

RESEARCH NETWORKING PROGRAMME

THE PHILOSOPHY OF SCIENCE IN A EUROPEAN PERSPECTIVE (PSE)

Standing Committee for the Humanities (SCH)



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We are dedicated to supporting our members in promoting science, scientific research and science policy across Europe. Through its activities and instruments ESF has made major contributions to science in a global context. The ESF covers the following scientific domains:

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- Social Sciences
- Marine Sciences
- Nuclear Physics
- Polar Sciences
- Radio Astronomy Frequencies
- Space Sciences

Introduction

A long-lasting tradition of investigations on the nature of scientific knowledge took shape in Europe at the beginning of the last century. Such a tradition started within a wide range of different disciplines, and in a number of different European countries. It included renowned scientists, such as Ernst Mach, Ludwig Boltzmann, Carl Menger, Ludwig and Richard von Mises, Otto Neurath, Albert Einstein, Max Planck, Pierre Duhem, Henri Poincaré, Karl Pearson, to mention but a few, and involved not only empirical disciplines but formal ones too (David Hilbert, Kurt Gödel, Federigo Enriques, Jan Łukasiewicz, Alfred Tarski, Bertrand Russell). This scientific movement, involving Central Logical Empiricism in Vienna, Berlin and Prague, was strongly interdisciplinary and cross-disciplinary. It produced an extended and stimulating literature and prepared the ground for a wide array of reflections on the structure of science, its aim and limits. Investigating the methods and the foundations of science from a European perspective does neither presuppose nor support or encourage chauvinist claims of superiority, but merely expresses recognition of an undeniable historical fact: European culture entered into the discourse on science from its very beginning. Until about the middle of the last century, Europe was where most of modern science underwent very decisive periods of development, and where inquiry on the aims and methods of science was begun. After all, Scientific Revolution in the 16th and 17th century took place in Europe, and the so-called 'Second Revolution' in natural science around 1900 had its first developments in Europe.

After such a tremendous growth, towards the end of the 1930s the movement was dissolved by the takeover of Nazism. The liberal tendencies shared by its members and the Jewish origin of some of them made its survival impossible, and its focus moved abroad, especially to the United States, where a large number of its exponents eventually settled. Even though Europe is no longer alone in setting the parameters for discourse in and about science, during the last few decades a renewed and increasing interest in foundational and methodological issues has again been shown by scholars all over Europe. The most recent stage of this revival is manifest by the remarkable number of research centres focusing on such topics, and the recent creation of the European Philosophy of Science Association (EPSA).

The ESF Research Networking Programme 'The Philosophy of Science in a European Perspective' (PSE) focuses on the philosophy and foundations of the natural and social sciences and aims at enhancing European tradition in the philosophy of science. Its ultimate goal is to promote exchanges between scholars from all over Europe, in order to build up a network of strong and durable relations to broaden and deepen the current debate on the topic.

The running period of the ESF Research Networking Programme PSE is five years, from May 2008 to April 2013.

Aims and Objectives



Preliminary Conference at the International Congress for the Unity of Science, Prague, 1934

PSE is a natural development of two ESF Networks, Historical and Contemporary Perspectives of Philosophy of Science in Europe (HCPPS, 2002-2004) and Philosophical and Foundational Problems of Modern Physics (PFPMP, 2003-2005), which pointed out major trends of research and their lacunas. Building on the results of such two successful Networks, PSE focuses on foundational and methodological issues in a number of sciences, including, within the natural sciences: physics, biology, chemistry and the earth sciences, and, within the social sciences: economics, anthropology, psychology and history. A specific interest will be devoted to emerging disciplines endowed with a peculiar, so-to-speak 'borderline' scientific status, such as medicine, archaeology and cognitive science.

The Programme, which has a strong interdisciplinary character, intends to reinforce contacts, knit together several European research centres and encourage the mobility of scholars, especially as regards young scholars and doctoral students. Working in strict cooperation with the newly founded EPSA, it will voice European research in the field, yet be open to the contribution of overseas scholars, especially from countries such as Australia, Canada, South America and the USA, which are strongly involved in this kind of research.

Teams and Topics

PSE includes scholars from 22 countries, and is structured into five teams of researchers, focusing on five areas: A) Formal methods in the philosophy of science; B) Philosophy of the natural and life sciences; C) Philosophy of the cultural and social sciences; D) Philosophy of the physical sciences; E) History of the philosophy of science. Teams will organise workshops devoted to specific aspects of such general topics, which will constitute a common ground for debate.

Team A: Formal Methods

The toolbox of modern logic has traditionally been employed to clarify concepts such as scientific explanation, confirmation and intertheoretic reduction. Despite their merits, it is widely recognised that purely logical accounts are not flexible enough to capture the details of actual scientific practice. A variety of formal methods is currently employed in the philosophy of science, complementing purely logical accounts, including Bayesian methods, combinations of logic and probability theory and various kinds of applied logic. Team A will focus on a methodological analysis of these methods and show how they can be used to solve problems in the philosophy of science and illuminate episodes from the history of science. Such study has the potential not only to enhance our understanding of science, but also to increase productivity in science.

The activities organised by Team A will revolve around the following topics:

- Year 1. Formal Methods and their Applications to the Philosophy of Science.
- Year 2. Formal Models of Explanation and Confirmation.
- Year 3. Pluralism in the Foundation of Statistics.
- Year 4. Philosophical Problems of Computer Science and Artificial Intelligence.
- Year 5. New Directions in the Foundations of Science: Modelling Uncertainty.

Team B: Philosophy of the Natural and Life Sciences

Team B will focus on a set of specific foundational and methodological issues arising in the life sciences and medicine, with a special interest in evolutionary biology and systematics, biodiversity, genomics and proteomics, cell and molecular biology, neurobiology, systems biology, and biomedical research. Team B will be concerned also with cross-disciplinary comparisons within the natural sciences, with relations between the life sciences and the physical sciences, and with the status of chemistry.

The activities organised by Team B will revolve around the following topics:

- Year 1: Approaches to the Foundations of Science: The Place of the Life Sciences.
- Year 2. Explanation, Prediction and Confirmation.
- Year 3. Probability and Statistics in the Life Sciences.
- Year 4: The Advent of Systems Biology.
- Year 5: Pluralism in the Natural Sciences.

Team C: Philosophy of the Cultural and Social Sciences

Foundational and methodological debate has a central role in the building of the cultural and social sciences. It follows at least three different lines: 1) the general scientific status of the social sciences, which calls attention to the different components of science, such as language, structure, knowledge, method etc.; 2) the scientific status of the social sciences as compared to that of the natural sciences; this includes methodological controversies such as Erklären-Verstehen and prediction-understanding; 3) the scientific status of each discipline. Here the foundational and methodological debate intersects with general trends (such as economic imperialism, sociologism and cognitivism). The activities organised by Team C will revolve around the following topics:

- Year 1: The Present Situation of the Philosophy of the Cultural and Social Sciences: The 'Naturalist Turn', the 'Social Turn', and the Discussion on Scientific Realism.
- Year 2: Explanation versus Description in the Cultural Sciences, and the Realm and Limits of Explanation and Prediction in the Social Sciences.
- Year 3: The Debate on Mathematical Modelling in the Social Sciences.
- Year 4: The Sciences of the Artificial versus the Cultural and Social Sciences.
- Year 5: New Approaches in the Social Concern on Science: Social Constructivism and Realism on the Cultural and Social Sciences.

Team D: Philosophy of the Physical Sciences

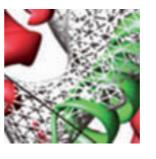
Team D's main focus will be on two related themes: probability in physics and the applications of ideas from physics to other fields. Probability is a central concept in both quantum theory and in classical and quantum statistical mechanics. It is not only used in the practical application of these theories: it is also central to the major conceptual issues surrounding them, in particular to the formulation of the quantum collapse postulate and thus to the quantum measurement problem, and to the arrow of time in statistical mechanics. Investigating these topics provides a direct line of attack on the main relationships between physics and other disciplines.

The activities organised by Team D will revolve around the following topics:

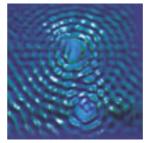
- Year 1. Philosophical Foundations.
- Year 2. Quantum Physics, Space-time Theories and Probabilities.
- Year 3. Statistical Mechanics.
- Year 4. Applications of Physics in other Sciences.
- Year 5. New Directions.

Team E: History of the Philosophy of Science

Like other fields of human endeavour, science possesses distinctive roots in the cultures to which its practitioners belong. Despite the intrinsic internationalism which determines its ethos of investigation and









From top left: The birth of a protein (© Max Planck Institute for Molecular Genetics, Berli), Skew spiral (© Fritz Haber Institute of the Max Planck Society, Berlin - Oliver Rudzick), Nanointerferences (© Max Planck Institute for Metals Research, Stuttgart - Dirk Sander, Guillemin Rodary, Hai Feng Ding, Jürgen Kirschner), In the cosmos of quanta (© Max Planck Institute for Gravitational Physics, Golm - Thomas Thiemann)

validation, the practice and the content of science, its dissemination and reception are not just fixed by the conscious cognitive concerns of a free-floating scientific intelligentsia. It is also influenced by distinctive, long-standing philosophical traditions, quite separate from the practical exigencies faced by their host cultures. Moreover, science has shown uneven development over its history. Team E will bring into focus, studying the history of foundational controversies, the distinctive reflection about natural and social sciences in the European tradition and explore its bearing on contemporary debates.

The activities organised by Team E will revolve around the following topics:

- Year 1. Foundational and Methodological Debates.
- Year 2. History of Explanation, Prediction and Confirmation.
- Year 3. Historical Debates about Probability and Statistics.
- Year 4. History of Philosophically Neglected. Marginalised and Recently Emergent Disciplines.
- Year 5. Contemporary Relevance of Neglected Approaches.

Funding

Workshops and conferences

The activities of PSE will cover a period of five years. Two big conferences will be held, one in the first and one in the fifth year; workshops will be organised in the remaining years.

The *first* general conference, on 'The present situations in the philosophy of science', will take place in Vienna from 18 to 20 December 2008 and will give an opportunity to identify specific topics on which teams can liaise thereafter.

In the second, third and fourth year, teams will organise separate workshops focused on the following topics:

- second year: 'Explanation, prediction and confirmation';
- third year: 'Probability and statistics';
- fourth year: 'The sciences that philosophy has neglected'.

On the *fifth* year a closing plenary conference will be held in Bologna on 'New directions in the philosophy of science'.

Publications

A key objective is the publication of a series of books collecting the achieved results. Such a series will reflect the articulation of scientific activities.

A joint PSE and EPSA quarterly Bulletin will appear on-line, and a website will disseminate achievements and provide up-dated information about activities and initiatives.



Anatomical theatre

ESF Research Networking Programmes are principally funded by the Foundation's Member Organisations on an à la carte basis. PSE is supported by:

- Fonds zur F\u00f6rderung der wissenschaftlichen Forschung in \u00f6sterreich (FWF)
 Austrian Science Research Fund, Austria
- Institut Wiener Kreis, Austria
- Fonds voor Wetenschappelijk Onderzoek-Vlaanderen (FWO)
 Research Foundation Flanders, Belgium
- Ίδρυμα Προώθησης Έρευνας (RPF)

 Cyprus Research Promotion Foundation, Cyprus
- Forsknings- og Innovationsstyrelsen (FIST)

 Danish Agency for Science, Technology and
 Innovation, Humanities Research Council, Denmark
- Suomen Akatemia/Finlands Akademi (AKA) Academy of Finland, Research Council for Culture and Society, Finland
- Centre National de la Recherche Scientifique (CNRS)

National Centre for Scientific Research, France

- Deutsche Forschungsgemeinschaft (DFG) German Research Foundation, Germany
- University of Bologna; University of Venice, Italy
- Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)

Netherlands Organisation for Scientific Research, The Netherlands

- Evert Willem Beth Foundation, The Netherlands
- Norges Forskningsråd
 Research Council of Norway, Norway
- Fundação para a Ciência e a Tecnologia (FCT) Foundation for Science and Technology, Portugal
- Consiliul National al Cercetarii Stiintifice din Invatamantul Superior (CNCSIS)
 National University Research Council, Romania
- Agentúra na podporu výskumu a vývoja (APVV) Slovak Research and Development Agency, Slovak Republic
- Consejo Superior de Investigaciones Científicas (CSIC)

Council for Scientific Research, Spain

- Comisión Interministerial de Ciencia y Tecnología (CICYT)
 Interministerial Committee on Science and Technology. Spain
- Vetenskapsrådet (VR) Swedish Research Council, Sweden
- Schweizerischer Nationalfonds (SNF) Swiss National Science Foundation, Switzerland
- London School of Economics (LSE), United Kingdom

PSE Teams

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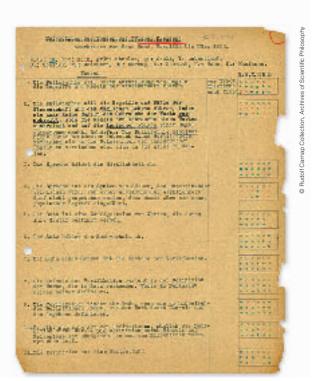
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From the Vienna Circle records, November 1932 – March 1933

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Second International Congress for the Unity of Science, Copenhagen, 1936

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For the latest information on this Research Networking Programme consult the PSE website: www.esf.org/pse

