ARS ELECTRONICA

FAS.research
Sozialwissenschaftliche Forschungsgesellschaft mbH

Language of Networks

Abstracts and CVs

Batagelj, Vladimir

Department of Mathematics, FMF, University of Ljubljana andDepartment of theoretical computer science, Institute for Mathematics, Physics and Mechanics, Ljubljana, Slovenia. Professor of Discrete and Computational mathematics, Ph.D. in Mathematics1986. Scientific interest: mathematics and computer science, combinatorics with emphasis on graph theory, algorithms on graphs and networks, combinatorial optimization, algorithms and data structures, cluster analysis, and applications of information technology in education. He is a chair of the Department of theoretical computer science, IMPM. With Andrej Mrvar he is developing Pajek http://vlado.fmf.uni-lj.si/pub/networks/pajek/, a program for analysis and visualization of large networks. In 2004 two books 'Generalized blockmodeling' (Vladimir Batagelj, Patrick Doreian, Anuska Ferligoj) and 'Exploratory Network Analysis with Pajek' (Vladimir Batagelj, Wouter de Nooy, Andrej Mrvar) will be published by the Cambridge University Press.
http://vlado.fmf.uni-lj.si/

Abstract for Workshop II:

Pajek - analysis and visualization of large networks

(Vladimir Batagelj and Andrej Mrvar)

We present an introduction to the use of Pajek followed by some efficient approaches (islands, cores, triangular weights, citation weights, pattern search, etc.) to the analysis and visualization of real-life large networks (genealogies, collaboration networks, citation networks, Internet networks, dictionary networks, etc.).

Program Pajek is available at: http://vlado.fmf.uni-lj.si/pub/networks/pajek/

Restricted participant number!

Brandes, Ulrik

is a full professor of computer science at the University of Konstanz, Germany. He received his Diploma from RWTH Aachen (1994), PhD degree (1999) and Habilitation (2002) from the University of Konstanz. After postdoctoral visits to Brown University (1999) and the University of Sydney (2001), he held an associate professor position at the University of Passau (2002-2003). His research interests are in algorithmics and focussed on the analysis and visualization of networks.

Abstract for Panel I Information Visualization:

Network Visualization and Graph Drawing

(Ulrik Brandes and Rene Weiskircher)

Network visualization deals with all aspects of representing link structures such as social networks, transportation systems, communication networks, or data structures. The automatic generation of network visualizations is thus of relevance in virtually every area concerned with graphical data analysis, visual communication of information or illustration. From an algorithmic perspective, the most interesting, and most difficult, aspect is the automatic layout of network representations. Mathematically, the structure of a network is represented by a graph, and the placement of graphical elements visualizing this graph in a way that is meaningful for the specific application, yet clear and readable to the observer, is called graph drawing. We give an overview over the rich diversity of network visualization applications and provide an introduction to graph drawing, an exciting research area that includes topics from graph theory, algorithmics and graphic design.

Dirmoser, Gerhard

works in Linz as a systems analyst (specializing in geographical information systems) and has also been dealing with semantic networks for over 15 years. He has produced studies in network form

on cybernetic aesthetics, structuralism, French philosophy, art in context, terms of thought, verbs, atmospheric concepts, design gestures, mapping issues, and the 25-year history of Ars Electronica. In collaboration with Josef Lehner, he conceived the SemaNet tool and, together with Grintec, developed the WiLa application module for the depiction of semantic networks.

Abstract for Panel III Networks and Art:
Depictions of Networks in the Field of Art
A Contribution to Diagrammatics Taking as my starting point a comprehensive collection of diagrams having to do with various mapping issues, I will elaborate on the subgroup of network depictions. I will present an approach to ordering that was worked out for the entire field of mapping and is now being applied as a method for the analysis of network diagrams. Network diagrams can be applied in a wide variety of fields, whereby questions having to do with representation, passing on information or traditions, impact/influence, relations, power, process and systems analysis, infrastructure, cognition, artificial intelligence and representation of knowledge are of particular significance. I will show in which of these areas art offers network depictions. In going about this, art is defined as broadly as possible, and I will also consider examples from music, design and architecture. On the basis of a specially constructed diagram plateau, I will go into somewhat more detail about a few topics specific to art. In addition, I will attempt to provide a concise overview of the work of those philosophers whose texts—as well as their expressions in graphic form—have had a major influence on diagrammatic thinking (Lullus, Fiore, Peirce, Wittgenstein, Deleuze, Foucault, Serres, Collins, Sloterdijk, Macho, Sachs-Hombach). I have produced a separate study of the terms network, diagram, plateau and tableau as used by Foucault and Deleuze, and this will be presented as a poster display.

Funk, Gerhard

Study of mathematics and education of art at the Johannes Kepler University and at the University of Art in Linz. Ph.D. in theoretical computer science. High school teacher for art, mathematics and computer science. Lecturer at RISC Linz (Research Institute for Symbolic Computation) and collaborator in research projects. Since 1993 senior lecturer at the University of Art in Linz within the range of digital media. Working as artist, e.g. interactive installations. Research projects in the field of e-learning and e-science. Head of the DMA project.
gerhard.funk@ufg.ac.at

Presentation in context of the Workshop I: Science Communication:
DMA – Digital Media for Artists
The aim of the project is to collect and share the widespread knowledge of many people, especially lecturers ad students, and to develop a web-based system with whose assistance users can pick up in a spatially and temporally flexible and need-oriented way the necessary technical and formative skills within the range of the digital media. The users can become acquainted with the technical and design aspects that are to be considered for a digital media production. The content is structured into modules, which cover theoretical background knowledge, technical-practical guidances, design principles. The network of these independent modules obtain the bases from the ranges 2D-graphics, desktop publishing, digital video and audio, 3D-graphics and animation, multimedia and web design. The crucial point is that every lecturer, student or interested user can produce and upload modules, which are supervised by an editorial board. The project is initiated and implemented by the University of Art and Industrial Design Linz in cooperation with FH Hagenberg „Engeneering of Computer-based Learning" and is granted by the Federal Ministry for Education, Science and Culture.
Current URL: http://e-learn.internet.ufg.ac.at/digimapp/digimapp/

Güdler, Jürgen

studied Sociology and History of Art at the Universities of Mannheim, Karlsruhe and Cologne ("Magister of Arts" in 1989, Ph.D. in 2001, University of Jena). Since 1996 he is working at the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation). Since 2001 head of the Department for Information Management which is responsible for information services including statistics and evaluation, web-based information databases (e.g. www.gepris.de) and general internet- and intranet-services.
One of our most popular services is the DFG-Ranking (www.dfg.de/en/ranking).

Abstract for Panel II Mapping of Research and Innovation:

2003 DFG Funding Ranking: Methods, Findings and Perspectives

With a budget of approximately € 1.3 billion, the Deutsche Forschungsgemeinschaft/German Research Foundation (DFG) is one of the main funding organisations for basic research in all scientific fields in Germany. In 2003 the DFG published its third funding ranking (see: http://www.dfg.de/en/ranking). Whereas the previous rankings (1997, 2000) focussed mainly on the amount of DFG-funding, each University ore non-university Institute received, this third ranking widens the scope to include other kinds of internal DFG data as well as data from other funding agencies such as the Humboldt Foundation (AvH), the German Academic Exchange Service (DAAD), the European Union (5th Framework Programme) and – last but not least – bibliometric data. The presentation will discuss the main data and methods used in this ranking. It is particularly interesting to look at a performance indicator that refers to the centrality of collaborative networks.

Hirschberg, Urs

Professor for representation of architecture and new media at Graz University of Technology. He received his Diploma in Architecture from ETH Zurich. Until 1997 he was involved in two major research projects: on computer support in urban planning and on digital photogrammetry in architectural design. Between 1997 and 2000 he was lecturer for computer aided architectural design at ETH Zurich. He conducted workshops at TU Delft and at Bauhaus University in Weimar and was an academic fellow at the Hong Kong Polytechnic University. From 2000 until 2002 he served as assistant professor in design computing at the Harvard Graduate School of Design. In September of 2002 he took on the newly founded professorship for "representation of architecture and new media" at the institute for visual design of the architecture department of Graz University of Technology. Since 2004 he heads the newly founded institute of architecture and media and serves as dean of the architecture faculty of TU Graz.

Abstract for Panel III Networks and Art:

Networks of collective authorship

Collaboration via networks has opened up new possibilities of creative exchange. With the advent of the internet the computer has become a new type of device: still a tool for creative work, it now doubles as a communication medium enabling users – among other things – to easily discuss and share the work created with it. Computer programmers were the first to take advantage of this double role: developments like the free software foundation or the open source movement have had a deep impact on the whole software industry. Linux and other open source projects have long proved that computer networks are more than a cheap way to exchange messages or to swap files. The classic 'creative' disciplines like art or architecture have been more hesitant to take advantage of this new potential. Our research in this area over the last several years has

addressed various implications of enabling networked collaborations for large groups in architecture. It led to a number of projects that were carried out in an educational context. Phase(x), fake.space, Eventspaces and DM0-4 are names of web-based environments for creative collaboration in which architecture students would share and reuse their design work in an open source fashion. These environments are specifically designed to handle graphical content and support the exchange of a wide variety of formats. The visualizations make the social dynamics of these networked interactions transparent.

Holmes, Brian

Brian Holmes is an art critic and activist, living in Paris, concerned with the intersections of artistic and political practice. He holds a doctorate in Romance Languages and Literatures from the University of California at Berkeley. He was the English editor of publications for Documenta X, Kassel, Germany, 1997, was a member of the graphic arts group Ne pas plier from 1999 to 2001, and has recently collaborated on cartography projects with the French group Bureau d'études. He contributes regularly to the international mailinglist Nettime, on the subjects of activism, social theory and tactical media; is a member of the editorial committees of the journals Multitudes (Paris) and Brumaría (Barcelona); publishes frequently in Springerin (Vienna) and Parachute (Montréal). He lectures around Europe and the world, and is the author of an anthology of essays, Hieroglyphs of the Future: art and politics in a networked era.

Abstract for Panel IV Networks and Power:
Control Networks, Productive Diagrams: The Limits of Representation
The "Skitter" graph, assembled by the Cooperative Association for Internet Data Analysis, correlates the spatial location of some 12,500 ISPs with the volume of outgoing signals they generate. The results show a striking visual resemblance to a map of the hierarchical relations existing between and within each of the world's three major production blocs (NAFTA, European Union, Far East Asia). The development of the Internet mirrors both the geographical extension of contemporary capitalism, and the neoliberal principles of modular, flexible management. But its uses are irreducible to the neoliberal model. Indeed, they are partially unmappable. This paper draws on the Deleuzian notion of the "diagram of power" to examine how new forms of grassroots political agency emerged from the tremendous bout of deterritorialization imposed by the globalization process, from the 1980s to the turn of the millennium.

Johnson, Jeffrey C.

Jeffrey C. Johnson is a Senior Scientist at the Institute for Coastal and Marine Resources, and Professor in the Departments of Sociology, Biology, Anthropology, and Biostatistics, East Carolina University, USA. He received his Ph.D. in Social Science from the University of California Irvine. He has recently completed a long-term research project comparing group dynamics of the winter-over crews at the American South Pole Station with those at the Polish, Russian, Chinese, and Indian Antarctic Stations. He is currently interested in network visualizations of complex social and biological systems.

Abstract for Evening Lecture:
Visualizing Group Dynamics at the Amundsen-Scott South Pole Station
From a series of cross-cultural studies on the evolution of group or network structure in Antarctic research stations it is evident that despite similarity in natural environments (e.g., cold, isolation), organizational goals (e.g., conducting science), formal organizational structure, physical settings, group size, and duration of isolation across years, group dynamics can vary dramatically from

one group to another even within the same physical and cultural settings. Thus, network dynamics are largely a function of both formal and informal factors (e.g., the emergence of informal social roles) that have variable effects on the patterns of interaction and connection among network actors. This lecture demonstrates how the dynamic visualization of social networks contributes to a better understanding of the emergent social processes underlying human interaction in extreme and isolated conditions typical of Antarctic research stations. Data and dynamic network visualizations from 3 winter-over crews at the American Amundsen-Scott South Pole Station provide important analogs for understanding the human challenges inherent in future space travel.

Kastrinos, Nikolaos

has a Degree in Political Science from the University of Athens and an MSc and a PhD from the University of Manchester. He has carried out research and published articles in matters related to European RTD policies and their evaluation. He joined the European Commission in 1997 as part of the ETAN (European Technology Assessment Network) initiative, and following a period in the Strategy Directorate of DG Research, he moved to the area of social sciences and humanities research, where he now works on policy development.

Katzmair, Harald

is director at FAS.research (Austria) a non-university institute for social science research. He holds a degree in sociology and philosophy (University of Vienna). Since 1992 he is lecturer at various universities (Vienna University of Economics and Business Administration, University of Vienna, Danube University in Krems, university course for communication in science, Faculty for interdisciplinary research and advanced training, NBC-Defense-School Austria, etc.). His main interests are Social Network Analysis, Complexity Theory and Ornithology.
Homepage: www.fas.at
E-mail: office@fas.at

Abstract for Workshop I:

Science Communication

(Harald Katzmair and Elke Ziegler)

Visualizing and communicating complex knowledge is "daily business" not only to journalists and PRexperts, but also to didacts and pedagogues. By participating in the workshop "Science Communication", they have the opportunity to learn about the method of "Social Network Analysis". On the basis of concrete examples, the lecturers will provide participants with a "tool box" for analysis and visualizations.
Restricted participant number!

Abstract for Panel IV Networks and Power:

The Structure of Rugged Power Landscapes - Complexity Theory, Social Network Analysis and the Mathematics of Power

The paper shows by the example of a large real data network (Austria's elite networks) how theoretic models from the field of Complexity Theory (CT) and Social Network Analysis (SNA) can be applied for visualizing and simulating power spaces. In the last 20 years these two sciences both dealing with states and dynamics of networks have developed a broad spectrum of highly sophisticated indicators for measuring the "power", "influence", and "prestige" of whole networks, groups or individuals. They discovered some very general structural principles which give power structures a robust and sustainable setting. The paper presents some of the most intriguing

insights and demonstrates by the example of real data networks from the field of economy, science and culture some approaches how to measure, visualize and simulate power landscapes.

Abstract for Panel VI Network and Business:

A new Science Goes Business: Key-Account Management, Sales and Marketing by Means of Social Network Analyis

As the saying goes there is nothing as practical as a good theory. The social science of analyzing networks called Social Network Analysis (SNA) is one of those rare "good theories". It offers a wide range of practical applications in various fields of economy. In the first part the paper gives a short overview on current centers of the practical application of network theories (Amazon, Google, IBM, Microsoft etc.). In the second part the paper presents cases conducted by FAS.research in the following three fields: key-account marketing and sales, lobbyism and communication, organizational analysis. Finally the paper argues that acting as a broker between science and economy is a multilingual work of conveying and bridging very different worlds. It shows that this process has its social risks but offers also many possibilities for establishing a new 21st century culture of knowledge creation and distribution.

Krempel, Lothar

is a senior research fellow at the Max Planck Institute for the Study of Societies in Cologne and lecturer for Empirical Social Science Research at the University of Duisburg Essen, Germany. He has written a habilitation (second thesis) on network visualization as a multvariate graphical technology: how complex empirical information can be inspected with graphical means in a scientific way. In his work he has applied network visualization technologies in various domains, to diverse topics such as patterns of scientific collaboration, inter- and intra- organisational processes, economic globalization and the world trade in cars, the economic transformation of transition societies, historical mobilization processes, symbolic exchanges in simple societies and the analysis of large text corpora.

Abstract for Introductory Lecture:

Networks: Science – Arts

Humans have created images since ancient times. Images can give highly realistic impressions of the world. They are storage devices which preserve information.
Visual communication is extremely powerful. This may explain why science was very hesitant to use the potential of images.
Today network studies identify information landscapes that are produced by automatic routines. Like geographical atlases they identify positions, but in statistical space. Science has entered the domain of arts. We have just begun to explore the vast potential of these new forms of communication. How to best do it is the question.

Abstract for Panel I Information Visualization:

Communicating Empirical Information with Color

Color has been a central mean of artistic expression from the early beginnings. The artistic craftsmenship how to use color to generate naturalistic and spatial impressions of the world is around for several hundreds of years, long before photography had been invented. Physical and physiological principles of color and color vision are far less old. Their implementation in forms of industrial standards is based on quantitative models of color appearance. These are q result of the ambitious work of crew of colormetricians. Not before 1970 they had managed to spell out the complex mathematical functions that underly the human perception of color. Since then, the standardization of color perception has allowed a steep development of digital technologies.

Digital color displays and printing devices have been available since the 1990s. They have brought color technologies to many workplaces and homes. These technologies allow today (among many other uses) to communicate numerical information and their orders with high precision into visual impressions. The talk gives a sketch of the scientific knowledge about color, and presents principles and examples, how color can be used to translate quantitative numerical information into the natural order of human vision. This allows to communicate so complex multivariate information with ease and high precision.

Laireiter, Anton-Rupert

Dr.phil., Ass.Prof.; Dept. of Psychology, University of Salzburg; Position: Outpatient-Center for Clinical Psychology and Psychotherapy (Head). Doctoral study in Psychology, Psychiatry and Psychopathology; Dr.phil. 1990, Salzburg. Scientific activities/interests: Psychotherapy research (Effectiveness, training); Social support and social networks: e.g. stress and social support; social networks and attachment; social support and psychotherapy; empathy.
URL: http://www.sbg.ac.at/psychologie/laireiter.htm
Mail: anton.laireiter@sbg.ac.at

Abstract for Panel V Sociometry:

Psychological Network Analysis

In comparison and contrast to sociological or anthropological network research, psychological network research is distinguished by a series of unique characteristics (personalism, psychological functionalism, networks as social environment, networks as assets and obligations, etc.). This address will provide an introduction to these and other similar differences as well as correspondences with structural network research. On the basis of this discussion, I will elaborate on a few typical issues and areas of application of psychological network research and practice. This will be followed by a brief portrayal of the most important methods of network research and a somewhat more elaborate discussion of two of my own methods—the interview as to a person's social network and system of social support (SONET), and a contact and interaction diary to register social contacts in everyday life (interaction networks)—and their most important findings. During my presentation of SONET, I will also discuss the question of why, within the framework of this instrument and in psychology as a whole, an individual's social structure and the linkages among the members of an individual's network are so seldom registered and taken into account. In doing so, I will specify, first and foremost, arguments having to do with research perspectives as well as theoretical and methodological grounds.

Marschall, Brigitte

Brigitte Marschall is currently professor at the Department of Theater, Film and Media at the University of Vienna, where she completed 1983 her doctorat with a dissertation on J.L. Moreno and Psychodrama. She has published numerous articles on Jakob Levy Moreno, Walter Benjamin, Georg Tabori, August Strindberg, ritual, drugs and theatricality, threshold phenomena, performance theory, subculture and actionsm. Her book "Die Droge und ihr Double" was published by Boehlau, Cologne 2000. She was guest lecturer at University of Berne, cooperator of the Quadriennale at Prague 2003, and supervises the databank THEADOK. She is currently preparing an edition of the early works of the performer J.L. Moreno.

Abstract for Panel V Sociometry:

Encounter as Life: Socio-theatrical Forms of Action in the Improvisational Theater of Jakob Levy Moreno

Jakob Levy Moreno did not explicitly use any sociometric terms either in his early Viennese writings or in his theatrical experiments; nevertheless, it is precisely these aesthetic-programmatic works dating back to 1914-25 that trace the socialization process. Years later, in the 1930s in America, Moreno would have recourse to his experiences and theatrical experiments and establish them as network theory. His Viennese theatrical experiments are to be properly understood as works of environment art that destroy the aesthetic distance to the work of art. Specific conditions of life and individuals' internal constitutions are tied to certain positions (of power) in the social sphere and to the rhythm of time. Moreno also sought a way to visually depict these complex systems of interrelationships and their shifts over time. The architectural solution that Moreno came up with to portray the simultaneously transpiring actions of the actors as well as the specification of various different states of consciousness and levels of action involved acting podiums raised to different elevations and in the form of organically proliferating rosettes with manifold, equally privileged performance centers. This oscillating form of the performative process transforms the microcosm of the individual into the macrocosm of (global) society beyond political and ethnic boundaries.

Moriwaki, Katherine / Brucker-Cohen, Jonah

Katherine Moriwaki artist and researcher investigating wearables, fashion, and the experiential resonance of technologically mediated urban public space. Currently a Ph.D. Candidate at the University of Dublin, Trinity College. Her work has appeared in IEEE Spectrum Magazine, and has exhibited and presented at numerous festivals and conferences including Siggraph (2000), numer.02 at Centre Georges Pompidou (2002), Break 2.2 (2003), Ubicomp (2003), e-culture fair (2003), Transmediale (2004), and CHI (2004). She is a 2004 recipient of the Araneum prize from the Spanish Ministry for Science and Technology and Fundación ARCO. URL: http://www.kakirine.com

Jonah Brucker-Cohen works as a Research Fellow in the Human Connectedness Group at Media Lab Europe in Dublin, Ireland, and is a Ph.D. candidate in the Disruptive Design Team of the Networks and Telecommunications Research Group (NTRG) at Trinity College Dublin. His writing has appeared in numerous international publications including Wired Magazine and Rhizome.org, and he was chosen as a net.art judge for the 2003 Webby Awards. He is the co-founder of the Dublin Art and Technology Association (DATA Group) and won the 2001 International Browserday with his project "Crank the Web." His work has been shown both in the US and internationally at events and venues such as DEAF (2003), Transmediale (02,04), ISEA, Whitney Museum of American Art's ArtPort (2003), Ars Electronica (02,04), The Institute of Contemporary Art (ICA) in London and others. URL: http://www.coin-operated.com/

Mrvar, Andrej

is a Assistant Professor at the Faculty of Social Sciences at the University of Ljubljana ,Slovenia. His studies at the University of Ljubljana, Slovenia are: 1992, B. Sc. in Computer Science at Faculty of Electrical Engineering and Computer Science. 1995, M. Sc. in Computer Science, 1999, Ph. D. in Computer Science at Faculty of Computer and Information Science. Mrvars Scientific and Teaching Activity are: 1992-1996 Assistant of Statistics. 1996-2000 Assistant of Computer Science and Statistics. Since 2000 Assistant Professor of Social Science Informatics. Research interests: Network Analysis, Graph Drawing, Electronic Timing and Data Processing of Sports Competitions.

Homepage: http://mrvar.fdv.uni-lj.si/

Email: andrej.mrvar@uni-lj.si

Abstract for Workshop II:

Pajek - analysis and visualization of large networks

(Vladimir Batagelj and Andrej Mrvar)

We present an introduction to the use of Pajek followed by some efficient approaches (islands, cores, triangular weights, citation weights, pattern search, etc.) to the analysis and visualization of real-life large networks (genealogies, collaboration networks, citation networks, Internet networks, dictionary networks, etc.).

Program Pajek is available at: http://vlado.fmf.uni-lj.si/pub/networks/pajek/

Neurath, Wolfgang

holds a degree in History and Philosophy from the University of Vienna. He is lecturer at the Vienna University of Economics and Business Administration. He works for the Austrian Council for Research and Technology Development. Currently, Wolfgang Neurath manages a project, which deals with innovative models for research and technology policy. Within this project visualisation of R&D and the measurements of innovation potential are central themes.

Abstract for Panel II Mapping of Research & Innovation:

Social Network Analysis (SNA): a new method to explore patterns of innovation

Research and innovation policy is undergoing a process of change, as can be seen in the social structure and exchange patterns of the innovation system and in social capital management. Innovation experts argue that not only the input in research, technology and development (RT&D) is crucial for innovation, but also - and perhaps even more so - the social structure of the network of innovators and the exchange of knowledge in terms of accessibility and speed; in other words the adoption and exchange structure of the innovation system. Social Network Analysis is a method to explore and visualize social structures and thus sustainable social patterns of innovation can be generated. With SNA it is possible to detect innovation networks and clusters with a higher potential for innovation than others.

Nigten, Anne

Anne Nigten is the manager of V2_Lab, the aRt&D department of V2_Organization. She's PhD candidate at SMARTlab Centre / The University of the Arts, London (UK). Nigten is advisor for several art and science initiatives in Europe and international. Over the last years she published papers on art, engineering and science collaboration and software development from an artistic perspective.

ANne@v2.nl ; http://lab.v2.nl ; www.v2.nl

Abstract for Panel I Information Visualization:

Mental maps

Mapping as an overall term seems appropriate for indicating a significant cluster of art and design research dealing with information visualization in a broad sense. In the field of mappings several categories can be distinguished, from notation systems, the cartographic map to the associative or mental map. All these maps represent a certain reality often based on a specific domain or discipline. The other maps, which we'll call mental maps or associative maps, offer a personal, emotional or artistic view on abstract data or information without any equivalent in our physical reality or according a specific subjective interpretation of our life. The artistic research in this field goes further than sexy packaging of abstract matter; it often reflects a critical view on the usage of the internet and its potential beyond the extrapolation of reality as we know it. Artists and artists groups have worked over the last decades on projects examining the potential of networked environments with respect to community building, knowledge exchange systems and tools to

investigate opportunities for social cohesion. This paper deals with mental maps as artistic research and development where the networks are used as an extension of urban or public space.

de Nooy, Wouter

teaches methodology and sociology of the arts at the Department of Arts and Culture Studies at the Erasmus University Rotterdam. His research focuses on the social production of belief within the literary field as well as the visual arts world, in which he combines Pierre Bourdieu's field theory and social network analysis. He participated in visual arts projects at the Witte de With center for contemporary art in Rotterdam, where he designed, for instance, the exhibition of the art work Between the Frames by Muntadas.

Abstract for Panel IV Networks and Power:

Who Shall Survive in the Literary Field?

In his magnum opus, Moreno posed the question Who Shall Survive? His answer was concise: "everyone should survive" (p. 607). To Moreno, survival was a matter of distributing wealth and optimizing sociometric relations. But do social relations and networks actually help people to survive instead of being instrumental to their demise? This presentation shows the role that networks play in the survival process within a professional art world, namely the Dutch literary field in the 1970s. Evaluations among literary authors and critics constitute the fundamental social relation in this field as they are part and parcel of the recognition process producing a ranking according to success, which is making a name in the double sense of receiving attention (sufficient to continue a career) and being attributed a particular literary style or signature. It will be shown that group processes and classifications according to literary style proposed by the authors and critics themselves produced winners and losers within a decade. Social class distinctions affected both group processes and classifications in a way such that the upper class maintained its dominant position.

On, Josh

Josh On is a web designer and activist living in San Francisco, USA. He works with Futurefarmers as well as pursuing solo projects and collaborating with his partner Amy Balkin. In 2000 he recieved a Masters degree in Computer Related Design at the Royal College of Art in London. Much of his time is spent participating in socialist activism. In 2001 (with some help from others) he made www.theyrule.net which he updated in 2004. It is an interactive website that lets user's browse the interlocking directories of the top US companies. He is still excited about the internet and what it can be.

Abstract for Panel IV Networks and Power:

Network vs Class

Modern capitalism has been described as both a network society and a class society. What are the implications of these two descriptions? Are they compatible? Perhaps class is a useful metaphor at times while network can help us understand society better others. Could this be the wave/particle duality of sociology? What implications does it have for activists, and those engaged in struggles against oppression? I will argue that the Marxist notion of class, brings more clarity to both understanding the world that we live in and changing it, than the metaphor of networks can. More nuclear weapons are being built, there is impending environmental catastrophe on a global scale, and increasing inequality of living standards. After the biggest demonstrations ever the US and its allies went to war for oil anyway. It begs the question - what

will it take to turn things around? After the failure of the centrally organized, militant struggles of the past, many have blamed centralized organizing as a flawed form. There is a skeptism about any authority and a desire to change the world without taking power. The chaordic, decentralized, dynamic and flexible features of the many of the global justice demonstrations have been embraced as a new way forward. Yet, old questions start arise as they did on a larger scale in Spain in 1936, and for the new Left in the 1960's. If we don't take power who will?

Paley, W. Bradford

creates visual displays with the goal of making readable, clear, and engaging expression of complex data. Brad did his first computer graphics in 1973, founded Digital Image Design Incorporated (didi.com) in 1982, and started doing financial & statistical data visualization in 1986. He has exhibited at the Museum of Modern Art; he created TextArc.org; he is in the Artport collection of the Whitney Museum of American Art; has received multiple grants and awards for both art and design. He is an adjunct associate professor at Columbia University, and is director of Information Esthetics: a fledgling interdisciplinary group exploring the creation and interpretation of data representations that are both readable and esthetically satisfying.
http://didi.com , http://didi.com/brad , http://www.cs.columbia.edu/~paley

Abstract for Panel I Information Visualization:

Information Visualization: Meaning, Evolution, and Design; How to Engage Cognition using Early Vision

Brad will offer his approach to "Information Esthetics," which involves collecting techniques inspired by expert communicators in the arts and tying these techniques to fundamental processes evolved in human vision. Several demonstrations of his work will help develop the thesis that a designed object, when operating as a window on an inherently interesting and complex natural phenomenon, may be able to satisfy both the eye and the mind--not sacrificing information content for esthetics nor vice versa. True synergy may be achievable: easier understanding because the image engages, and richer images because the source/subject transcends the creator.

Schenk, Michael

Univ.-Prof. Dr. rer. pol. Dr. habil. Michael Schenk heads the research centre for media economics and communication research at the University of Hohenheim (Stuttgart) and, since 1986, is chair of communication science and social research, ibidem. With a Masters degree in economics (University of Regensburg, Dipl.-Kfm. 1974) and a Ph.D. (University of Augsburg, 1977) he worked as a project manager in market research at Infratest, Munich. In 1983 he was promoted to professor (tenured) for journalism and media economics at the University of Mainz. Prof. Schenk's fields of interest include: Media- and communication research, media marketing, innovation research, and network analysis.
schenk@uni-hohenheim.de

Abstract for Panel V Sociometry:

Network analysis of social structures

Analysing social networks has gained prominence not only in sociology and psychology, but also in different disciplines such as economics, communication science, geography or linguistics. This contribution gives insight into basic models and methods in network analysis. First, we introduce pivotal structural parameters in complete networks, which for example lead to concepts for identifying cliques and clusters as well as different social positions and roles. Since social sciences

increasingly analyse ego-centred networks, the second part focuses on structural parameters of this particular kind of networks. Empirical examples will illustrate the parameters and methods presented.

Schmidt-Burkhardt, Astrit

is a historian of graphic imagery. As a lecturer at the Free University of Berlin, she teaches the history of graphic imagery and art since the Enlightenment. She is also active as an expert witness and consultant. She has done research and published on the subjects of diagramming, the eye and pseudonyms.

Abstract for Panel III Networks and Art:

Art's Family Tree.

On the Genealogical Transformation of Information. Modern art has different historical narratives—related not only according to the subjective standards of those who write them but also according to the perspectives from which that history is viewed. That's obvious. Yet, it must still be maintained that art historians, with their objectifying modes of depiction of art's family trees and genealogical schemata, nevertheless lodge the claim to be providing an impartial historical overview. What they are instead imparting is merely a variety of individual perspectives. On the basis of selected diagrams, I will show which concepts and strategies—some fundamentally, diametrically opposed to one another—might be behind iconic historical symbolism or the semiotic explanatory model. Going about this will be a matter of revealing what Philippe Ariès referred to as art's theoretical "totalities" from different perspectives. The family tree of art suggests itself as an object of investigation in that the genealogical reordering of the past brings to light telling examples of Modernism's shifting conception of self.

Schoenerwissen/OfCD

(Anne Pascual & Marcus Hauer) specializes in the design and development of information architectures, interfaces and visual languages. Our design strategy integrates the use of new technologies, theory and experimentation. We seek for advanced information infrastructures that provide spatial and temporal contexts serving as frameworks for exploration and dynamic decision making.

Smetschka, Joachim

Study of experimental visual design at the University of Art in Linz. Working as a mediadesigner, art director and videoartist. Member of the Ars Electronica Futurelab from 1997 to 2000. Lecturer at the University of Art and Industrial Design Linz/Institute for Media within the range of video and postproduction. Supervisor and member of the editorial board of the DMA project.

Presentation in Context of the Workshop I Science Communication:

DMA – Digital Media for Artists

The aim of the project is to collect and share the widespread knowledge of many people, especially lecturers ad students, and to develop a web-based system with whose assistance users can pick up in a spatially and temporally flexible and need-oriented way the necessary technical and formative skills within the range of the digital media. The users can become acquainted with the technical and design aspects that are to be considered for a digital media production. The content is structured into modules, which cover theoretical background knowledge, technical-practical guidances, design principles. The network of these independent modules obtain the

bases from the ranges 2D-graphics, desktop publishing, digital video and audio, 3D-graphics and animation, multimedia and web design. The crucial point is that every lecturer, student or interested user can produce and upload modules, which are supervised by an editorial board. The project is initiated and implemented by the University of Art and Industrial Design Linz in cooperation with FH Hagenberg „Engeneering of Computer-based Learning" and is granted by the Federal Ministry for Education, Science and Culture.
Current URL: http://e-learn.internet.ufg.ac.at/digimapp/digimapp/

Stampfer, Michael

Michael Stampfer is currently managing director of the Vienna Science and Technology Fund (Wiener Wissenschafts-, Forschungs- und Technologiefonds - WWTF; www.wwtf.at), a private non profit research funding institution for Vienna, established in 2002. It's main aim is to fund excellent scientific research with a medium term application potential in fields like "Life Sciences", "Mathematics" or "SciENCE for creative industries".
Before joining WWTF he was programme manager for the Austrian K plus Competence Centre funding programme in Technologie Impulse Gesellschaft (TIG, www.kplus.at) from 1998-2002, building up the largest single RTD funding programme in Austria.
From 1992 to 1998 he worked as a strategist and programme manager in federal ministries responsible for technology policy.
He holds a Magister Juris and a PhD degree in law from the University of Vienna. Michael Stampfer is involved in various professional activities namely as a founding member and co-ordinator of the Austrian Platform for Research and Technology Evaluierung and as author of a number of publications on RTD policy and legal issues.

Abstract for Panel IV Networks and Power:
"Funding (the) sources in Innovation Systems"
In Innovation systems the interlinks and relations between the different actors and actor sets are as important as the actors themselves. Replacing linear models of innovation by more network-oriented approaches has implications not only on business behaviour and public funding of business research & innovation activites. There are also far reaching consequences for science - industry co-operations and for the funding of scientific activities. Scientists (will) increasingly work in interdisciplinary and mission-oriented settings with the medium and long-term goal to solve problems - thereby expanding their original agenda with business and society related questions. For such forms (translational resarch, targeted basic research ...) it is necessary to fund networks and new combinations, which is also one of the main missions of the Vienna Science and Technology Fund (WWTF). Network analysis in this respect is a very useful tool to prepare funding programmes and to visualize the networks and some of their outcomes.

Steiny, Don

is part of Mark Granovetter's Silicon Valley Network Analysis Project, is a Senior Fellow at the UC Santa Cruz Knowledge Society Center and is president and co-founder of the Institute for Social Network Analysis of the Economy. He graduated with a degree in linguistics from UC Santa Cruz in 1981. He spend a number of years as a software engineer and founded several companies including one of the first Web companies. In the late 90's Don began to work with angel investor groups and has heard pitches from hundreds of companies. He has acted as a business consultant in the USA and in Finland. Don is co-founder and president of Central Coast Angel Network. Don is involved in a number of social network research projects.

Abstract for Panel VI Network and Business:

Networks and Meaning

Social network analysis often talks of "ties" that represent relationships between individuals. When humans communicate and have a relationship, part of what allows them to do this is shared understanding of the situation. Networks of meaning are part of what not only what supports our dayto-day interaction, but also what creates, stabilizes or destabilize our institutions. Don will talk about a social network perspective on many of the common issues of business, including leadership, tasks and goals, and productivity using networks of meaning as the descriptive and predictive perspective.

Thurner, Stefan

PhD in theoretical physics (TU Wien 1995),PhD in Financial Economics (Univ. Wien 2001), Habilitation in Physics (2001). Postdoc positions at Boston Univ. and Humboldt Univ. Berlin. Since 2000 regular visits at the Santa Fe Institute. Since 2001 associate professor at the Medical University Vienna. Research interests: Complex systems theory, network theory, Modeling Biological and Financial Systems. Work published in about 70 papers. Head of the Complex Systems Reserch Group at the MUV.

Abstract for Panel II Mapping Research & Innovation:

Complex Systems Theory, Evolution and Innovation

In the quest to make the concept of innovation a quantitatively understandable, we suggest the notion of selfish autonomous agents which are linked together on networks. We review how this view has provided some recent understanding of biological evolution and the emergence of the biosphere. We conclude with an outline of how these concepts can be borrowed for a decription of (technological) innovation and where the potential handles for its management and control could lie.

Wattenberg, Martin

is a researcher at IBM whose work focuses on visual explorations of culturally significant data. His algorithmic approach is informed by his background in mathematics. Wattenberg is equally known for his scientific and applied work in the field of information visualization, and for his information-based digital artwork. Wattenberg's artwork has been exhibited at The London Institure of Contemporary Art, The Whitney Museum of American Art, Ars Electronica, The New Museum, and at galleries and festivals internationally. Wattenberg received his Ph.D. in mathematics from U.C. Berkeley, M.S. from Stanford University, and A.B. from Brown University.

Weiskircher, René

is assistant professor at the institute of computer graphics and algorithms at the Vienna University of Technology. After studying computer science at Saarland University in Saarbrücken (Master's thesis 1997) he worked as a researcher at the Max-Planck-Institute for computer science in Saarbrücken. In 1999, he came to the Vienna University of Technology. He finished his doctorate in 2002 with a thesis in the area of automatic graph drawing.

Abstract for Panel I Information Visualization:

Network Visualization and Graph Drawing

(Ulrik Brandes and René Weiskircher)

Network visualization deals with all aspects of representing link structures such as social networks, transportation systems, communication networks, or data structures. The automatic generation of network visualizations is thus of relevance in virtually every area concerned with graphical data analysis, visual communication of information or illustration. From an algorithmic perspective, the most interesting, and most difficult, aspect is the automatic layout of network representations. Mathematically, the structure of a network is represented by a graph, and the placement of graphical elements visualizing this graph in a way that is meaningful for the specific application, yet clear and readable to the observer, is called graph drawing. We give an overview over the rich diversity of network visualization applications and provide an introduction to graph drawing, an exciting research area that includes topics from graph theory, algorithmics and graphic design.

Wührer, Gerhard

is Professor and Head of Department of Marketing at the Johannes Kepler University, Linz, Austria. Career: Studies in management science and technology at the University of Stuttgart, Assistant Professor at the Department of Management there; consultant and marketing researcher at Roland Berger Consultants, Munich; in 1988 he became Assistant/Associate Professor at the Department of Marketing and International Management at the University of Klagenfurt. He has been visiting professor at the University of Northern Iowa, USA, the University of Trujilo, Peru, Chang Jung Christian University, Taiwan, and Maribor/Slovenia. His areas of interests include international marketing, b2b-marketing, relationships and networks marketing and network research and methodology. He works as consultant in several industries. For details see: www.marketing.jku.at.

Abstract for Panel VI Marketing and Economy:

Marketing, communication, and project networks in technology clusters – the example of Upper Austria

Much of marketing is relational where the concepts of cooperation, competition, and conflict are important agendas. Relational marketers go beyond studies of dyads and explore how transactions develop toward long-term relationships, further to partnerships and alliances, and further still to intricate networks of interconnections. So the network paradigm allows the study of relational phenomena, which go beyond b2b-networks. Its analytical power also covers issues in business to consumer marketing which are related to brand-switching behaviour, the embeddednes of acquisition and consumption of goods in c2c-relationships. The research presented here focuses on relational phenomena in technology clusters. The studies concentrate on the goal oriented structure of network partners, their innovative efforts, the expected rewards and contribution in relationships, business and marketing strategies, and communication and project relationships. Two technology clusters in diverse industries are the empirical field where network research will be applied. The networks will be studied from various theoretical perspectives and the visualization will yield additional insight into network phenomena of marketing, innovation and business management.

Abstract for Cave:

Description of "Salzburg Sommer Joker 2003"

The Salzburg Sommer-Joker is a chip card for an all inclusive vacation. It offers free admission or at a reduced rate to about 150 tourism sights and leisure attractions throughout the entire Province of Salzburg in Austria. It may be booked at all tourist offices, many branches of a local bank, and many hotels in the Province of Salzburg. A selection of special offers within the 150 sights covers about 10 categories which are: Lakes & Spas, Fortresses & Castles, Museums &

Exhibitions, Exhibition mines, Natural Attractions, Cables Cars, Panoramic Roads, Historical Railways, Busses, and Boat Routes, Sports & Games Facilities, Wildlife & Adventure Parks, Special Events, and Historical Sites in the City of Salzburg. The movements from one event to another within the Province of Salzburg may be interpreted as a large scale network where the tourism sights and leisure attractions are linked by the visits of about 28.000 people.

Ziegler, Elke

works as a freelance science and technology journalist in Vienna. After graduating in political science and some professional "detours" via project management and conceptual design of online projects, she publishes regularly in national and international newspapers and journals since 2002. Her special interest: interdependencies between science, technology, society,and media.

Abstract for Workshop I:

Science Communication

(Harald Katzmair and Elke Ziegler)

Visualizing and communicating complex knowledge is "daily business" not only to journalists and PRexperts, but also to didacts and pedagogues. By participating in the workshop "Science Communication", they have the opportunity to learn about the method of "Social Network Analysis". On the basis of concrete examples, the lecturers will provide participants with a "tool box" for analysis and visualizations.

Restricted participant number!