

EUROPÄISCHE AKADEMIE

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

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

NEWSLETTER

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EDITORIAL

■ Im Editorial des Newsletters Nr. 73 (August 2007) wurde begründet, warum für eine außeruniversitäre interdisziplinäre Forschungseinrichtung die Arbeitsform der Akademie vorzuziehen ist. Durch diese Arbeitsform ist jedoch nicht die Rechtsform determiniert. In Deutschland stehen im wesentlichen drei Rechtsformen für außeruniversitäre, vorwiegend öffentlich finanzierte Forschungseinrichtungen, zur Verfügung, nämlich der eingetragene Verein (e.V.), die öffentlich-rechtliche Stiftung und die gemeinnützige Gesellschaft mit beschränkter Haftung (gGmbH). Grundsätzlich haben alle drei Rechtsformen Vor- und Nachteile, so dass im Einzelfall mit Blick auf die Aufgabenstellung abgewogen werden muss. Der e.V. ist rechtlich sehr einfach zu gründen, bleibt jedoch an die Existenz von wenigstens sieben natürlichen Personen gebunden. Werden diese am Beginn aufgrund ihrer dienstlichen Funktionen bestimmt, überlebt sich die persönliche Zuordnung sehr schnell. Die Stiftung ist eine bewährte Rechtsform, z.B. wenn größere Vermögen (Immobilien u.a.) zu verwalten sind. Öffentlich-rechtliche Forschungseinrichtungen haben es jedoch mit einer gewissen Überinstitutionalisierung zu tun (u.U. Stiftungsrat, Stiftungsvorstand, Wissenschaftlicher Beirat, Kuratorium). Die gGmbH bedarf nach dem GmbH-Gesetz eines recht förmlichen Gründungsverfahrens und einer Kapitalrücklage, ist institutionell dagegen sehr schlank konstruierbar (z.B. Gesellschafterversammlung, Geschäftsführender Ausschuss, Wissenschaftlicher Beirat). Sie hat ferner den Vorteil, dass die Funktionen des Geschäftsführers der gGmbH und des Direktors der Forschungseinrichtung von einer Person wahrgenommen werden können. Für die Aufgabenstellung der Europäischen Akademie hat sich in über zehn Jahren die Rechtsform der gGmbH uneingeschränkt bewährt. Über die Arbeit der Organe wird regelmäßig im Newsletter berichtet. Detaillierte Informationen dazu finden sich auch unter www.ea-aw.de. CFG

FOCUS

Rethinking computer science

Kei Ishii, Bernd Lutterbeck

Computer science artefacts permeate all areas of our social, cultural, and political life for which the intense debates about their actual and prospective uses give ample evidence. While the discipline praises itself as facilitator of the technological progress, it has yet to develop adequate means to grasp the societal impact of its artefacts, and transfer this knowledge into the design processes. Recent initiatives and contributions made in the field of computer science might offer some promising starting points.

Computers in society

■ These days, no one can ignore the complex questions and heated debates on the use of information and communication technologies in society: To what extent should governments be allowed to implement surveillance and tracking technologies such as closed-circuit television cameras, radio frequency identification tags in identity cards, or infect private computers with software viruses and trojans?

Does the large-scale technological overhaul of the health care system really bring the promised benefits, and what are the hidden costs? And why do such technological ventures often appear at the brink of failure, blowing up carefully planned time schedules and cost budgets, and failing to deliver the promised benefits?

As deeply as these technologies change the societal fabric, as fierce are the struggles for control and advantages by stakeholders and other interested parties. Thus, the technological systems, propagated as cost-efficient and effective solution for the perceived societal problems, more and more become a large part of the problem itself.

Computer science stands in the center of these struggles as the core academic discipline for designing and building those systems. Though comparatively young, its success in creating the knowledge to produce faster and more advanced information and communication technologies cannot be denied. Within only a few decades, we have come from room-filling mainframe computers capable of basic calculation tasks to the

small powerful devices which are crowding our desks and pockets nowadays, and are connected to vast networks giving access to a wealth of information and let us reach countless communication partners around the globe.

However, as these systems and technologies have such an impact on society, one wonders if computer science should restrict itself to the mathematical and engineering aspects of its products, and leave everything else to others to cope with. While this “divide and impera” approach certainly has its merits, there is – especially in the light of the above mentioned debates – a growing acknowledgement that the discipline has to pursue the necessary non-technical knowledge, not the least to cope with the complexity of their large-scale systems, and make their design and deployment more than a hit-or-miss.

Computer science, still in search for its place among the established science and engineering disciplines, finds itself in the center of the struggle of fundamental societal changes. Where does it find the required knowledge and tools to cope with the challenge?

Computer and society

■ Computer scientists recognized rather early that the discipline is in need of an understanding of the social, economic, and legal aspects of computing. Consequently, university chairs, courses, periodicals as well as conferences and working groups were established under the label

of “computer and society”, from which important contributions and new research topics arose, such as software ergonomics, computer supported cooperative work (CSCW), and, right from the start, data privacy issues.

Despite its numerous activities, though, “computer and society” did not succeed in developing a common terminology or a single theoretical framework shared among its proponents. Each researcher took the liberty to interpret the “society” part in its own way; thus, today we can find studies relating computers to aspects from sociology to economics, from philosophy to liberal arts, and so on, each with their own language and models. Some even subsume topics like telematics or bioinformatics under the label “computer and society”. (It is interesting to note that legal aspects of computing never enjoyed a substantial following in the “computer and society” community but were mostly left to legal scholars.)

Together with the fact that “computer and society” was not able to attract a critical mass of cooperating researchers, the result was a largely uncharted research landscape with smaller or larger spots of unconnected contributions in between. The mainstream computer science continued to advance their technological knowledge and products, leaving the non-technical aspects to others to cope with.

From chips to clicks

■ In recent years, a growing number of eminent voices have called for a fundamental rethinking of computer science in order to face the challenges inherent in the complex techno-social systems it however designs and builds. Or, in the words of computer science scholar Ben Shneiderman, there is a need to make “the shift from chips to clicks”. The main computer science areas, including their mathematical and engineering foundation, continue to constitute the core framework in order to create the “chips”. In addition, however, a scientific understanding of the “clicks”, the non-technical aspects, has to be placed into this frame. The lesson which can be learned from the “computer and society” efforts is that these studies must be woven into the very fabric of computer science instead of staying at the periphery as a catch-all for “all things societal”.

What does the move from “chips to clicks” encompass? We believe that the “web science” initiative, launched by Tim Berners-Lee – the creator of what has now become the world wide web – and other researchers, offers a promising research agenda for the perspective shift to be pursued in the computer science. They argue that computer science needs to understand the many phenomena which have emerged in the world wide web – such as wikis, blogs, social and sharing networks – not only in engineering terms but at the same time in its societal aspects. Thus, focus and topics of web science are redefined from those of computer science (see table): Instead of a singular focus on the technology, web science examines applications; instead of computers, it includes users; and instead of single computers, there exists a multifold of mobile devices.

The same shift is also apparent where web science broadens the narrow view on core tech-

Computer Science	Web Science
Focus	Focus
Technology	Applications
Computers	Users
Supercomputers	Mobile devices
Proficient programmers	Universal usability
Topics	Topics
Computer networks	Social networks
Packet switching	Voice over IP, music sharing
Information	Relationships
Programming languages	Wikis, blogs, tagging
Databases, operating systems, compilers	E-commerce, e-learning, e-government, medical informatics, financial analysis
3D graphics, rendering algorithms, computational geometry, object modeling	Creating and sharing video, animation, music, photos, maps

Computer science vs. Web science (Shneiderman, 2007)

nologies like databases and computer network created by “proficient programmers” in favour of wikis or social networks where actors hold no preordained static roles like ‘programmer’, ‘developer’ or ‘user’, but interact dynamically in changing roles. Where computer science is limited to the “chips”, web science strives for an understanding of the “clicks”.

There are two points hidden in the web science agenda which, however, deserve to be specially mentioned, as they seem to be important to overcome the deficiencies apparent in the “computer and society” endeavour.

Guide implementers

Computer science – including the new web science – is not only an analytic science, but is mainly concerned with the design and implementation of systems. It is therefore crucial that a reformulated computer/web science must still focus on enhancing the prescriptive models which guide its designers in addition to the descriptive theories which deepen the understanding of its systems.

Ubiquity of computing

“Computer and society” research often lagged in the state of technology they took into account. For example, their main books written in the 1990s still ignored the internet, while the rest of computer science was already busy to shape it. Web sci-

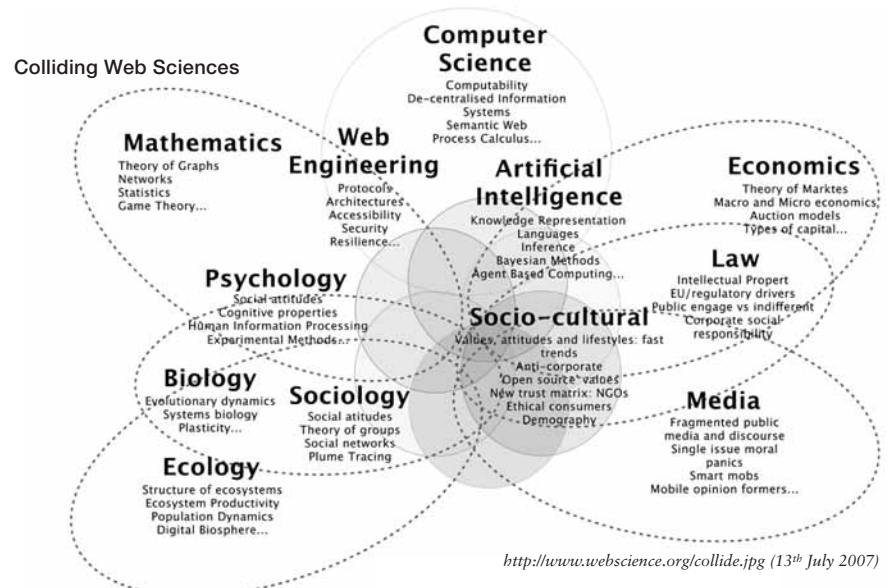
ence must certainly start with the current phenomena, but should also carefully take technologies to come into consideration. Strong contenders are, for example, ubiquitous or pervasive computing, embedding technology into everyday objects and thus, becomes ‘invisible’ to its users; and the field of agent technologies in which direct user interaction is replaced by software or hardware entities enjoying a higher degree of autonomy, the ability to learn, evolve, and interact with each other.

The cooperation challenge

■ As complex and diverse as the web science initiative presents itself – and, doubtlessly, there is still an immense amount of research necessary to reach its objectives – there is an overarching common theme which may serve as a guiding light for their studies as well as a nexus for interdisciplinary explorations to which the computer/web science could make important contributions: The structure and dynamics of cooperation, both as research topic and in the struggle for interdisciplinarity in its research.

Interdisciplinarity

The agenda outlined above clearly shows that without an interdisciplinary approach, the web science would be doomed from the start on. Consequently, the initiative has sketched possible connecting points between academic disci-



plines which they call the “colliding web sciences” (see illustration).

Anyone who has ventured to execute research between two or more disciplines is well aware of the fact that interdisciplinary efforts are fraught with pit falls, beginning with simple misunderstanding of terminology up to mismatches in approaches, models and theories (or even plain ignorance) which have to be overcome in lengthy and difficult processes.

It is also clear that even the best technology cannot circumvent such cooperative challenges. Technology, however, can act either as an inhibitor or as an activator of basic scientific principles such as access to knowledge and persons, as apparent for example in current issues from scientific publishing to plagiarism. In view of its own research interest, web science would do well to further the understanding of the role of technology and the underlying design principles – such as “open access” – in order to create a viable context for interdisciplinary research.

Net neutrality

Cooperation (and its challenges) does by no means exist only inside the academic community. Countless cultural mechanisms have been created in order to preserve and foster cooperation, so that it almost appears as an anthropological constant. Technical communication modes constitute an important subset of such mechanisms. Therefore, current debates about access and control of the technical infrastructure will determine the ways into which society might develop. The question is: To what extent should those who provide and own this infrastructure be allowed to shape, redirect or block information flows?

To this debate on ‘network neutrality’, an important contribution had been made which we think could serve as a template for the kind of research that web science should pursue: In her doctoral thesis, Barbara van Schewick combined a decade-old computer science design principle – called “end-to-end” principle – with recent findings from law and economics, resulting in a strong multi-disciplinary anchored argument as to why the technical infrastructure should be ‘neutral’, i.e. ignorant of the applications that it supports.

Code governance

Aside from the technical infrastructure, internet applications such as blogs, wikis or other social networks as well as the various activities surrounding open source software offer a rich field for research on how cooperation can work, what their underlying principles are, and what role technology plays. In his doctoral thesis, one of the authors (Ishii) investigated the hypothesis that successful communities in the internet actively use the software as a regulative means to cope with their cooperation challenges. Explicit changes in the software enabled the community to cope with social conflicts, or react to changes in the social structure. Specific patterns in these software changes could be discerned leading to the conclusion that the technology can be seen as

“regulation”, on par with social norms, laws, or market mechanisms.

Although much further work is necessary, the results indicate that the notion of “software as regulation” or “code governance” could well serve as a unique contribution of computer science to broaden the understanding of cooperation in technical environments. It is yet uncertain if computer science will pick up the challenge to rethink itself as has been outlined here. However, the web science initiative appears to be a promising path with which the discipline could find its position among other disciplines and in a society struggling with its technology.

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Professor Dr. jur. Bernd Lutterbeck was member of the project group “Electronic Signatures” of the Europäische Akademie GmbH (duration 9/1999–12/2001). He holds the chair for computers and society (“Informatik und Gesellschaft”) at the Technische Universität Berlin. **Dr.-Ing. Kei Ishii** contributed to that project group with a study on the use of signature seals in Japan. He is computer scientist and patent engineer. A version of this essay with a list of references can be accessed at the authors’ websites at <http://ig.cs.tu-berlin.de/malblap> (entry no. 10/2007) or <http://ishii.de/kei>. An extended version will be published soon in the academy’s journal “Poiesis&Praxis”.

WORKING GROUPS

■ Project Group “The Research Guiding Function of Metaphors from the Information Sciences and their Relevance to the Transformation of the Philosophy of Man”: 10/10/07 in Berlin, 1/11/07 in Marburg and 29/ and 30/11/07 in Bad Neuenahr-Ahrweiler

■ Project Group “Fuel Cells and Virtual Power Plants as Elements for a Sustainable Development. Innovation Barriers and Implementation Strategies”: 8/11/07 in Bad Neuenahr-Ahrweiler

■ Project Group “Potentials and Risks of Psychopharmaceutical Enhancement”: 9/11/07 in Berlin

■ Project Group “Societal Implications of Electrical Power Grids”: 12/11/07 in Düsseldorf

■ Project Group “Responsibility for Future Generations. Implementation of Sustainability in Schooling”: 22/10/07 and 11/ and 12/11/07 in Bad Neuenahr-Ahrweiler

CONFERENCES

International Summer School “The Impact of Current Developments in the Neurosciences on the Concept of Psychiatric Disease”

From 2nd to 8th October a group of international junior researchers met in Bonn to discuss the impact of current developments in the neurosciences on the concept of psychiatric disease,

psychiatric research and clinical practice. The neurosciences have experienced a spectacular boom during the past decades: new and improved methods in molecular- and cell-biology as well as imaging techniques have deepened our understanding of the nervous system and contributed to the understanding of neurological and psychiatric diseases. In addition, a range of novel interventional methods – e.g. from the fields of neuro-surgery, neuro-prosthetics and psychopharmacology – has been developed with partly impressive results. Despite of this considerable advance the relationship between neuro-scientific research and the clinical disciplines neurology and psychiatry proves to be strained at times. Especially amongst psychiatrists it remains a hotly debated issue to what extent the neurosciences improve clinical practice or, to the contrary, amount to an undue “scientification” of psychiatry.

A broad range of issues related to this thematic framework was discussed by the participants covering the fields of medicine, the neurosciences, psychology, philosophy, law, the social sciences, and theology. The discussions were augmented by several lectures by senior scientists and two field trips to the department of psychiatry and the Life & Brain Institute (both Universität Bonn).

The Summer School – jointly organised with the department of psychiatry (Universität Bonn) – was funded by the German ministry of education and research (BMBF).

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 For further information see:
www.neuroscience-psychiatry.de

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16th international conference on traffic noise

The annual conference on traffic noise took place on 5th and 6th October in Dresden. The recent event aimed at interdisciplinary reviews and further development of strategies for effective noise protection from road, rail and air traffic. The discussions at the conference focused on the consequences of the recent national action plan “Nationales Verkehrslärmschutzpaket” which was presented by leading representatives of the German Federal Ministry of Transport, Building and Urban Affairs (BMVBS). Dr. Stephan Lingner was invited to contribute to the conference with a paper on societal and normative aspects of noise protection. It referred to the results of the completed academy’s project “Environmental Noise” with regard to the a. m. action plan.

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NEWS

Arbeitskreis Medizinethik

Thema dieses Arbeitskreises war „Sollen Krankenkassen Kinderwunschbehandlungen zahlen? Ethische und rechtliche Überlegungen.“ Im Gegensatz zu anderen Ländern werden in Deutschland die Kosten für reproduktionsmedizinische Maßnahmen zur Behandlung eines unerfüllten Kinderwunsches nur sehr eingeschränkt von der gesetzlichen Krankenkasse übernommen. Aus moralischer Perspektive stellt sich daher unter anderem die Frage, ob diese Situation ungerecht ist und politischer Handlungsbedarf besteht. Dr. phil. Oliver Rauprich, Dipl. Biol., Leiter der BMBF-Nachwuchsgruppe „Gerechtigkeit in der modernen Medizin“ am Institut für Medizinische Ethik und Geschichte der Medizin der Ruhr-Universität Bochum, vertrat in seinem Vortrag am 30.10. die Auffassung, dass, obwohl der unerfüllte Kinderwunsch (bzw. seine Ursachen) i.d.R. nicht als Krankheit oder Behinderung anzusehen ist, moralische Überlegungen im Rahmen einer Konzeption vom gelungenen Leben dafür sprechen, die Kosten für die Behandlung des unerfüllten Kinderwunsches stärker als bisher durch die Gesellschaft tragen zu lassen.

*Contact:**Dr. med. Felix Thiele, M.Sc.**+49 (0) 2641 973-304**felix.thiele(at)ea-aw.de***Students discussed with managers**

On 8th October, the Ph.D. students Jan Bollinger, Annette Kötter and Katja Stoppenbrink as well as Dr.-Ing. Droste-Franke (all four staff members of the Europäische Akademie) were invited by the heating technology company Vaillant GmbH to a discussion with their managers; it took place within the framework of a leadership workshop in Duisburg. Under the topic of “future energy”, energy supply options were discussed with a focus on ethical questions in a controversial but well-founded debate.

PUBLICATIONS

Stephan Lingner

“Macht Lärmschutz uns arm? Rechtliche und ökonomische Aspekte des Verkehrslärmschutzes”, in: Hamann Consult AG (eds.) Tagungsband 16. Konferenz “Verkehrslärm” 2007, Dresden 2007

LECTURES

Carl Friedrich Gethmann

24/10/07

“Was heißt ‘Wettbewerb’ in den Wissenschaften?” Interdisziplinäres Zentrum für Wissenschafts- und Technikforschung, Bergische Universität Wuppertal

7/11/07

“Ethos des Heilens versus Effizienz des Gesundheitssystems”
Medizinische Gesellschaft Mainz e.V.

19/11/07

“The interdisciplinary project groups at the Europäische Akademie Bad Neuenahr-Ahrweiler GmbH”
Institute for Health and Consumer Protection, Ispra, Italy

22/11/07

“Entlastung vs. Selbstbestimmung. Ethische und anthropologische Aspekte der Ambient Intelligence”
Day of Technology, Fraunhofer Institut für Experimentelles Software Engineering, Kaiserslautern

Karsten Mause

11/10/07

“Ist Marktsignalisierung im Hochschulsektor sozial verschwenderisch?”
Conference “Hochschulen und außeruniversitäre Forschung unter Reformdruck”, Deutsche Hochschule für Verwaltungswissenschaften, Speyer

PERSONALITIES



RAFAEL PARDO AVELLANEDA holds a degree in political and economic sciences at the Complutense University of Madrid and received a Ph.D. in sociology from the same center in 1984. His thesis dealt with methodological issues in the social sciences. From 1986 to 1988 he was a postdoctoral Fulbright scholar at the Massachusetts Institute of Technology, USA (Science, Technology and Society Program). After having worked as assistant and associate professor of sociology at the Complutense University and associate professor of sociology at the UNED (Spanish Open University) in Madrid, he took up a chair in sociology at the Public University of Navarre in 1993. In 1996 he was appointed professor of research at the Institute of Economy and Geography (National Scientific Research Council, CSIC), again in Madrid. As chair of the National Research Assessment Committee for the social sciences of the Agencia Nacional de Evaluación y Prospectiva (ANEP, Spanish Ministry of Science and Education) from 1994 to 1996, he also formed part of the Socioeconomics Group in charge of drawing up the National RDI Plan 2000–2003. Since 2000, he has been director of the BBVA Foundation, an associate researcher at the Institute of Economy and Geography (National Scientific Research Council, CSIC) and a member of the Scientific Advisory Board of the Autonomous University of Madrid. His research and publications mainly deal with the study of scientific and technological culture, research methods, organisational studies, innovation and social capital. He also participated in the design of the 1992 Eurobarometer on Europeans, Science and Technology. He was engaged in a series of methodological issues in the study of public understanding and attitudes to science. He is currently preparing a book on social capital in thirteen countries.

Professor Rafael Pardo Avellaneda, Ph.D., is member of the project group “Pharming. Genetically modified plants and animals as future production site of pharmaceuticals?” (duration 7/2006–12/2008) of the Europäische Akademie GmbH. He was also member of the project group “Embryo experimentation in Europe. Bio-medical, legal and philosophical aspects” (duration 1/01–12/03).

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