



**International Nonlinear Sciences
Conference
Research and Applications
in the Life Sciences**

**February 7, 8, and 9, 2003
Vienna, Austria**

Program Overview

**Full text of abstracts is
in the printed program
available at the conference.**

**This is Program Version v013103
Subject to revision.**

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PROGRAM SUMMARY

Friday 7th February, 2003

	Series A Kleine Festsaal	Series B Hörsaal 31	Series C Hörsaal 32	Series D Hörsaal 30
0900	Welcome			
0930	Keynote Address: Professor H. Haken <i>Synergetics: How Does Self-Organization Work?</i>			
1030	Morning Tea			
1100	PAPER SESSION 1 Brain and Chaos	PAPER SESSION 2 Applications in Life Sciences I	Symposium 1: The Dynamics of Language Acquisition	
1300	Lunch			
1400	PAPER SESSION 3 Philosophical Issues I	PAPER SESSION 4 Applications in Social Processes	PAPER SESSION 5 Applications in Life Sciences II	Symposium 2: How to teach a multidimensional (bio - psycho - social) diagnostic and therapeutic approach to medical students.
1530	Afternoon Tea			
1600	Symposium 3: Chaos and Complexity in Arts and Architecture	PAPER SESSION 6 Brain Processes	PAPER SESSION 7 Mathematical Applications	PAPER SESSION 8 Order and Self- Organisation
	Poster Display Hall			
1800	POSTER SESSION with Refreshments			

Saturday 8th February, 2003

	Series A Kleine Festsaal	Series B Hörsaal 31	Series C Hörsaal 32	Series D Hörsaal 30
0900	PAPER SESSION 9 Medical Applications	PAPER SESSION 10 Social Science Applications I	Symposium 4: Cellular Self- Organizing Nets and Chaotic Dynamics to Model And Control Complex Systems	PAPER SESSION 11 Theoretical Issues
1100	Morning Tea			
1130	Keynote Address: Professor Tõnu Puu <i>Oligopoly Dynamics – A Traditional Area for Complex Dynamics in Economic Theory.</i>			
1230	Lunch			
1330	PAPER SESSION 12 Applications in Economics and Management II	Symposium 5: From chaos to clinic: emerging applications in nonlinear brain dynamics	PAPER SESSION 13 Applications in Education and Social Sciences	PAPER SESSION 14 Biomedical Applications
1530	Afternoon Tea			
1600	PAPER SESSION 15 Applications in Psychology I	PAPER SESSION 16 Organisational Processes and Complexity	Symposium 6: The Human Body as a Complex System	Symposium 7: Foundations of Self- Organisation
1800				
1930	CONFERENCE DINNER			

Sunday 9th February, 2003

	Series A Kleine Festsaal	Series B Hörsaal 31	Series C Hörsaal 32	Series D Hörsaal 30
0900	PAPER SESSION 17 Applications in Mental Health	PAPER SESSION 18 General Applications	PAPER SESSION 19 Applications in Psychology II	Workshop 1: Nonlinear Dynamics in Work Organizations: 20 Years and Counting
1100	Morning Tea			
1130	Keynote Address: Professor Jack Cohen <i>"Why is Negentropy, like Phlogiston, a Privative?" or "Life must be natural, not negentropic"</i>			
1230	Lunch			
1330	PAPER SESSION 20 Psychotherapy and Dynamics	Symposium 8: Nonlinear Dynamics and Epilepsy	Workshop 2: Virtual Worlds, Artificial Societies: the Artist Vision at the Boundary Between Life Sciences and Imagination	
1600	Afternoon Tea and Farewell			

Friday 7th February, 2003

Kleiner Festsaal

9am-930am Welcoming Session. Organising Committee

9.30am-10.30am **Keynote Address 1: Prof. Dr. rer. nat. Dr. h.c. mult. Hermann Haken**
Professor of Theoretical Physics, University of Stuttgart, Germany.
Synergetics: How Does Self-Organization Work?

10.30am – 11am Coffee Break

Series A

11am – 12.30pm PAPER SESSION 1 Brain and Chaos

Bondarenko, V. , Yevin, I., & Koblyakov, A. Department of Physiology and Biophysics, SUNY at Buffalo, USA

Music and Controlling Chaos in the Brain

Hu, S-J. & Zhong, J. Institute of Neuroscience, Fourth Military Medical University, Xian, P. R. China

Dynamic responsiveness of neurons

Keller, K., Lauffer, H., & Wittfield, K. Mathematical Institute, University Luebeck, Germany,

Symbolic analysis of high-dimensional EEG time series

Creanga, D., Univ. Al. I. Cuza, Fac. of Physics, Iasi, Romania, and Stan, C., Univ. Politehnica Bucuresti, Romania

Oscillations in The Visual System

Series B

11am – 1pm PAPER SESSION 2 Applications in Life Sciences I

Yulmetyev, R. Kazan State Pedagogical University, Kazan, Russia

Fluctuation and noise in the life systems by discrete non-stationary non-Markov processes

Liebovitch, L., Shehadeh, L., & Jirsa, V. Center for Complex Systems and Brain Sciences, Florida Atlantic University, Boca Raton, FL, USA

How Genes Regulate Other Genes

Rinaldi, S. Dipartimento di Elettronica e Informazione, Politecnico di Milano, Italy

Chaos and optimality in ecosystems

Rojdestvenski, I., Dept. of Plant Physiology, Umeå university, Sweden

Recursive embedding and self-organization

Series C

11am-1pm Symposium 1: The Dynamics of Language Acquisition

Convenors: Annette Hohenberger, University of Frankfurt, Germany

Annemarie Peltzer-Karpf, University of Graz, Austria

Hohenberger, A. University of Frankfurt, Germany

Procedural and structural self-similarity in first language acquisition

Plaza Pust, C. Institut fuer Deutsche Sprache und Literatur II, Frankfurt am Main, Germany

The dynamics of language development and language contact in adult second language acquisition

Peltzer-Karpf, A. University of Graz, Austria

The interplay of nonlinear processes in early neural and linguistic development

Tracy, R. Universität Mannheim, Germany

UG-assisted self-regulation

Wagner, M. Graz University, Austria, and Harvard Graduate School of Education, USA

Growth spurts in communication

1pm-2pm Lunch

Series A

2pm-3.30pm PAPER SESSION 3 Philosophical Issues I

Voitsekhovich, V., Department of Philosophy, Tver State University, Russia

The philosophical bases of the theory of evolutionising systems

Fuchs, C. Institute of Design and Technology Assessment, Vienna University of Technology, Austria

Dialectical Materialism and the Self-Organisation of Matter

Degtiar, V. Department of Social Informatics, Moscow State University, Moscow, Russia

The Life Program, Self-organisation and Gregariousness

Series B

2pm-3.30pm PAPER SESSION 4 Applications in Social Processes

Aruka, Y. Chuo University, Tokyo, Japan

Some Adaptive Economic Processes in Social Interaction

Lawless, W. Paine College, Augusta, GA, USA

Information density functional theory: A quantum and organizational approach to counterterrorism

Gimeno, R., Universidad Pontificia Comillas (ICADE), Madrid, Spain, Olmedo, E., Universidad de Sevilla, Sevilla, Spain,

Mateos de Cabo, R., Universidad San Pablo-CEU, Madrid, Spain,

Escot, L. Universidad Complutense, Madrid, Spain and Grau, P., Universidad Rey Juan Carlos, Madrid, Spain.

On Detecting Regime Switching Behaviour: An Economic Application of TAR Models

Series C

2pm – 3.30pm PAPER SESSION 5 Applications in Life Sciences II

Schuster, P., Institute for Theoretical Chemistry and Structural Biology, University of Vienna, Austria

Information created by evolutionary processes

Rulkov, N., Institute for Nonlinear Science, University of California, San Diego, La Jolla, USA.

A simple two-dimensional map for modeling of spiking-bursting neural activity

Huett, M-T., Institute of Botany, Darmstadt University of Technology, Germany

How can noise-induced nonlinear patterns be detected in biological data sets?

Series D

2pm – 3.30pm Symposium 2: How to teach a multidimensional (bio - psycho - social) diagnostic and therapeutic approach to medical students.

Convenor: Toifl, K., Neuropsychiatric clinic for children and adolescents, A-1090, Vienna.
With contributions from a group of medical students.

3.30pm – 4pm Afternoon Tea

Series A

4pm-6pm Symposium 3: Chaos and Complexity in Arts and Architecture

Convenor: Sala, N., University of Italian Switzerland – Academy of Architecture, Mendrisio, Switzerland

Yevin, I. Mechanical Engineering Institute, Russian Academy of Sciences, Moscow, Russia
Visual and Semantic Ambiguity in Art

Burkle-Elizondo, G., Valdez-Cepeda, R., & Sala, N. Universidad Autónoma de Zacatecas, Hidráulica, México
Complexity In The Mesoamerican Artistic And Architectural Works

Semboloni, F. Department of Town and Regional Planning University of Florence, Florence, Italy
Avalanches in urban spatial development

Marsault, X. MAP-ARIA, Ecole Architecture Lyon, France
Generation of textures and geometric pseudo-urban models with the aid of IFS

Sala, N., Andrey, S., & Kushi, A. Academy of Architecture of Mendrisio, University of Italian Switzerland, Mendrisio, Switzerland
Chaotic and Complex Components in Arts and Architecture: Some Examples

Salari, R. MAP-ARIA, Ecole Architecture Lyon, France
Pseudo-urban automatic pattern generation

Series B

4pm-6pm PAPER SESSION 6 Brain Processes

Kirlangic, M., Ivanova, G., & Henning, G., Technische Universität Ilmenau, Institute of Biomedical Engineering and Informatics, Ilmenau, Germany
The DC-level: An order parameter of the brain complex open system?

Durstewitz, D., Biopsychology, Ruhr-University Bochum, Germany
Biophysical models for generating and learning temporal predictions

Dhooge, A., Govaerts, W. Department of Applied Mathematics and Computer Science, Gent University, Belgium,
Kuznetsov, Y., Mestrom, W. & Riet, A., Department of Mathematics, University of Utrecht, the Netherlands.
Matcont : A Matlab package for dynamical systems with applications to neural activity.

Rossberg, A. Zentrum für Datenanalyse und Modellbildung, University of Freiburg, Germany.
A robust, pathway-independent frequency measure for nonlinear oscillators

Series C

4pm – 6pm PAPER SESSION 7 Mathematical Applications

Da Luz, M., Buldyrev, S., Raposo, E., Santos, M., Stanley, H., & Viswanathan, G. Departamento de Física, Universidade Federal do Paraná, Brazil
Dynamical Robustness of Lévy Search Strategies

Mahmoud, G. Department of Mathematics & Computer Science, United Arab Emirates University, Al Ain, United Arab Emirates.
Chaotic behavior of nonlinear oscillators

Winkler, F-G. Vienna University of Technology, Department of Computer Aided Planning and Architecture, Vienna, Austria
Spacetime Holism and Part-Whole Relationship in Self-Organizing Systems

Arrow, H., Department of Psychology, University of Oregon, USA
Bubbles, eruptions, stagnation, and floods: How energy flows in small groups

Series D

4pm – 5.30pm PAPER SESSION 8 Order and Self-Organisation

Goldstein, J., Adelphi University, Garden City, NY, USA
The Emergence of New Order: From Self-organization to Self-transcending Constructions

Toifl, K. Neuropsychiatric Clinic for Children and Adolescents, University of Vienna; Austria
The meaning of quality and creativity of information and time for self-organization in living systems

Mella, P., University of Pavia, Italy
Order and chaos in combinatory systems. A different approach to collective behaviour

6pm – 8pm POSTER SESSION with Refreshments

Adli, A., University of Tübingen, Tübingen, Germany
A catastrophe theoretic approach to suboptimality in grammar research

Aporti, F., Ferro-Milone, F., Cananzi, A., Minelli, T.A., Nofrate, V., & Pascoli, D. Research & Innovation, Padova, Italy
Sampling dependence of EEG nonlinear and fractal structures in healthy subjects and Alzheimer patients

Bassin, M. Synergetic Research Center of Saint-Petersburg Association of Scientists and Scholars, Universitetskaya Naberegnaya, Russia
Information-Wave Theory of Structures and Systems and its Application to the Life Sciences.

Dimitriou, M. Department of Psychology, University of Warwick, UK & Bird, D., Department of Psychology, University of Northumbria, UK
Chaos in Psychopharmacology: The effects of caffeine on cognition, mood and cortical complexity.

Chesters, G., Centre for Local Policy Studies, Edge Hill University College, Lancashire, UK
Global Social Movements and Complexity

Chistilin, D. Institute World economy and International Relations, Ukraine Academy of Science
To the wave nature of economic cycles

Codreanu, S., Babes-Bolyai University, Dept. of Theoretical Physics, Romania & Codreanu, T., Dr Gray's Hospital, Elgin, U.K.
Suppression of chaos in some nonlinear biological models.

Damgov, V. Space Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria.
Class of Kick-Excited Self-Adaptive Dynamical Systems: “Quantized” Oscillation Excitations

DeVaney, T.T.J., Ahammer, H., & Tritthart, H.A.. Institute of Medical Physics and Biophysics, University of Graz, Austria

The time dependance of the fractal dimension and invaslog during th e invasion of melanoma into healthy tissues

Gregson, R. Australian National University, Canberra, Australia, & Geake, J. Oxford Brookes University, UK

Tribonacci. Long Memory, and Stochastic-deterministic Mixed Series

Grizzi, F., Russo, C., Franceschini, B., Barbera, R., & Dioguardi, N. Gastroenterology Department, Istituto Clinico Humanitas, Milan, Italy.

Fractal Evaluation of Human Ph Recording Time Series

Javorszky, K. Institute für angewandte Statistik Vienna, Austria.

The Interplay between Structured Sets and their Sequential Description

Knezevic, A., & Martinis, M.. Department of Theoretical physics, Rudjer Boskovic Institute, Zagreb, Croatia

Change of the heart rate variability during ergometric measurement

Lambropoulos, N. London Metropolitan University, Learning Technology Research Institute, London, UK
Creative Process: a Constellation of Chaotic Nexus

Obcemea, C., Memorial Sloan-Kettering Cancer Center, New York, NY USA

Chaotic Dynamics of Tumor Growth and Regeneration

Otranto, E. Istituto Nazionale di Statistica, Dipartimento delle Statistiche Economiche, Roma, Italy.

Stock and Watson Models with Markov Switching Dynamics: an Application to the business cycle .

Proroković, A., Gregov, L., & Valerjev, P. University of Zadar, Department of Psychology, Zadar, Croatia

Mental load assessment by the means of non-linear analysis of heart rate variability

Puebla, H., Álvarez-Ramírez, J., & Cervantes, I. Instituto Mexicano del Petróleo, México, MEXICO

Suppression of Nonlinear Waves in Excitable Media via Feedback Control

Puebla, H., & Álvarez-Ramírez, J. Instituto Mexicano del Petróleo, México, MEXICO.

A Robust Controller for Hypnosis Based on Modeling Error Compensation

Robertson, R., Bird, D. Northumbria University, UK, Goldstein, J., Adelphi University,0

and Porter, R., Directions for Mental Health, Clearwater, Florida, USA

The Case of the Missing Third: Induction, deduction, and what?

Sedivy, R. University Hospital Vienna, Austria

Applications of fractal analysis in tumor pathology

Soos, I. Praha, Czech Republic.

The Integrarchic Society

Spohn, M., Graduate School of International Studies, University of Denver, Colorado, U.S.A.

Operationalizing Violence

Stamovlasis, D. & Tsaparlis, G., University of Ioannina, Department of Chemistry, Ioannina, Greece

A Complexity Theory Model in Science Education Problem Solving: Random Walks for Working Memory and Mental Capacity

Tretter, F. State Mental Hospital Haar, Munich, Germany
Problems of matching empirical data and theories of clinical psychology /sociology to systems theory

Zhong, Z., Xing, J-L., Hu, S-J., & Yang, G-S., Department of Physics, The Fourth Military Medical University, Xi'an, PR China

A Novel Bursting Mechanism of Type A Neurons in Injured DRG

Saturday 8th February, 2003

Series A

9am – 11am PAPER SESSION 9 Medical Applications

Schiepek, G., Eckert, H., & Weihrauch, S. Universitätsklinikum der RWTH Aachen, Klinik für Psychosomatik und Psychotherapeutische Medizin, Aachen, Germany.

Assessment of Dynamic Systems –Data Based Real-Time Monitoring in the Management of Change Processes

Orel, V., Romanov, A., Dzyatkovskaya, N. & Mel'nic, Y. Physics-Technical Laboratory, Institute of Oncology, Kiev, Ukraine

Windows of Mechanoemission Chaos in Blood and Oncogenesis

Ahammer, A., DeVaney, T.T.J., & Tritthart, H.A.

Institute of Medical Physics and Biophysics, University of Graz, Austria

Fractal dimension of in vitro cancer spheroids invading host tissue spheroids

Zhirkov, A., Kostenko, V. Department of Urgent Cardiology, Research Institute of Emergency Medical Care, St.Petersburg &

Subbota, A., Military Medical Academy, St.Petersburg, Russia

Harmony and Chaos in Organization of Heart Rhythm

Series B

9am-11am PAPER SESSION 10 Social Science Applications I

Rinaldi, S. Dipartimento di Elettronica e Informazione, Politecnico di Milano, Italy

Modelling love dynamics: the case of "Jules et Jim"

Remondino, M. Computer Science, University of Turin, Italy

Agent Based Process Simulation and Metaphor Based Modelling for Social Sciences

Kubo, M. & Sasakabe, Y., National Defense Academy, Yokosuka, Japan

Formation, Disorder, and Reformation of Mobile Agents by Chaotic Itinerancy

Zidansek, A., J. Stefan Institute, Ljubljana, Slovenia

Self-organization in sustainable development

Series C

9am-11am Symposium 4: Cellular Self-Organizing Nets and Chaotic Dynamics to Model And Control Complex Systems

Convenor: Fortuna, L., Universita' degli Studi di Catania, ITALY

Email: lfortuna@dees.unict.it

Caponetto, R., Fortuna, L., & Frasca, M. Dipartimento di Ingegneria Elettrica, Elettronica e dei Sistemi Università degli Studi di Catania, Catania, Italy.

The role of diversity in spatially extended systems.

Genesio, R. & Bagni, G. Dipartimento di Sistemi e Informatica, Università di Firenze, Firenze, Italy
Simplified dynamic models for complex data

Bonanno, G., Lillo, F., Micciche, S. & Mantegna, R.N. Istituto Nazionale per la Fisica della Materia,
and Dipartimento di Fisica e Tecnologie Relative, Unita' di Palermo, Università di Palermo, Palermo,
Italy
Complexity in financial markets

La Rosa, M., Nicolosi, D., & Occhipinti, L. Corporate R&D - Soft computing Nano-Organics Si-
optoelectronics & Micromachining Operation, STMicroelectronics, Catania, Italy.
CNN As Paradigm For Complex Dynamic Systems Modeling

Andriani, P. Durham Business School, UK, & Passiante, G., Department of Innovation Engineering,
Faculty of Engineering, University of Lecce, Italy.
Micro-diversity and sustainable innovation

Rinaldi, S. Dipartimento di Elettronica e Informazione, Politecnico di Milano, Italy
Peak-to-peak dynamics

Series D

9am – 11am Paper Session 11 Theoretical Issues

Arahovitis, I., Department of Mathematics, University of Athens, Greece
Theorizing on the Elliot Wave Principle and Adopting a Chaotic Aspect

Popp, F. A. International Institute of Biophysics, Neuss, Germany
Coherent States and Squeezed Light in Biological Systems

Glatte, E. & Nygård, J. Cancer Registry of Norway. Montebello, N-0310 Oslo Norway
Fractal Meta-Analysis and Chaos-Bound 'Causality'

Koski, K. University of Lapland/Hogeschool voor de Kunsten Utrecht, Netherlands
Non-linear Storytelling in Environmental Installation System

11am-1130am Morning Tea

Kleiner Festsaal

1130am-1230pm Keynote Address 2: Professor Tönu Puu, Institutionen för
nationalekonomi, CERUM, Umea University, Umea, Sweden

**Oligopoly Dynamics – A Traditional Area for Complex Dynamics in Economic
Theory.**

12.30pm-1.30pm Lunch

Series A

1.30m-3pm PAPER SESSION 12 Applications in Economics and Management II

Yegorov, Y. Institute for Advanced Studies, Vienna, Austria
Social Dynamics in a Continuous Heterogeneous Space

Houchin, K., Management and Labour Studies, Stevenson College, Edinburgh, & MacLean, D.,
Department of Management Studies, University of Glasgow, UK
Organisation Development through the lens of complexity theory

Valderas Jaramillo, J. Department of "Economía Aplicada I", Universidad de Sevilla, Sevilla, Spain;&
Mateos de Cabo, R., Universidad San Pablo-CEU, Madrid, Spain
Time continuous modelling: A bridge between the simple and the complex

Series B

1.30pm-3.30pm Symposium 5: From chaos to clinic: emerging applications in nonlinear brain dynamics

Convenor: Stam, C.J. Department of Clinical Neurophysiology and MEG Centre, VU University Medical Centre, Amsterdam, Netherlands.

Stam, C.J., van Cappellen van Walsum, A.M., Pijnenburg, Y.A.L., Scheltens, Ph., Vriens, E.M., Strijers, R.L.M., Altenburg, J., Vermeulen, R.J., Spijkstra, J.J., Girbes, A.R.J., van Dijk, B.W.
Department of Clinical Neurophysiology, MEG Center, Department of Neurology, Department of Child Neurology, Intensive Care, VU University Medical Center, Amsterdam, The Netherlands
Synchronization likelihood: interacting dynamical systems in the brain in health and disease.

Molnár, M. and Gaál, Zs. Institute of Psychology, Hungarian Academy of Sciences, Budapest, Hungary;
Nagy, Z.
& Magos, T. National Stroke Center, Budapest, Hungary; Kondákor, I., Department of Neurology, Pécs, Hungary; Stam, C.J., Department of Clinical Neurophysiology, VU University Medical Centre, Amsterdam, The Netherlands
Nonlinear electrophysiological measures in patients with vascular dementia

Mormann, F., Kreuzl, T., Riekel, C., Andrzejak, R., Kraskov, A., David, P., Elger, C., & Lehnertz, K.
Department of Epileptology, University of Bonn, Germany; Helmholtz-Institute for Radiation and Nuclear Physics, University of Bonn, Germany; John von Neumann Institute for Computing, Research Center Jülich, Germany
EEG analysis and seizure prediction

Micheloyannis, S., & Stam, C.J. University of Crete, Medical division, Greece and VU University Medical Centre, Amsterdam, The Netherlands.
Neuropsychological studies in health and disease using nonlinear EEG analysis.

Ferri, R., & Stam, C.J., Sleep Research Center, Department of Neurology, Oasi Institute for Research on Mental Retardation and Brain Aging (IRCCS), Troina, Italy;
Department of Clinical Neurophysiology and MEG centre, VU University Medical Centre, Amsterdam, The Netherlands
Nonlinear analysis of normal and pathologic sleep EEG

van Putten, M.J.A.M. Ziekenhuis Leyenburg, Leyweg 275, 2545 CH The Hague, The Netherlands
Proposed link rates in the human brain

Series C

1.30pm – 3.30pm PAPER SESSION 13 Applications in Education and Social Sciences

Davis-Seaver, J. Department of Curriculum and Instruction, North Carolina A&T State University, Greensboro, North Carolina, USA
Chaos in the Classroom

Xu, W. & Li, Q. School of Chemical Engineering and Material Science, Beijing Institute of Technology, People's Republic of China
Chemical kinetic systems derived from chaotic arms races model

Reschke, C. University of Witten/Herdecke, Department of Macroeconomic and Institutional Change, Witten, Germany
Implications of Complexity for Evolutionary Economics and vice versa

Andergassen, R., Nardini, F., & Ricottilli, M., Università degli Studi di Bologna, Italy
Technological Paradigms and Firms' Interaction

Series D

1.30pm – 3pm PAPER SESSION 14 Biomedical Applications

Mayer-Kress, G., & Newell, K. Penn State University, University Park, PA, USA
Time-Scales in Stochastic Map Models of Chaos in Isometric Force Production

Martinis, M., & Knezevic, A. Department of Theoretical physics, Rudjer Boskovic Institute, Zagreb, Croatia
Time statistics of heart beat intervals and Cauchy distribution

Mirow, S. Dept. of Psychiatry, University of Utah School of Medicine, & Porter, R., Directions for Mental Health, Clearwater, Florida, USA.
Inter-relationships of temporal patterns in simultaneously recorded measures of movement and heart rate before and after psychotherapeutic interventions

3.30pm-4pm Afternoon Tea

Series A

4pm-6pm PAPER SESSION 15 Applications in Psychology I

Van Lieshout, P. University of Toronto, Speech-Language Pathology, Oral Dynamics Laboratory, Canada
Coupling dynamics in speech gestures

Yevin, I. & Apenova, S. Russian Academy of Sciences, Dolgoprudny, Russia
Pavlovian Conditional Reflex As a Pattern Recognition Process

Renaud, P., Décarie, J., Gourd, S.-P., Paquin, L.-C. & Bouchard, S. Laboratoire de cyberpsychologie et Laboratoire DEII, Université du Québec en Outaouais, Institut Philippe-Pinel de Montréal, Université du Québec à Montréal, Québec, Canada
Computing perceptual and motor invariants in immersive environments

Mens-Verhulst, J., & van Dijkum, C., Utrecht University, Utrecht, The Netherlands
The Dynamics of Fatigue: Insights From Simulation in Self-Regulation

Series B

4pm – 5.30pm PAPER SESSION 16 Organisational Processes and Complexity

Pugacheva, E., Baikal State University of Economics and Law, Irkutsk, Russia
Coping with Chaos: The Experience of Russian Economy

Di Lorenzo, P., Dipartimento di Matematica - Seconda Università di Napoli, Italy
Chaos hides in recorded monodic music: what is the role of timbre?

Stein, A. Wagan Institute, Garrison, New York, USA
Embodying complexity at the end of life

Series C

4pm-6pm Symposium 6: The Human Body as a Complex System

Convenor: Kratky, K. Institute of Experimental Physics, University of Vienna, A-1090 Vienna, Austria

Kratky, K. Institute of Experimental Physics, University of Vienna, A-1090 Vienna, Austria
Comparative and integrative medicine

Sauer, H. IIAS, Waldbronn-Reichenbach, Germany
The regulation thermography of men

Zhang, C-L., College of Life Science, Zhejiang University, Hangzhou, China
Acupuncture system: function versus structure

Schaefer, A. Institute of Experimental Physics, University of Vienna, A-1090 Vienna, Austria
Human heartbeat and light: Influence of various light sources on the dynamics of heart rhythms

Series D

4pm-6pm Symposium 7: Foundations of Self-Organisation

Convenors: Fuchs, C. and Hofkirchner, W. Institute for Design and Technology Assessment, Vienna University of Technology, Austria.

Arshinov V. & Budanov, V. Institute of Philosophy, Russian Academy of Sciences, Moscow, Russia
Cognitive Foundations of Synergetics

Collier, J. Konrad Lorenz Institute for Evolution and Cognition Research, Altenberg, Austria
Why Self-Organization and Emergence are Linked

Darvas, G. Institute for Research Organisation of the Hungarian Academy of Sciences, Budapest, Hungary
The Arrows of Symmetry, Entropy and Orderedness in Self-organising Systems

Jimenez-Lopez, E., Mautern a. d. Donau, Austria
Weltanschauungen and Perspectivism Derived from Bertalanffy's Thinking May Help Humans to Self-organize their Role on Earth

Kharel, M. Kathmandu, Nepal
The Dynamism of Competition and Co-operation in Self Organization

Klauninger, B. Institute of Design and Technology Assessment, Vienna University of Technology, Austria
An Onto-Epistemological Model of Cognition

Hofkirchner, W. Institute for Design and Technology Assessment, Vienna University of Technology, Austria.
A Unified Theory of Information Requires a Unified Theory of Self-Organisation

7.30pm for 8pm Drinks and Conference Dinner

Sunday 9th February, 2003

Series A

9am-10.30am PAPER SESSION 17 Applications in Mental Health

Koopmans, M. Metis Associates, Bronx, NY, USA.

Dynamical perspectives on the origins of bind interactions in the family and their relationship to mental disorders.

Lipscomb, P. University of Washington, Seattle, WA, USA
Does Complex Adaptive Systems Theory Explain Therapeutic Change?

Tretter, F. State mental Hospital Haar, Munich, Germany
The clinical neurobiology of opiate withdrawal – a non-linear phenomenon?

Series B

9am-11am PAPER SESSION 18 General Applications

Schwartz, I. Naval Research Laboratory, Washington, DC, USA
Noise induced chaos and Transport in population dynamics

Glendinning-Hall, S. Health Development Agency, UK
From systems to evidence: a study in applying complexity theory to a health promotion programme

Thomassen, A., Utrecht School of the Arts, Hilversum, The Netherlands
Engendering a continuum of flow within a dynamic CHI system applying a framework of Second Order Cybernetics

Baskin, K., Institute for the Study of Coherence and Emergence, Philadelphia, PA, USA
Human Adaptability on the Meso Level: Organizations as Ecosystems

Series C

9am-11am PAPER SESSION 19 Applications in Psychology II

Schiepek, G., Strunk, G., Weihrauch, S., Bölker, S., & Nelle, I.
Universitätsklinikum der RWTH Aachen, Klinik für Psychosomatik und Psychotherapeutische Medizin,
Aachen, Germany.
Nonlinear Dynamics and Complexity in the Experience of Emotions

Schiepek, G., Trump, T., Eckert, H., & Weihrauch, S.
Universitätsklinikum der RWTH Aachen, Klinik für Psychosomatik und Psychotherapeutische Medizin,
Aachen, Germany.
How to Identify Critical Phase Transitions in Human Development Processes – Complementary Information from Complexity Resonance Plots and Recurrence Plots

Jay-Shake Li, J-S. & Huston, J. Institute of Physiological Psychology I, University of Düsseldorf, Germany
Applications and Limits of the Extended Return Map in the Analysis of Behavioral Dynamics

Schiepek, G., Eckert, H., Droste, S., Weihrauch, S., Picht, A. & Altmeyer, S.
Universitätsklinikum der RWTH Aachen, Klinik für Psychosomatik und Psychotherapeutische Medizin,
Aachen, Germany.
Real-Time Monitoring in Psychotherapy Processes. the Contribution of Nonlinear Dynamics to the Management of Change Processes.



Series D

9am-11am Workshop 1: Nonlinear Dynamics in Work Organizations: 20 Years and Counting

Organiser: Guastello, S., Department of Psychology, Marquette University, Milwaukee, WI, USA
Email: stephen.guastello@marquette.edu

Applications overview of basic dynamics to organizational behavior from the early 1980s involved catastrophe models. There was a shift in focus to chaos and self-organization in the early 1990s. Importantly, the change in a system from one self-organized state to another is an example of a catastrophe process. Empirical studies are presented.

The organization is a complex adaptive system that receives and interprets environmental stimuli which themselves may be complex and dynamic. It generates response options and information through its creative problem solving capability. The butterfly catastrophe model of motivation combined many previously-known dynamics affecting personnel selection and training, motivation, and work performance, absenteeism, and turnover. Creative products are the result of a chaotic idea generation process. Individuals filter out some ideas and attract others depending on their goals for problem solving. The idea elements and unique mental organization and experience are shared with other problem solvers in group settings. Local interactions among group members culminate in the eventual self-organization of the group such that the role of a general leader emerges along with several other, more specific roles. Control parameters vary by type of group task. Work group coordination applications involve psychological theory, game theory, chaos and self-organization. The basic process of coordination is non-hierarchical, meaning that a leader is not required. The process is fundamentally nonverbal, although verbalization enhances performance to some extent. Experiments on work flow in an organizational hierarchy open up new questions pertaining to the cognitive ability to control chaos and other dynamics.

11am-11.30am Morning Tea

Kleine Festsaal

11.30pm – 12.30pm Keynote Address 3: Professor Jack Cohen, Reproductive Biologist, Birmingham Women's Hospital Assisted Conception Unit, Birmingham, UK
"Why is Negentropy, like Phlogiston, a Privative?" or "Life must be natural, not negentropic"

1pm – 2pm Lunch

Series A

2pm-3.30 pm PAPER SESSION 20 Psychotherapy and Dynamics

Toifl, K. Neuropsychiatric Clinic for Children and Adolescents, University of Vienna, Austria
Psychosis, defined as self-organization of a dysfunctional Self. Consequences for scientific research.

Orsucci, F. Institute for Complexity Studies, Rome, Italy
Synchronization as a basic process in psychotherapy

Mayring, P., University of Klagenfurt, Institute of Psychology, Austria
Qualitative Methods for Research of Nonlinear Phenomena in Human Sciences

Series B

2pm-4pm Symposium 8: Nonlinear Dynamics and Epilepsy

Convenor: Iasemidis, L. Department of Bioengineering, Arizona State University, Tempe, USA

Le Van Quyen, M., Chavez, M., & Martinerie, J. Laboratoire de Neurosciences Cognitives et Imagerie Cérébrale, Hôpital de la Pitié-Salpêtrière, Paris, France

Characterization of Brain Spatio-Temporal Dynamics: Application to Epileptic Seizure Anticipation

Prasad, A., Narayanan, K., Tsakalis, K., & Iasemidis, L. Brain Dynamics Lab, Dept. of Bioengineering and Electrical Engineering, Arizona State University, Tempe, Arizona, USA

Hysteresis in Coupled Chaotic Oscillators and Application to Epileptic Seizures

Iasemidis, L., Prasad, A., Narayanan, K., Sackellares, J., Pardalos, P., Shiau, D-S., & Chaovalitwongse, W. Brain Dynamics Labs, Dept. of Bioengineering, Arizona State University, Tempe, Arizona, USA, and Depts. of Neurology, Neuroscience, Statistics, Bioengineering, Industrial and Systems Engineering, University of Florida and the Malcolm Randall VA Medical Center, Gainesville, Florida, USA

Prediction of Epileptic Seizures by Linear and Nonlinear Methods

McSharry, P., Smith, L., & Tarassenko, L. Mathematical Institute, University of Oxford, Department of Engineering Science, University of Oxford, and Centre for the Analysis of Time Series, London School of Economics, London, UK

The Value of Nonlinear Statistics for Identifying Epileptic Seizures

Sackellares, J., Shiau, D-S., Pardalos, P. & Carney, P., Depts. of Neurology, Neuroscience, Statistics, Bioengineering, Industrial and Systems Engineering, University of Florida and the Malcolm Randall VA Medical Center, Gainesville, Florida, USA

Time Irreversibility of Brain Spatio-Temporal Dynamics at Epileptic Seizure Transitions

Series C

2pm-4pm Workshop 2: Virtual Worlds, Artificial Societies: the Artist Vision at the Boundary Between Life Sciences and Imagination

Organiser: Mauro Annunziato

Email: mauro.annunziato@tiscalinet.it

1) Celestino Soddu, Enrica Colabella and Gabriele Maldonado
Generative art is the idea realized as genetic code of artificial objects.

2) Christa Sommerer and Laurent Mignonneau
Modeling Complex Adaptive Systems and Complexity for Interactive Art

3) Mauro Annunziato and Piero Pierucci
Emerging Structures in Artificial Societies

4) Juan Romero Cardalda
The Hybrid Society

5) Giuseppe Caglioti
Ambiguity and symmetry reduction in the emergence of structures and the nucleation of visual thinking

4pm Afternoon Tea and Farewell