

Viennese Talks on Resilience Research & Networks

New perspectives on growth, development and innovation

Location:

Haus der Industrie
Urban Saal, 1st Floor
Schwarzenbergplatz 4,
1031 Wien/Vienna
Austria

Date:

5/27/2010

For the organizing team:

Ruth Pfosser
Mobile 0043 660 364 2489

Viennese Talks on Resilience Research & Networks

New perspectives on growth, development and innovation

Date: **27 May 2010, 9.00 am – 6.00 pm**

Location: **Haus der Industrie, Urban Saal, Schwarzenbergplatz 4, 1031 Wien**

Participation is free for all, but subject to registration.

Please register by sending an e-mail to the following address: office@fas.at

08:45 REGISTRATION

09:15 WELCOME NOTES

09:25 KEYNOTE LECTURE

- **Crawford Stanley Holling (CAN)** - Managing the Planet

10:00 RESILIENCE & NETWORKS IN NATURE

(Chair: Harald Katzmair)

- **Brian Fath (USA)** - Ecological Networks: Mutualism and Complexity
- **Benjamin Burkhart (GER)** - Dynamics, Resilience and Adaptability in Human-Environmental Systems Studies
- **Sergio Ulgiati (ITA)** - Putting Metabolic Patterns of Society Within a Larger Perspective

11:15 RESILIENCE & NETWORKS IN ECONOMY AND SOCIETY

(Chair: Roland Sommer)

- **Bernard Lietaer (FRA)** - Network Resilience applied to Financial and Monetary Stability: What Economics should learn from Nature.
- **Fred Luks (AUT)** - Between Efficiency and Squander? Generosity and the Resilience of Economic Systems
- **Uno Svedin (SWE)** - Complex Systems, Resilience and the current Global Grand Challenges

12:30 Lunch break

13:30 RESILIENCE & NETWORKS IN RESEARCH POLICY, INNOVATION POLICY & GOVERNANCE

(Chair: Wolfgang Neurath)

- **Jill Jaeger (AUT)** - Resilience, Sustainability and Research Policy: Opportunities and Challenges
- **Christian Gulas (AUT)** - Crossing the Chasms of Socio-Ecological Research: Structural Holes and Structural Folds in Basic Research Networks
- **Hannes Leo (AUT)** - Resilient Decision Making Processes
- **Eric Poettschacher (USA)** - Business Intelligence and Resilience: Steps towards a robust Marketplace for the global Creative Community

15:10 Coffee Break

15:30 RESILIENCE & NETWORKS IN CULTURE, BUSINESS & POWER

(Chair: Brian Fath)

- **Neal Gorenflo** (USA) - The Design 4 Resilience Movement
- **Balázs László Szekfu** (HUN) - All Your Brains Are Belong to Us: Fit Memes make Resilient Stories
- **Balazs Vedres** (HUN) - Structural Folds: Generative Disruption in Overlapping Groups
- **Harald Katzmaier** (AUT) - The Resilience of Business and Power: The Influence of Systems Ecology on Understanding Social Networks

17:15 LESSONS LEARNED AND CONCLUDING REMARKS

- **Brian Fath** (USA)
- **Wolfgang Neurath** (AUT)
- **Roland Sommer** (AUT)
- **Harald Katzmaier** (AUT)

18:00 END

Buffet and Evening Program

Organizing Committee

Brian Fath, Towson University und IIASA

Harald Katzmaier, FAS.research

Wolfgang Neurath, Austrian Federal Ministry of Science and Research

Roland Sommer, Federation of Austrian Industries

Keynote Buzz Holling: Managing the Planet

Crawford Stanley Holling (CAN)

Crawford Stanley (Buzz) Holling (born in 1930, Theresa, New York) is a Canadian ecologist, and Emeritus Eminent Scholar and Professor in Ecological Sciences at the University of Florida. Holling is one of the conceptual founders of ecological economics.



Throughout his research, C. S. Holling has blended systems theory and ecology with simulation modeling and policy analysis to develop integrative theories of change that have practical utility. He has introduced important ideas in the application of ecology and evolution, including resilience, adaptive management, the adaptive cycle, and panarchy.

His 1973 paper on the resilience of ecological systems had a substantial impact within ecology and other natural and social sciences. He has also contributed important ideas to ecological management, including Adaptive management and the Adaptive Cycle. More recently his work on the cross-scale structure and dynamics of ecosystems has been highly influential. This work resulted in the 2002 book *Panarchy: understanding transformations in human and natural systems*. His work is frequently cited in the fields of ecology, environmental management, ecological economics and the human dimensions of global change.

The speakers in alphabetical order:

Benjamin Burkhard (GER)



PhD in Ecology in 2004, has studied Geography at the universities of Berlin and Uppsala. Since 2001 he has been working at the Ecology Centre of the University of Kiel. He has been part in different interdisciplinary research and development projects, dealing for example with landscape management in Northern Finland, integrative coastal zone management in the North Sea, peri-urban land use relations in Europe or changing water regimes at the Yangtze river in China.

In these projects he was carrying out integrative social-ecological systems analyses and indicator applications, assessments of ecosystem services, resilience and adaptability under future scenario conditions.

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Dynamics, Resilience and Adaptability in Human-Environmental Systems Studies

Humans' ability to actively maintain human-environmental systems' social, economical and ecological resilience has been defined to be crucial for sustainable resource management. Consequently, appropriate management should try to enhance capacities to handle disturbances and changes. Therefore it is necessary to explore and to learn more about dynamics and resilience of human-environmental systems.

Our methodological framework includes integrative sets of process and state indicators, models and scenario applications. They have been applied in several case studies - including sub-polar Fenno-Scandinavia, German land- and seascapes as well as China.

Within these case studies the aim was to test system theoretical knowledge and hypotheses in practical applications and "real" problem sheds, and to acquire adequate data and information for model simulations and indicator quantifications.

These studies showed that resilience is not always the optimum management target. Regarding for example the provision of ecosystem goods and services, a system shift towards an alternative state might have several positive effects. Then, a management oriented towards ecosystem dynamics and adaptability should be more in focus and might be more suitable in supporting future sustainable developments.

Brian D. Fath (USA)



Brian D. Fath is an Associate Professor in the Department of Biological Sciences at Towson University (Maryland, USA). He teaches courses in ecosystem ecology, environmental biology, networks, and human ecology and sustainability. Dr. Fath has also taught courses on ecological networks and modeling in Portugal, France, Croatia, Denmark, China, and Germany.

Dr. Fath is also a research scholar at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria.

He first went to IIASA as a participant in the 1997 Young Scientist Summer Program. Since 2002, he has been a summer Research Scholar within the Dynamic Systems Program. His work at IIASA contributes to DYN activities in ecological dynamics, in the area of integrated modeling (ecological-economic networks). He has published over 60 research papers and book chapters in journal such as the *Journal of Theoretical Biology*, *Ecological Modelling*, *BioSystems*, *Ecological Complexity*, *Total Science of the Environment*, *Environmental Modelling and Software*, and *Ecosystems*. He co-authored the book *A New Ecology: Systems Perspective* and is Associate Editor-in-Chief for *Encyclopedia of Ecology*. He is currently Editor-in-Chief for the journal *Ecological Modelling*; President of the North American Chapter of International Society for Ecological Modelling; and chair of the Baltimore County Commission on Environmental Quality.

Dr. Fath graduated in 1990 from Miami University, Ohio, USA, with degrees in Physics and Aeronautics. He completed an MS degree in Environmental Science at Ohio State University (1993) and earned a PhD in Ecology from the University of Georgia in 1998. He was a Post-Doctoral Fellow at the University of Georgia (1998-2000) with Dr. Bruce Beck and the U.S. Environmental Protection Agency in Cincinnati (2000-2001).

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Ecological Networks: mutualism and complexity

Network analysis provides a powerful tool to visualize and understand interactions among entities of complex integrated systems. Within the field of ecology, there has been significant development of specific methods to track the holistic (i.e., direct and indirect) influences of energy and matter exchanges within an ecosystem. Specifically, they address the complex multiple pathways, the indirect flow contributions, the storage residence times, and the relational aspects between all compartments, referred to as path, flow, storage, and utility analyses, respectively. A flow partitioning allows for distinguishing the flow among boundary, first passage, and cycled flow, and this approach has been used to demonstrate the application of goal functions that track ecosystem growth and development along the complex system cycle identified by Holling. Three important results from

ecological network analysis include 1) ecosystems are complex networks interacting far-from thermodynamic equilibrium, 2) indirect flows tend to dominate the total through flow in each node (an idea similarly captured in metrics such as ecological rucksack, life cycle assessment, or virtual water/energy), and 3) the rise of mutualistic relations in ecological networks, i.e., compartments provide self-reinforcing benefits to each other. These methods, developed within the ecological literature, have applications to other network systems (social, economic, etc.) and therefore it is important to broaden the interdisciplinary exposure of these approaches. This presentation will provide an overview of these methods and give an example of network mutualism in ecological and economic systems.

Christian Gulas (AUT)



is director of Network Analytics at FAS.research in Vienna/Austria. He has studied sociology and philosophy at the University of Vienna. At FAS.research he has received advanced training in Social Network Analysis, Information Visualization System Modeling, Complexity and Innovation Research, and Mathematics. Mr. Gulas is lecturer at the Faculty of Interdisciplinary Studies (IFF) in Vienna, at the Danube University Krems, at the Universities of Applied Sciences in Vienna and St. Pölten.

His main focus is on Elite Networks, Networks of Health Care Systems, and Science Networks. One of his current projects is about the impact of resource flows and identity formations on network structures and morphologies.

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Crossing the Chasms of Socio-Ecological Research: Structural Holes and Structural Folds in Basic Research Networks

Science can be considered as a constant process of self constructed disruptions: Ideas, propositions, models, and theories challenge and replace each other; some of them persist and get combined with new ideas, others simply disappear. For many reasons scientific disciplines differ in their resilience, their capacity and ability to persist within this process of disruption and creation. Sometimes they simply do not have enough energy sources (resources such as time and money). Sometimes they just produce memes that cannot be combined with other memes because they are not s(c)aleable or translatable into languages (codes) other actors understand. The talk presents the findings of a long term study on collaboration and knowledge networks in the field of Austrian basic research. Different scientific disciplines will be classified according to their network morphology which is linked with

their capacity to adapt to and shape changes within the universe of research. It can be shown that the most important (and most funded) disciplines are embedded into structural fold networks (Vedres & Stark 2010). The life sciences as an example belong to the “social circles” of human medicine and biology at the same time. The social sciences on the other hand get more and more specialized and differentiated (Adorno referred to them as “hyphenated sociologies”) with the risk to get ever more isolated within niches with poor access to energy and resources. And there is up to date no intercohesion where it would be particularly important to strengthen resilience research and thinking: Between natural sciences and social/cultural sciences we simply find the white space of structural holes, not the vivid pulsing and flows typical for structural fold networks.



Neal Gorenflo (USA)

Neal Gorenflo is the publisher of Shareable.net, a nonprofit online magazine that tells the story of the sharing – how people are leaving a life focused on consumption for one focused on contribution to the common good. Neal is a former sales executive, technology analyst, and Fortune 500 strategist that now works to strengthen civil society. Neal serves on the board of nonprofits Independent Arts & Media and ForestEthics, and is a Strategy Fellow at FAS.research and a member of Stanford's Persuasive Technology Lab.

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The Design 4 Resilience Movement

Resilience thinking is well developed in many important academic disciplines. The lessons for individuals, communities, businesses, and governments couldn't be more timely given that global society is organized at a critical state - poised for both dramatic breakthrough and breakdown. However, resilience thinking has not yet influenced

society as a whole. Our stories about how to respond to crisis and plan for the future are dominated by the very ideas which have brought on crisis. Design 4 Resilience is a self-organized movement to bring Resilience Thinking into the mainstream. Mr. Gorenflo's talk will explore the themes of this movement and strategies for change.

Jill Jäger (AUT)



is an independent scholar and author of numerous books and papers on sustainability and policy. Dr Jäger has worked as a consultant on energy, environment, and climate for many national and international organizations. She is also a senior researcher at the Sustainable Europe Research Institute in Vienna, Austria. She has served as the Executive Director of the International Human Dimensions Programme on Global Environmental Change (IHDP), and as Deputy Director of the International Institute for Applied Systems Analysis (IIASA, Laxenburg). Her main field of interest is in the linkages between science and policy in the development of responses to global environmental issues.

Resilience, Sustainability and Research Policy: Opportunities and Challenges

Research on resilience contributes to the relatively new area of “sustainability science”, which has the broad goal of harnessing science and technology in the quest for transitions to sustainability. International discussions over the past decade have suggested that sustainability science approaches must: encompass the interaction of global processes with the ecological and social characteristics of particular places and sectors; integrate the effects of key processes across the full range of scales from local to global; and achieve

fundamental advances in our ability to address such issues as the behaviour of complex, self-organizing systems, as well as the responses of the nature-society system of governing to multiple and interacting stresses.

Fostering sustainability is strongly linked to the debate on reforming research policy, which will have to change in order to support participation in long-term, iterative and participatory processes of dialogue, learning and implementation.

Harald Katzmaier (AUT)



is the founder and director at FAS.research, a Social Network Analytics & Strategies firm located in Vienna and New York. Harald holds a degree in Social Science and Philosophy (University of Vienna), he is lecturer, visiting scholar, and invited guest speaker at various universities (Stanford University, Carnegie Mellon University, Vienna University of Economics and Business Administration etc.).

His main focus is the areas of networks, power and business. Because of the increasing unpredictability of our economic future, Harald's mission is to provide new means to empower executives and change makers, and their organizations to make robust decisions and to

enhance their leadership capabilities for resilient and effective action.

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The Resilience of Business and Power: The Influence of Systems Ecology on Understanding Social Networks

The talk is about how Systems Ecology (C.S. Holling's panarchy framework and H.T. Odum's emergy framework) has influenced and changed fundamentally how we at FAS.research are modeling status, power and authority in social networks. Understanding drivers of diversity and resilience in socio-ecological systems has helped us to reframe our understanding of social networks by linking the study of resource distribution at different scales with the study of social ties within and across scales.

The world of business and power is a world which continuously exposes its "inhabitants" to generative disruptions, creative destructions, changing alliances, structural imbalances, and cognitive dissonances. The concepts of "cross scale

links", "scale breaks", "adaptive cycles" and "territory of influence and energy hierarchies" have helped us to better understand and formalize the nature of social power managing collectively disequilibrium and conflict.

The new concept of Structural Fold Networks (Vedres & Stark 2010) perfectly describes the structural features of resilient Cross Scale Networks (linking agents at different level of time and space).

The talk will show some examples how we operationalize those concepts in our daily consulting work, their implications for designing networks to become more resilient (D4R – Design for Resilience) and the implications in terms of interdisciplinary research challenges ahead.

Hannes Leo (AUT)



has been analysing various dimensions of innovative activities and innovation policy for about 20 years. He has been responsible for large scale national and international research projects and acted as deputy director of WIFO (Austrian Institute of Economic Research) from 2005 to 2007. From January to April 2008 he was director the Institute for the Study of Labour (IZA) in Bonn responsible for research management, external communications and policy consulting. Since May 2008 he has been working as independent consultant in Austria. Presently he is also Scientific Director of ERAWATCH and founder – together with Prof. Alfred Taudes – of Cbase (Community Based

Innovation Services) which designs and organises decision making processes that are inspired by community based innovation principles.

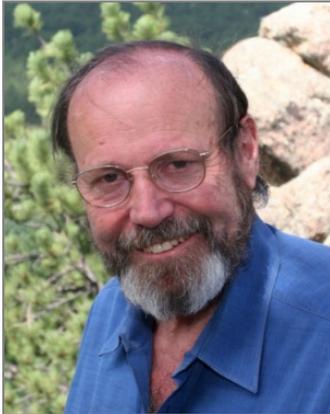
He is delegate to the Consultative Commission on Industrial Change (CCMI) of the European Economic and Social Committee (EESC), member of the UNECE Team of Specialist on Innovation and Competitiveness Policies (TOS-ICP) and lecturer at the Vienna University of Technology. During his career, he has provided advice for the European Commission, OECD, UNECE, national and regional governments and enterprises. Hannes Leo was a research fellow at SPRU (University of Sussex, Brighton) in 1994, the Istituto di Studi sulla Ricerca e Documentazione Scientifica, (Consiglio Nazionale delle Ricerche, Rome) in 1995, a visiting economist at OFTEL (Office of Telecommunications, London) in 1996 and a research fellow of the University of California, Berkeley in 2001.

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Resilient decision making processes

There is large probability that many of today's decision making processes incorporate the preferences of small groups rather than building on the experience, knowledge and the preferences of wider parts of society. This even holds for many "democratic" decisions. Such decision making processes are frequently coupled with one way communication structures of which an increasing share of the transported messages are to conserve this situation rather than focusing on factual issues. Coherence of societies and resilience of economic systems are undermined by these developments.

Resilient decision making processes integrate various components of society, individuals, and organization principles. Obviously, the Internet will have to play a role in broadening and consolidating resilient decision making process but is far from being the only media or the all-inclusive solution to present communication deficits and flawed decision making processes. More traditional forms of information aggregation and consensus building are of importance still. This presentation will present reflections on societal decision making processes that are based on "community based innovation" principles and have been tested in different contexts.



Bernard Lietaer (FRA)

Bernard Lietaer has been active in the domain of money systems for a period of 25 years in an unusual variety of functions. While at the Central Bank in Belgium he co-designed and implemented the convergence mechanism (ECU) to the single European currency system, and served as President of Belgium's Electronic Payment System. He was General Manager, and Chief Currency Trader for the Gaia Hedge Funds, during which time *Business Week* identified him as "the world's top currency trader" in 1990. He was Visiting Professor of International Finance at the University of Louvain. He is the author of fifteen books, including *The Future of Money* translated in 18 languages. He is member of

the Club of Rome and Research Fellow at the Center for Sustainable Resources of the University of California at Berkeley.

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Network Resilience applied to Financial and Monetary Stability: what economics should learn from nature.

Fundamental laws govern all complex flow systems, including natural ecosystems, economic and financial systems. Natural ecosystems are practical examples of sustainability: enduring, vital, adaptive. The sustainability of any complex flow system can be measured with a single metric as an emergent property of its structural diversity and interconnectivity; it requires a balance in emphasis between efficiency and

resilience. The urgent message for economics from nature is that the monoculture of national currencies, justified on the basis of market efficiency, generates structural instability in our global financial system. Economic sustainability therefore requires diversification in types of currencies, specifically through complementary currencies.

Fred Luks (AUT)

has studied in Hamburg and Honolulu, with research stays in Kuala Lumpur, New York and Berkeley. He has held several jobs in sustainability research, among them visiting professor for ecological economics at the University of Hamburg. Luks was chairman of the German Association for Ecological Economics.



He lives in Vienna and works as a sustainability manager for UniCredit Bank Austria. His new book on irony and generosity “Endlich im Endlichen” will be published in May 2010.

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Between efficiency and squander? Generosity and the resilience of economic systems

Mainstream economic rationality is focused on efficiency, which is frequently interpreted as the avoidance of slack and squander. Resilience, however, presupposes redundancy and slack. Hence, what is needed for an economic system that is sustainable in ecological, economic

and social terms is another interpretation of what is seen as appropriate. The answer to the current misleading focus on efficiency is generosity, which includes another interpretation of what squander is all about.

Wolfgang Neurath (AUT)



holds a degree in History and Philosophy from the University of Vienna. He works in the Austrian Federal Ministry of Science and Research as Head of the Department for Promotion of Research. He published work in the fields of network analysis as well as history.

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Eric Poettschacher (USA)



graduated from the European Executive Masters Programme for Media and Arts at the International Centre for Culture and Management in Salzburg.

In 1994 he founded a consultancy firm and developed a comprehensive set of interventions made to tackle the specific management challenges of small businesses in the creative sector. From 2005 through 2008 he has been leading a research project named “Mindscapes” and explored the intrinsic decision-making patterns of professional creatives within a strategic framework he described as “Money & Meaning”.

Eric has received training in large-group facilitation, organizational systems theory as well as communications management. Clients include cultural quarters, urban redevelopment agencies but most of all creative entrepreneurs from a wide range of disciplines and cultures.

In 2006 he incorporated Shapeshifters Information Management GmbH together with a Boston based angel investor. Shapeshifters is a global knowledge broker supporting creatives all over the planet with tailor-made business opportunities:

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Business Intelligence and Resilience: Steps towards a robust Marketplace for the global Creative Community

Shapeshifters is a business support network for professional creatives. What initially started as a two-year social experiment designed from the bottom-up evolved into a global marketplace fostering opportunities for small business in industries like design, fashion, music, architecture, etc. The story of Shapeshifters illustrates what it means on a grassroots level to create and sustain robust cross-boundary, cross-scale and cross-functional

links between social worlds that usually wouldn't meet in real life conditions. Eric Poettschacher, the co-founder and mastermind behind Shapeshifters will focus in his presentation on the challenges, shifts and phases the network has been going through over the first four years of its existence while aiming to transform cultural diversity into resilient and productive working relations between peers.

Roland Sommer (AUT)



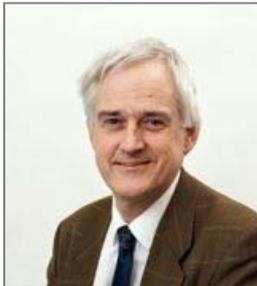
studied landscape architecture in Vienna, Austria and Wageningen, the Netherlands.

He started his career in the management of a research funding programme on sustainability in 2000 and changed after one year to a research funding programme that fosters the research cooperation between business and academia.

In 2004 he followed the Federation of Austrian Industry where he is responsible for research and innovation policy. His main fields of activity are the internationalisation of R&D, the EU framework Programmes, research financing, the cooperation between academia and business and research at universities and non-university research organisations. Sommer is in several national selection committees. Since January 2010 he serves as Vice-Chair of the Technology Group of the Business and Industry Advisory Committee (BIAC) to the OECD.

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Uno Svedin (SWE)



started as a physicist and got his PhD from Stockholm University 1974 based on studies related to CERN. Later he got more involved in what physics - and in a broader sense science - can contribute to contemporary problems, specifically of sustainability and environmental kinds. He thus pursued studies in futures studies on natural resources and environmental aspects in the period 1975-1980. Key to his interest has been the formation of knowledge around these types of matter including how that links to policy making. He thus took up a post in 1981 at the newly created Swedish Council for

Coordination of Research (FRN) where he later became Acting Secretary General in 1993 and further on Director of Research until the major research science policy reform in Sweden 2001 when he proceeded to the then newly created Swedish Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS) now as Director of international affairs.

He is the author - or co-author - of several books and scientific articles in these fields. Currently he is a Senior Research Fellow at the Resilience Center Stockholm University and now retired from Formas.

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Complex Systems, Resilience and the current Global Grand Challenges

Having made a few remarks on the importance of understanding the connected natural and socio-economic systems to address the current global challenges, specifically three aspects of this will be elaborated upon: SCALE in both spatial and temporal terms from the micro-meso to the macro levels of phenomena. FIT in terms of the match or non-match between natural and social systems when it relates to the capacities of governance of these combined systems.

BOUNDARIES in terms of the challenges of "planetary boundaries" and what it may mean for the challenges of governance. Rounding up - a connection will be made to the thinking of the late geographer Torsten Hagerstrand, Lund University - "the father of space-time geography" - and his contributions to the systems thinking on sustainability issues following a recent final document of his just published in 2009.

Balázs László Szekfu (HUN)



Balázs László Szekfu is an entrepreneur, communication expert, and evolutionary media sociologist.

He is the co-founder and CEO of Institute for Applied Memetics LLC, a joint venture established in the United States between bestselling author Douglas Rushkoff (Mediavirus!, Get Back in the Box, Life Inc.) and Darwin's Marketing Evolution, Inc. Szekfu is the founder of Darwin's Marketing Evolution, a firm that successfully incorporates the theory of memetics into marketing practice. Darwin's

has been based in Budapest since 2003.

Szekfu was a 2006 Yale World Fellow at Yale University. He has ten years of university teaching experience and now teaches at the MOME Theoretical Institute in Budapest. He has designed an introductory course in the field of Emergence which covers evolutionary theory, networkology, the science of memes, studies of human cooperation, and internetology. He has coined the term "Evolutionary Media Sociology" to refer to this complex field.

In 1997, he founded Carnation, Inc., a start-up internet consulting and marketing company. Carnation now ranks second in the Hungarian market, with revenues consistently over \$10 million. He regularly is asked to speak about the network economy and the information society. His articles are published in the Hungarian press and he had his own show on Tilos Radio, Budapest's best known "pirate"/community radio for 7 years. Balazs co-founded East Europe's biggest week-long music and arts festival (Sziget) at the age of 21.

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All Your Brains Are Belong to Us: Fit Memes make Resilient Stories

Fit Memes make Resilient Stories. The fitness of memes are determined by endogenous and exogenous factors. Memes not only have to be potent (high memetic fitness) they also have to be well suited to the memescape (high contextual consistency). Strategies striving for resilience must be based on these memetic dynamics. Applied memetics is the study of how ideas compete for mindshare in a culture. The The data sphere is huge and

grows exponentially, interlocking with volumes of human interaction, creating a new hybrid evolving entity that shows the distinct signs of a complex system. This "memescape" is a living being, evolving, changing and surprising us with emerging properties. In his talk, Balazs Szekfu will introduce the rules of the memescape that effect every communicator in the age of social media.



Sergio Ulgiati (ITA)

Parthenope University of Napoli, Department of Sciences for the Environment. Education in Physics and Environmental Chemistry. Professor of Life Cycle Assessment and Environmental Certification. Expertise and research interests in Energy Analysis, LCA, Environmental Accounting and Energy Synthesis, zero emission technologies and strategies (ZETS). Member of the Editorial Board of Energy, Ecological Modelling, and Environment, Development and Sustainability. Organizer and Chair of the Biennial International Workshop "Advances in Energy Studies" (6 editions already held since 1998). President 2010-2011 of ISAER - The International Society for the Advancement of Energy Research.

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Putting Metabolic Patterns of Society Within a Larger Perspective

The recent economic meltdown in the USA and in similar economies world-wide has reinforced our understanding of the effects of decoupling monetary growth and resources. Furthermore, concern for peak oil and suggestions that it may have contributed to the global economic woes may have added confusion over the underlying causes and sent a misleading message to the public and to policy makers. In earlier papers we have stressed that energy is not the only resource driving economies; equally, and possibly more important, are material resources such as biodiversity, water, topsoil, and minerals as well as the proper accounting methods to value them. We suggested the emergy method in order to acknowledge all types of driving energies and resources and their quality differences.

Consistent with those earlier efforts, here we raise some important perspectives necessary to understand the present and adjust to the future, as follows: **Resources are the real wealth of nations.** - Contrary to common beliefs, monetary measures do not reflect the wealth of nations, they only measure the activities of humans manipulating resources, energy, and information. A nation's wealth is its resources and relying on monetary principles only, dismisses this crucial information that is necessary for sound economic policy. **Quality matters** - Resource throughput of human society needs to be adjusted for the quality of different forms of resources and actual net return to society. Present patterns of societal infrastructure were built by and its metabolism is driven by a high net yielding resource base

that is not likely to be available in the future. **The false promise of renewables** - Renewable energy sources, up to now, have lower net yields than fossil fuels and thus provide false promises to those who are looking for business as usual at the end of cheap oil. **The environment is a limited resource** - The ability of the environment to support human society is limited in both source and sink services and calls for reconsidering the way we use and value the environment. **Information is not unlimited** - Information is a key ingredient in all productive processes and contrary to popular belief, the creativity of humans is not without resource costs. **A systems view is mandatory** - Finally, radical changes are necessary for the transition to a more sustainable future with lower availability of resources. This cannot be done without a systemic understanding of the place of humans and their economy within the wider economy of the biosphere.

In a nut shell, the problem is not just resource availability nor finding another cheap source of energy. The problem is BUSINESS AS USUAL. The environmental, social, and economic consequences of unlimited renewable energy might be even worse than limited fossil fuels. Our fascination and addiction with continued growth may have unbelievable consequences in the long run. One can only hope that we fail in our attempts to solve this current crisis so that our focus will turn to living within the planet's carrying capacity. Some suggest that this will happen, no matter what, and thus the real issue is if we want to be part of the solution or continue to be the problem. (by Brown&Ulgiati)

Balazs Vedres (HUN)



is the Director of the new Center for Network Science at Central European University.

Vedres' research furthers the agenda of understanding historical dynamics in network systems, combining insights from historical sociology, social network analysis, and studies of complex systems in physics and biology. His contribution is to combine historical sensitivities to patterns of processes in time with a network analytic sensitivity to patterns of connectedness cross-sectionally. Over the last decade Balazs Vedres developed data collection, data

cleaning, and analysis techniques to handle datasets with hundreds of thousands of entries, coding my own algorithms to realize methodological innovations. He was engaged in qualitative case study work – over the last fifteen years he conducted hundreds of interviews with businessmen, politicians, civic activists. Balazs Vedres demonstrated in his dissertation and subsequent research that a historical network approach can tackle substantive research questions about processes of transnational and domestic networks coming into contact.

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Structural Folds: Generative Disruption in Overlapping Groups

Entrepreneurial groups face a twinned challenge: recognizing and implementing new ideas. We argue that entrepreneurship is less about importing ideas than about generating new knowledge by recombining resources. In contrast to the brokerage-plus-closure perspective, we identify a distinctive network topology, structural fold: the overlapping of cohesive group structures. Actors at the structural fold are multiple insiders, facilitating familiar access to diverse resources. Our dataset records personnel ties among the largest 1,696

Hungarian enterprises from 1987-2001. First, we test whether structural folding contributes to group performance. Second, because entrepreneurship is a process of generative disruption, we test the contribution of structural folds to group instability. Third, we move from dynamic methods to historical network analysis and demonstrate that coherence is a property of interwoven lineages of cohesion, built up through repeated separation and reunification.

(Paper by Balazs Vedres and David Stark)

Viennese Talks on Resilience Research & Networks

New perspectives on growth, development and innovation in instable times

Resilience is about the capacity to deal with change and continue to develop. Resilience research is an ascendant paradigm aiming to model and understand the structural features of systems that determine the capability of organisms, ecosystems, societies, enterprises, economies, etc. to adapt to and shape changes. Network Theory provides a robust language to better describe and understand those features.

The workshop will bring together ecologists, economists, policy makers, sociologists, consultants and social entrepreneurs to exchange perspectives on the value and potential of resilience and network thinking for our highly volatile and instable world.

- Learn about the scientific state of the art and how to apply the framework of networks and resilience to improve the robustness and adaptive capacities of your organization, research program, regional network, your city.
- Join the discussion on the principles of a new paradigm for growth and development and its consequences for economic and research policy.
- Meet leading scientists and experts and listen to the Key Note of Buzz Holling, the great pioneer and founder of adaptive management and one of the most influential scientists in the field of systems dynamics.

Keynote:

Crawford Stanley (Buzz) Holling, Eminent Scholar, Arthur R. Marshall Jr. Chair in
Ecological Sciences Department of Zoology

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