of charge six to ten times per year. It can also be downloaded from the homepage of the Europäische Akademie GmbH (www.ea-aw.de).

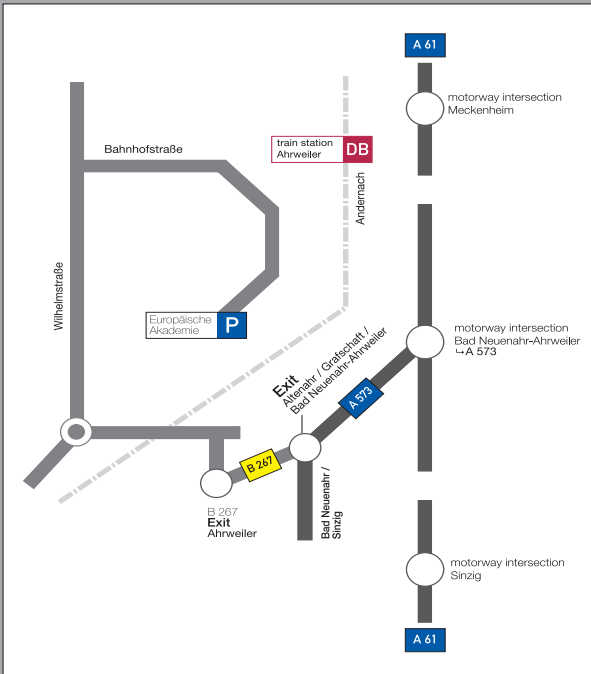
Regular parts of it are the focus article (scientists write about a topic of the project groups or other issues relevant for the Europäische Akademie), news about the academy's working groups and latest publications and lectures of members of the Europäische Akademie. Here the academy regularly informs about the spring and autumn conferences. Last but not least a person relevant to the academy's work is portrayed in every issue.



EUROPÄISCHE AKADEMIE

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

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



Europäische Akademie GmbH

Address: Wilhelmstr. 56
53474 Bad Neuenahr-Ahrweiler / Germany
Telephone: +49 (0) 2641 973 - 300
Telefax: +49 (0) 2641 973 - 320
e-mail: europaeische.akademie@ea-aw.de
Homepage: www.ea-aw.de
Head: Professor Dr. phil. Dr. phil. h.c. C. F. Gethmann