

Announcement
VISU/SWC 2003

Vienna International Summer University 2003
SWC Scientific World Conceptions

Biological and Cosmological Evolution

Vienna, July 14–27, 2003

organized by

the University of Vienna and the Institute Vienna Circle

A two-week high-level summer course on questions about evolutionary aspects in physics and genetics from a comparative and interdisciplinary point of view.

Main Lecturers:

Karl Sigmund (University of Vienna, Austria)

Robert M. Wald (University of Chicago, USA)

Eörs Szathmáry (Eötvös Loránd University, Hungary)

Assistant Lecturer:

Daniel Holz (University of California, Santa Barbara, USA)

Our world is not static, as was the prevailing view in past ages - but dynamic. It evolves. This holds for the large-scale structures in the universe as well as for the biomolecules. The Summer University 2003 is devoted to the major scientific aspects of cosmological and biological evolution, the key ideas of which originated in the early decades of the previous century.

The theory of general relativity revolutionized our view of the nature of space, time, and gravitation; and the neo-Darwinian synthesis merged genetics with the theory of natural selection. Both fields progressed enormously during the past forty years: the “big bang” theory was dramatically confirmed by the discovery of the cosmic microwave background radiation, and evolutionary biology linked up with genomics. Yet we still do not know the answer to some very basic questions concerning, for instance, the origin of life or the origin and ultimate fate of the universe.

The lectures on *cosmological evolution* will explain the basic nature of general relativity, describe its implications for cosmology, and address recent developments in theoretical and observational cosmology. The lectures on *biological evolution* will concentrate on the major transitions, in particular prebiotic evolution, the origins of multicellularity, the

role of sex and the emergence of social structures. Topics will include the principles of population genetics and ecological modelling, random drift and selection, competition and cooperation, and applications of game theory to population dynamics.

International Program Committee

Martin Carrier (Bielefeld), Maria Luisa Dalla Chiara (Florence), Maria Carla Galavotti (Bologna), Malachi Hacoen (Duke), Rudolf Haller (Graz), Rainer Hegselmann (Bayreuth), Michael Heidelberger (Tübingen), Elisabeth Leinfellner (Vienna), James G. Lennox (Pittsburgh), Paolo Mancosu (Berkeley), Paolo Parrini (L'Aquila), Friedrich Stadler (Vienna), Roger Stuewer (Minneapolis), Thomas Uebel (Manchester), Jan Wole_ski (Cracow), Anton Zeilinger (Vienna)
Michael Stöltzner (Secretary of the VISU Program Committee, Vienna)
Gloria Sultano (Secretary of the VISU)

The Main Lecturers

Karl Sigmund is professor of mathematics at the University of Vienna. He works on dynamical systems, and in particular on evolutionary game theory, a field which he helped to found, together with his collaborators Josef Hofbauer and Martin Nowak. Sigmund, who was for many years president of the Austrian Mathematical Society and Editor in Chief of the *Monatshefte für Mathematik*, is a member of the Austrian Academy of Science. Many of his contributions deal with diverse aspects of biomathematics, as for instance population genetics, mathematical ecology, epidemiology and modelling of animal behaviour. Among his books are *Evolutionary Games and Population Dynamics* (1998, with Josef Hofbauer) and *Games of Life* (1995). Sigmund's main interest centers currently on the evolution of cooperation. He is also actively engaged in the study of the Vienna Circle and the history of mathematics.

homepage: <http://mailbox.univie.ac.at/Karl.Sigmund/>

Eörs Szathmáry is professor of biology and head of the Department of Plant Taxonomy and Ecology of Eötvös Loránd University, Budapest. His main interest is theoretical evolutionary biology and focuses on the common principles of the major steps in evolution, such as the origin of life, the emergence of cells, the origin of animal societies, and the appearance of human language. Together with John Maynard Smith, he has published two important books which serve as the main references in the field (*The Major Transitions in Evolution*, 1995, and *The Origins of Life*, 1999). Szathmáry serves on the editorial board of several journals; in particular, he is the Editor-in-Chief of the new journal *Selection*. Professor Szathmáry was awarded the New Europe Prize in 1996 by a group of institutes for advanced study, and the Academy Prize 1999 by the Hungarian Academy of Science. He is the President of the International Organisation for Systematic and Evolutionary Biology (IOSEB).

homepage: <http://www.colbud.hu/main/fellows/SzathmaryEors.html>

Robert Manuel Wald is the Charles H. Swift Distinguished Service Professor of Physics at the University of Chicago. He is a fellow of the American Physical Society and the American Academy of Arts and Sciences, and is a member of the U.S. National Academy of Sciences. His research interests center on general relativity - particularly, the theory of black holes - and extend to cosmology and quantum gravity. Wald is the author of the textbook/monograph *General Relativity* (1984) and the lecture note volume *Quantum Field Theory in Curved Spacetime and Black Hole Thermodynamics* (1994).
homepage: http://physics.uchicago.edu/t_rel.html

Assistant Lecturer

Daniel Holz is a postdoctoral fellow of the Institute for Theoretical Physics, at the University of California, Santa Barbara. His research has focused on the interface between general relativity and cosmology. This has included extensive work on the effects of gravitational lensing, in addition to a broad array of other projects (ranging from numerical relativity and gravitational wave astrophysics, to cosmological dark matter and random matrix theory).
homepage: <http://www.itp.ucsb.edu/~deholz>

Cost of the Program: Eur 880,00

Lodging in student dormitories is available at approximately Eur 250,00 for the whole duration of the course.

Applicants should submit:

1. A short educational curriculum vitae
2. A list of their most recent courses and grades or a copy of their diplomas
3. A one-page statement (in English), briefly describing their previous work and their purpose in attending **VISU-SWC**
4. A (sealed) letter of recommendation from their professor, including some comment on their previous work
5. A passport photo

Applicaton deadline January 15, 2003

(Later applications may be considered if space is still available.)

A letter of admission together with a detailed syllabus will reach successful applicants by mid-February, 2003.

The administration of VISU-SWC at the University of Vienna can assist the candidates admitted in applying for funds and in the accreditation of the course, but unfortunately, cannot offer financial assistance. However, for a few gifted applicants who can demonstrate that, despite serious documented efforts, they have not been able to obtain any financial support, in particular due to economic difficulties in their respective country, a tuition-waver grant, awarded by the Institute Vienna Circle and the University of Vienna, will be provided.

Applications should be sent to Professor Friedrich Stadler, c/o Institute Vienna Circle, Museumstrasse 5/2/19, A-1070 Vienna. For further inquiries, please send email to Friedrich.Stadler@univie.ac.at or consult the IVC's Web site <http://ivc.philo.at/VISU/> or the University of Vienna's Web site: <http://www.univie.ac.at> (click Vienna Summer University)

Preview 2004

Fourth Vienna International Summer University

SCW Scientific World Conceptions

“The Quest for Objectivity”

organized by the University of Vienna and the Institute Vienna Circle

Location: Vienna, University Campus

Date: July 19–30, 2004

Lecturers: John Beatty (University of Minnesota, USA), Micheal Friedman (Stanford University, USA), Helen Longino (University of Minnesota, USA)

<http://ivc.philo.at/VISU/>