



Europäische Akademie

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

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Newsletter

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Editorial

In March 1996 the Bundesland Rhineland-Palatinate (Land Rheinland-Pfalz), the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt e.V., DLR) and the Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF) founded the Europäische Akademie zur Erforschung von Folgen wissenschaftlich-technischer Entwicklungen as a „gemeinnützige Gesellschaft mit beschränkter Haftung“, i.e. a non-profit corporation with limited liability for an indefinite time.

Bundesland and DLR formed the company while the BMBF, made means in the form of its project funding available for ten years. The partners and the BMBF determined to evaluate the work of the Europäische Akademie after five years. At the end of 2000 the academy was evaluated with an outstanding result. The initiators of the Europäische Akademie concluded thereupon to continue the support. The ten-year-period of the project funding through the BMBF ends at the end of 2005. In the meantime the Bundesland Rhineland-Palatinate and the DLR agreed on a continuation of the support of the academy and therewith the continuity of the Europäische Akademie is secured. The sponsorship through the BMBF will presumably result further on from the form of its project funding.

Further information about the structure and the work of the academy can be found in the recently published research report 2003-2004 which is available on www.europaeische-akademie-aw.de.

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Focus

The Spatial Effects of the Virtualisation of “Lebenswelten”

Gerhard Steinebach

As a result of rapid advances and new developments in the field of modern information and communication technologies and the application of innovative systems developed therefrom in various different personal environments, consequences of this “virtualisation” are ensuing in a variety of contexts also in the field of spatial development. This applies particularly to planning processes and content, whereby the actual degree of virtualisation has yet to be determined reliably and furthermore, in view of the dynamics of the progress underway, the present picture could simply be a reflection of the momentary situation.

If we regard the typical characteristics of the European city as a habitat which we experience and identify with, there we must recognise that a considerable change is taking place. So far, there is universal agreement that the city as an entity has come into being as the physical manifestation of specific forms of communication, commerce, the exchange of concepts and as the home for immigrants. These constituent factors of a city, however, as a result of current megatrends in economy and society are, in part, subject to extremely far-reaching changes. In particular, modern information and communication systems exert an influence today on nearly all areas of the world of work and the personal environment of human beings. This applies, above all, to the towns as areas of the highest information density, nodes within the technical network and as places where the users of the new technologies are concentrated. In addition, the trend towards social and economic globalisation, in conjunction with the virtualisation of the environment we live in, has a multiplying effect.

The Spatial Effects of Virtualisation

The trend towards *buying on the internet* and the ensuing consequences are among

the immediate effects of the application of modern ICT systems that are making themselves felt today. These systems offer the possibility to guarantee that basic needs can be covered also by ordering via the internet/email. It also means, however, that in order to do this, the individual must have the appropriate technical equipment and there must also be a suitable delivery service for the goods ordered. In this way, shopping trips could be made superfluous. The effects of E-Shopping on urban development have been the subject of research studies for a good many years already. Whereas the primary effects predominantly involve individual enterprises, the secondary effects are largely linked with the impacts on the region, resulting from changes in the fields of logistics and traffic, and on the inner and outer urban areas and their system of centres.

The growing application of modern ICT technologies and the resulting possibilities for technological advance – also *within one’s “own home”* – could cause a stronger concentration of life activities centred on the place of residence accompanied simultaneously by a “displacement” of the respective personal environments in response to virtual offers. Since it is reasonable to suppose that, also in the mid-



term, not everyone will have a PC and an internet connection at their disposal, a "digital divide" will emerge between those sections of the population who have access to modern communications media and those who, in the long term, will be excluded. At the same time, a disproportional concentration of the leisure activities of larger sections of the population in the vicinity of their place of residence will not remain without effect on social, cultural and other societal conditions.

At present, growing *competition between the towns* to attract investors can be observed, which is also expressed in terms of the realisation of large-scale leisure projects and mammoth events (i.e. a "festivalisation" of the town). This competition for investors is fundamentally influenced by the possibility to sever the link between entrepreneurial decisions regarding business sites and the concept of centres of business or urban concentration. Simultaneously, in the wake of the globalisation, there is a notable concentration of the control centres of large corporate enterprises in "correspondingly" large centres. When choosing the sites for their entrepreneurial decision-making centres and the sites of production-oriented service enterprises, corporations, given the availability of ICT systems, can orient themselves towards a minimum of unfavourable, i.e. hard, business site factors, while demanding the optimal possible number of favourable, i.e. soft, location factors.

The creation of *IT networks and system installations* in the towns will continue to advance. This will give rise to the installation of IT-oriented "furniture" – above all in the town centres. In addition to the concrete, spatial effects, a further step will be necessary to examine the consequences of different models in regard to businesses and the providers of ICT infrastructure. Presumably, a new E-logistics structure will emerge in conjunction with pick-up points at focal traffic junctions alongside existing traffic axes with significant commuter traffic and in densely developed residential areas in the vicinity of town centres. As a result of this, the need for logistic space in central urban locations in future will decrease in relation to past requirements. Besides this, it is possible to imagine that there will be an E-logistics-oriented reactivation of existing, conventional, logistical sites, such as inland port facilities, as "gateways" within the urban framework.

The potential effects of ICT systems and/or of virtualisation in the towns will be the subject of *regional development plans* and their processes. This is where the foundations should be laid for the later design and spatial allocation of functions and applications within the framework of urban settlement, thereby setting the points for future regional development. At present, also in connection with spatial

planning processes, frequent demands are being made for a more dynamic approach to currently long-winded and tedious initiation procedures and a substantially more flexible handling of planning contents and planning results using modern ICT systems. The possibilities offered by these new technologies encompass, for example, geographic information systems, including web applications, data, document and/or knowledge management systems, workflow systems, groupware etc., which can render the work of the planners more efficacious. Not only this but also, by using new technical aids from the ICT sector for the advance simulation of the effects of planned projects with a view to making provisions against spatial risks and, subsequently, to realistically visualise planning objectives ("virtual reality" and "augmented reality"), it is possible to support the communication of planning content and objectives to expert bodies and other public stakeholders within the framework of participatory procedures, both on a formal and informal level. Visualisation enables a particular form of transparency. The submission of statements and the formulation of proposals via the homepage of the local planning authorities can lead to a qualitative enhancement within the participatory process. At the end of the day, incorporated within an appropriate, communal E-government strategy, participation via the internet can contribute to more democracy in the planning process.

The CyberCity – Virtualisation as a "Surrogate for Reality"

The conception of the term "CyberCity" has yet to be defined reliably. There are currently numerous visionary notions and approaches in this connection as well as a variety of terms that are used in the context of this topic, as for example, the digital city, the telematic city, the multimedial city, etc. The common denominator of all these approaches is that the various tasks and functions of the physically real city are digitally visualised. The degree of visualisation, however, varies considerably. In the following, three models shall be presented. By means of a data profile, *additional information* can be projected and used as required in the real world (augmented reality). It is possible to imagine, for example, the digital visualisation of a museum which provides the visitor via a display screen, at any given time, all the information about a current exhibition and the individual exhibits, the artists as well as the history of the museum. In this way, each and any building with its relevant functions, any monument and any historical site can be digitally visualised in order to provide specific information on demand. GPS systems already constitute the first steps in this direction.

In the same way, data profiles serve to *visualise the buildings of a real city*. This

applies, in the first instance, to buildings used by the public and/or those incorporating service functions. Then, in addition, comes the visualisation of public premises, which, analogous to real communal places, can be used as meeting rooms and communication centres. This city is experienced exclusively in virtual space. All public buildings and premises are virtually accessible, all services offered are virtually available for use. Overcoming the distance between place of departure and place of destination loses its significance. The forerunner of such a city is the city of Amsterdam.

From its basic conception, *the purely virtual city*, in contrast to the physically real city, is not subject to any basic physical laws, i.e. its design and appearance do not have to be oriented exclusively to any real models. In the same way, this form of city is detached from any territorial designation and thus also from any administrative jurisdiction in the classical sense. Today already, in virtual space, there are libraries, enterprises, recreation parks, shopping centres, schools, universities, old peoples' homes, market places, churches, memorial grounds, museums, beauty competitions, which exist, apart from external computers and warehouses, without any form of concrete functional buildings. Users worldwide are able to enter and explore this city and by means of their computer controlled avatar, can become visitors, users or citizens. The realisation of the CyberCity is dependent both on technical development as well as the acceptance of the target groups. As yet, many questions, in particular, pertaining to the operators and users remain unanswered. Among other aspects, it is worth discussing alternative operational and administrative structures, security and safety systems, which can continually guarantee the stability of such cities, along with the question as to what extent the user will be willing in the future to seek the fulfilment of his social needs, which are currently satisfied by the complex interactive structures of the real city, in virtual space. Photographic imaging and realistic sound reproduction, realtime presentation possibilities as well as developments in the field of sensory perception will be developed in order to create acceptance for this form of city. To what extent such an artificially created, seemingly real world can cause negative consequences on the human psyche and his social behaviour patterns is also yet to be ascertained. One thing is certain, future generations will not first be confronted with these artificial worlds when they reach adulthood but will, in fact, already grow up with them.

Professor Dr.-Ing. Gerhard Steinebach holds a chair for urban planning at the Technische Universität Kaiserslautern. He is member of the project group "Environmental Noise" of the Europäische Akademie.

Working Groups

Expert meeting "Incentives for Organ Donation"

In the course of the project "Incentives for Organ Donation" an expert meeting with 25 participants was held at the Berlin-Brandenburgische Akademie der Wissenschaften on 3./4. December 2004. The first session was opened by Professor Dr. H.-L. Schreiber, Göttingen. In his talk on "possible expansions of live organ donation" he proposed the legalisation of non-paid live organ donation into a public pool. Professor Dr. N. Paul, Mainz, argued that the concept of altruism in organ donation can only be justified, if utilised as an instrument to ensure voluntariness of live organ donors. In the second session Ms. S. Wille, Mannheim, and Professor Dr. C. B. Blankart, Berlin, debated on the concept of reciprocity versus the duty for organ donation. Wille emphasized that human dignity holds against a duty for organ donation for living donors, whereas in post mortal organ donation the right for religious freedom conflicts with a duty for organ donation. Blankart claimed that prior to any discussions the reasons for organ shortages have to be analyzed and demanded a strengthening of organ donor rights. In the third session about "special aspects of kidney donation" Professor Dr. G. Thiel, Basel, pointed out that the separation of dialysis and transplantation medicine in Germany could lead to conflicts of interests. He called for the establishment of a live organ donor register to record data about the risks connected with live organ donation. These data are crucial for a broad information of potential donors. During the fourth session Professor Dr. Dr.h.c. C.F. Gethmann, Bad Neuenahr-Ahrweiler, and Professor Dr. W. Lübke, Leipzig, put emphasis on an ethical analysis of a "market of organs". Gethmann asked for a separate analysis of a markets of organs that are derived from live organ donation or post mortal organ donation. Regarding live organ donation he called into question if persons have the right to interfere with their bodies in the relevant sense, since persons have a duty towards themselves that is derived from a duty they have taken towards other persons. Lübke analysed arguments typically used by defenders of a market for organs and opponents. She stated that the burden of proof lies with the opponents of monetarisation. In the last session the current insurance status for live organ donors was in the focus of discussion of RA U. Riedel, Berlin, and Professor W. Gaertner, Osnabrück. The results of the conference will be published in the publication series "Graue Reihe" of the Europäische Akademie.

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Nanomaterials, Nanodevices, Nanocomputing. Standortbestimmung und Perspektiven

The project group „Nanomaterials, Nanodevices, Nanocomputing. Standortbestimmung und Perspektiven" held meetings in Bad Neuenahr-Ahrweiler from 9 to 10 December 2004 and in Frankfurt/Main from 13 to 14 January 2005. The project group welcomed Professor Dr. Harald Brune from the EPFL Lausanne, Switzerland, who is designated to provide physical expertise to the study. Furthermore, the group decided to stick to its former definition of Nanotechnology. It will treat possible concerns stated at the Mid-Term Meeting last autumn by adding and enhancing clarifying text passages in the accompanying chapters of the book to be published. The project's last important work package consists of formulating integrated acting recommendations for decision makers. To build up a basis for these recommendations, group members were asked to identify essential messages of their respective text contributions.

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Environmental Noise

On 17 January 2005 the project group "Environmental Noise" met on the premises of the Europäische Akademie and discussed several papers on specific juridical, philosophical and technical aspects of traffic noise. Professor Dr. Heinrich Weyer (DLR, Cologne) highlighted the mitigation potential of aircraft noise, which still exists although specific noise reductions of around 25 dB had been already achieved in the last five decades. A further stepwise reduction of up to 12 dB seems to be conceivable on timescales of 3 to 20 years by modifications and design-to-noise construction of jet engines, wing geometries and cavities, among others. Moreover, "Green Aircraft" concepts will also include improvements of landing and take-off trajectories in order to minimize noise loads in the exceptional, sensitive vicinity of airports. The development of corresponding strategies and technologies seems to be necessary – apart from passive measures – in order to compensate for emissions of the continuously expanding air traffic branch. Nevertheless, respective concepts will have to undergo approval along established fuel efficiency and safety standards before innovation will become operational. Therefore and from life-cycle considerations, total diffusion of low-noise aircraft may be expected in around 45 years.

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Conferences

Spring Conference 2005 "Leben mit Lärm? Beurteilung der Verkehrslärmproblematik"

The upcoming academy's spring conference will take place from 28 – 30 April at Hotel Steigenberger in Bad Neuenahr. The conference aims at the assessment of traffic noise in view of the national implementation of the European Environmental Noise Directive. The event will start with an introductory evening lecture given by Professor Dr. M. Klopfer (Humboldt-Universität zu Berlin) on "Lärmschutz als Aufgabe". The speakers will mainly address questions on impacts and abatement of traffic noise. The conference will end up with a panel discussion on perspectives for respective policies.

The symposium will bring together experts from medicine, philosophy, jurisprudence, engineering and politics, among others. The number of attendees will be rather limited in order to enable intensive discussions.

In the following is an overview of the sessions and speakers which will be contents of the conference:

Session 1: Lärmwirkungen des Verkehrs

Die kulturhistorische Dimension des Umgebungslärms

Professor Dr. Andrzej Kaniowski (Universität Lodz)

Gesundheitliche Effekte des Verkehrslärms
Professor Dr. Barbara Griefahn (Universität Dortmund)

Session 2: Möglichkeiten der Lärminderung

Minderung von Schienenverkehrsgeräuschen

Professor Dr.-Ing. Markus Hecht (Technische Universität Berlin)

Minderung von Flugzeuggeräuschen
Professor Dr.-Ing. Heinrich B. Weyer (Deutsches Zentrum für Luft- und Raumfahrt e.V., Köln)

Raumbezogene Lärminderung
Professor Dr.-Ing. Gerhard Steinebach (Universität Kaiserslautern)

Session 3: Perspektiven lärmarmen Mobilität

Panel discussion with:

Ministerin Bärbel Höhn (Ministerium für Umwelt und Naturschutz NRW, inquired)

Professor Dr. Ludwig Krämer (Abteilungsleiter „Rechtspolitik a.D.", Europäische Kommission)

Professor Dr. Reinhart Kühne (Deutsches Zentrum für Luft- und Raumfahrt e.V., Berlin)

Ministerialdirigent Dr. Uwe Lahl (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit)

The conference programme and a registration form may be obtained from the academy's homepage www.europaeische-akademie-aw.de.

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News

Junge Akademie

On 19 and 20 November 2004 the working group "Zur Deutungsmacht der Biowissenschaften" of the Junge Akademie met at the Europäische Akademie. During the meeting Dr. Christoph Halbig, Universität Münster, Professor Dr. Andreas Hüttemann, Universität Münster and Dr. Felix Thiele, Europäische Akademie GmbH, held lectures on the philosophical foundations of the biosciences and problems of applying the results of these sciences on societal problems.

Philipp Morris Prize for Professor Dr. Viola Vogel

Professor Dr. Viola Vogel, member of the project group „Nanomaterials, Nanodevices, Nanocomputing. Standortbestimmung und Perspektiven" of the Europäische Akademie, has been awarded the Philipp Morris Prize in January 2005. This highly prestigious prize honors her work on "NanoShuttles" that are driven by biological motor proteins and that pick up single molecules, transporting them to a designated location. They are used for fabrication and manipulation of materials in Nanotechnology.

Arbeitskreis Medizinethik

Im Rahmen des Medizinerarbeitskreises des Fördervereins der Europäischen Akademie stellte am 28. Februar 2005 Professor Dr. Annemarie Gethmann-Siefert (FernUniversität Hagen) den weiterbildenden Studiengang Medizinethik vor. Der Studiengang wird in Kooperation der Europäischen Akademie mit der FernUniversität Hagen sowie dem Institut für Geschichte, Theorie und Ethik der Medizin der Johannes Gutenberg-Universität Mainz durchgeführt und beginnt zum Sommersemester 2005.

Lectures

Carl Friedrich Gethmann

4.12.04 „Ethische Aspekte des legalisierten Handels mit Organen". Fachgespräch der Projektgruppe „Anreize zur Organspende", Berlin

13.12.04 „Ethische Grundlagen eines dauerhaften Gesundheitssystems". Medizinerarbeitskreis des Vereins der Förderer der Europäischen Akademie, Bad Neuenahr-Ahrweiler

3.2.05 „Existenz und Defizienz. Oskar Beckers Beitrag zu einer heterodoxen ‚Theorie der Geschlechterdifferenz' *avant la lettre*". Kolloquium zur Philosophie Oskar Beckers, FernUniversität Hagen

18.2.05 „Wissen und Realität". Zentrum für Konstruktive Erziehungswissenschaft am Institut für Pädagogik der Christian-Albrechts-Universität zu Kiel

19.2.05 „Interdisziplinäre Forschung. Skizze eines Praxisberichts". Zentrum für Konstruktive Erziehungswissenschaft am Institut für Pädagogik der Christian-Albrechts-Universität zu Kiel

Felix Thiele

21.1.05 „Schuld und Verantwortung im Licht neuer Ergebnisse der Neurowissenschaften". Tagung „Natürlich? Zur Deutungsmacht der Biowissenschaften" Daimler-Benz Stiftung und Junge Akademie, 21.–22. Januar, Ladenburg

26.1.05 „Fortschritte der Genetik. Moralische Probleme und gesellschaftlicher Regelungsbedarf". Ringvorlesung „Biologie und Menschenbild", Verein für Philosophie Bielefeld/Zentrum für interdisziplinäre Forschung, Bielefeld

Personalities



Heinrich B. Weyer graduated 1965 from the Rheinisch-Westfälische Technische Hochschule (RWTH) Aachen and got his doctor's degree in 1973. From 1965 to 1984 he worked with the Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt (DFVLR) as a scientist in aeroengine technology, being part of time head of the Compressor Group. From 1984 Heinrich Weyer was Director of the German Dutch Windtunnel (DNW) in the Netherlands, before he became Director of the Institute of Propulsion Technology of Deutsches Zentrum für Luft- und Raumfahrt (DLR) in 1988; since then he has lectured as a professor at the Ruhr-Universität Bochum.

Professor Weyer's technical career is a.o. characterised by numerous activities in national and international organisations dealing with aero and heavy duty gasturbine technology; member of Turbomachinery Committee of American Society of Mechanical Engineers (ASME); member of Deutsche Gesellschaft für Luft- und Raumfahrt (DGLR) and chairman of the DGLR-Sub-Committee of Airbreathing Propulsion; member of the German Governmental Panel on Aviation and Environment; member of AGARD-Propulsion and Energetic Panel; member and chairman of several national technology programmes and scientific networks, a.o. AG Turbo, Pollution in Aviation, Quiet Traffic.

Professor Dr. Heinrich B. Weyer is member of project group "Environmental Noise" of the Europäische Akademie.

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