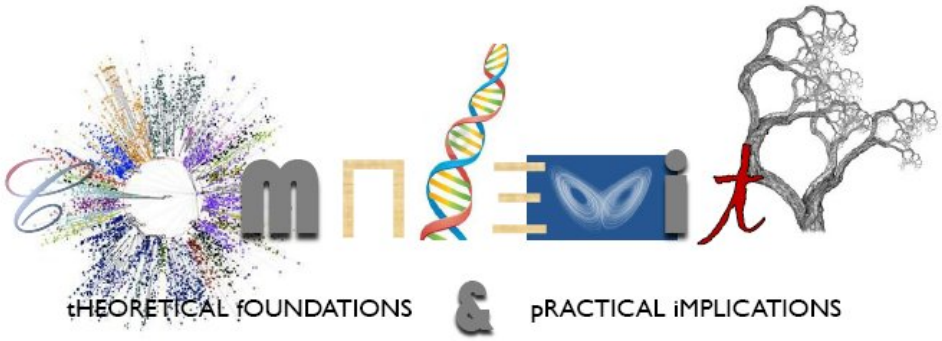


Complexity:
Theoretical Foundations &
Practical Implications

Altonaer Stiftung für philosophische Grundlagenforschung

Hamburg, 24-26 August 2011

Complexity: Theoretical Foundations and Practical Implications

Complexity has always been around us. Only recently, however, it has become a subject matter in its own right. And only recently researchers and institutions have realised that complex phenomena may need tackling with unconventional tools and methodologies. This workshops brings together scientists from a variety of disciplines and philosophers interested in issues related to complexity. The format of the workshop (short talks by scientists, comments by philosophers, and extended discussion sessions) is designed to catalyse interaction and mutual understanding as regards both domain-specific research problems and general philosophical issues.

Questions we would like to see addressed in the discussion comprise:

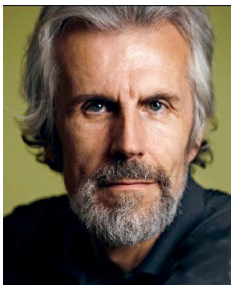
- What makes systems in your domain complex? What's peculiar about them vis à vis other domains?
- Is there a difference between the kind of complexity exhibited by natural and social systems? If so, is it epistemological or ontological in character?
- How are complexity and emergence related? How does (understanding of) one affect (understanding of) the other?
- What kind of explanation (e.g. nomic subsumption, statistical relevance, mechanisms) fits complex systems of your domain best?
- What interpretation of causality or causal relations (as, e.g. probability raising, counterfactual relation) applies best to complex systems (of your domain)?
- What disciplinary changes does study of complex phenomena impose on researchers and institutions? And what is the status of the (cross-disciplinary) subjects that it generates?

	DAY1	DAY2	DAY3
	Introduction	**Complexity and Evolution**	**Complexity and Consciousness**
9:30 - 10:50	Chu - Casini - McMullin	Goldstein - Heylighen	Chennu - Theurer
11:10 - 12:30	Session continued & discussion	Discussion	Discussion
Lunch			
	Biocomplexity	**Complexity and Social Science**	**Complexity: Science, Society and Ethics**
14:00 - 15:20	Wolkenhauer - Theurer	Moneta - Kuhlmann	Kaiser
15:40 - 17:00	Discussion	Discussion	Discussion & conclusion

Participants

Srivas Chennu is Research Associate in the Department of Clinical Neurosciences, Wolfson Brain Imaging Centre, University of Cambridge. As a part of the impaired consciousness research group, he works on developing the use of EEG (Electroencephalography) and BCI (Brain Computer Interfaces) for assessing and assisting patients in vegetative and minimally conscious states. Email: *sc672@cam.ac.uk*

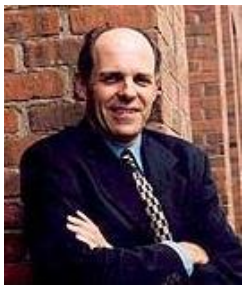
Richard Goldstein is coordinator of the reserach group on "Modelling of Evolution" in the Mathematical Biology division of the National Institute for Medical Research (NIMR), London. He investigates the evolutionary process that determines form and function of living beings, by developing computational and theoretical methods that draw on insights from physical chemistry, condensed matter physics, artificial intelligence, complexity theory, and mathematical biology. Email: *rgoldst@nimr.mrc.ac.uk*



Francis Heylighen is research professor at the Free University of Brussels (VUB), where he directs the transdisciplinary research group on "Evolution, Complexity and Cognition". The main focus of his research is the evolution of complexity, in particular the development of collective knowledge and intelligence, and its application to the emerging intelligent web, or "global brain". More recently, he has been looking at how individual agents tackle complex challenges via action, exploration, and learning. Email: *fheyligh@vub.ac.be*

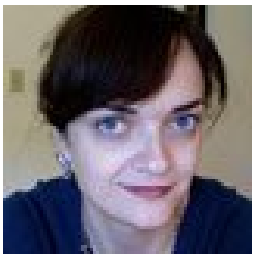
Matthias Kaiser is Director of the Centre for the Study of the Sciences and the Humanities at the University of Bergen. He holds a position at the National Committees for Research Ethics where he is directly involved in matters of science and technology policy. His main work and areas of expertise are in the fields of philosophy of science, ethics of science, and technology assessment. Email: *matthias.kaiser@etikkom.no*

Meinard Kuhlmann is Associate Professor at the Institut für Philosophie at the University of Bremen. He has research expertise in theoretical philosophy, philosophy of science, modern natural philosophy and analytic ontology. His research interests range from quantum field theory to econophysics. He recently authored *On Markets and Magnets: Explanation, Reduction, and Mechanisms in Econophysics* (Habilitationsschrift, 2008). Email: *meik@unibremen.de*



Barry McMullin is Director of the Rince Research Institute and Associate Professor in the School of Electronic Engineering at Dublin City University. One of his research projects aims to engineer synthetic Autonomous or Autopoietic Agents. The outcomes of the project are, among other things, to provide insight into basic scientific problems of the origin and organisation of the simplest living organisms and a basis for utterly new kinds of living technology. Email: *Barry.McMullin@dcu.ie*

Alessio Moneta is Research Associate in the Evolutionary Economics Group at the Max Planck Institute of Economics, Jena. His research interests are causality in time-series econometrics, methodology of economics, philosophy of causation, graphical causal models. His current research is on empirical analysis of consumption, causal inference in nonparametric and nongaussian settings, methodology of empirical economics. Email: *moneta@econ.mpg.de*

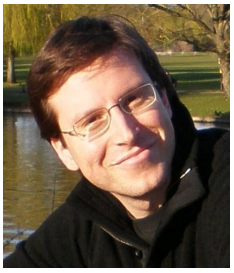


Kari Theurer is a graduate student in philosophy at Indiana University, Bloomington. Among her research interests are the philosophy of biology, the philosophy of psychology, of mind and neuroscience. Within these areas, she is particularly interested in issues concerning mechanisms and reduction. She is also interested in the structure of scientific theories, the nature of scientific explanation, and the metaphysics of science. Email: *ktheurer@indiana.edu*

Olaf Wolkenhauer is Chair in Systems Biology and Bioinformatics, Department of Computer Science at the University of Rostock. He is interested in data analysis and mathematical modelling with applications to molecular and cell biology. His dual target is the understanding of how the components within a cell interact, so as to bring about its structure and realise its functioning, and how cells interact, so as to develop and maintain higher levels of structural and functional organisation. Email: *olaf.wolkenhauer@uni-rostock.de*

Organisers

Dominique Chu is Lecturer at the Computing Laboratory at the University of Kent, Canterbury. His main research interest is Bio-inspired computing and Systems Biology. More specifically, he is working on computational systems that evolve cell signaling networks that have pre-specified properties. His philosophical interests revolve around issues of complex systems modelling and the (im-)possibility to define complexity. Email: *D.F.Chu@kent.ac.uk*



Lorenzo Casini is a graduate student in philosophy of science at the University of Kent, Canterbury. He has research interests in philosophy of science, mind, language, and epistemology. He is currently concerned with the - inferentialist - interpretation of causal claims in complex systems sciences, with focus on case studies from systems biology (apoptosis) and computational economics (asset pricing). Email: *L.Casini@kent.ac.uk*

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Große Freiheit
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„Olé"
Eulenstr.
Jessenstr.
Ehrenbergstr.
Lobuschstr.
Keplerstr.
Mörkenstr.
Reeperbahn
Arnoldstr.
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