

**Comptes Rendus de  
l'Academie Internationale  
de Philosophie des Sciences**

**Tome I**

**Science's Voice of Reflection**

**Éditeurs**  
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**The electronic book series *Comptes Rendus de l'Académie Internationale de Philosophie des Sciences***

This volume is the first volume published in the new publication series *Comptes Rendus de l'Académie Internationale de Philosophie des Sciences* (C.R. AIPS).

The *Académie Internationale de Philosophie des Sciences* (AIPS) was created in 1947 by Stanislas Dockx in order to reach a synthesis on fundamental questions of the philosophy of the sciences in an interdisciplinary manner. Among its early members were many famous philosophers and scientists, among them Paul Bernays, Evert Willem Beth, Józef Maria Bocheński, Niels Bohr, Émile Borel, L. E. J. Brouwer, Louis de Broglie, Albert Einstein, Ferdinand Gonseth, Edward Arthur Milne, and Hermann Weyl. The main instrument to bring together philosophers and scientists and reflect on fundamental questions were the regular conferences of the AIPS, usually resulting in a proceedings volume published with different publishers. Between 1947 and 2021, the AIPS held sixty-five of these conferences which we list in chronological order:

**1947.** *Problèmes philosophiques des sciences.*

Brussels, Belgium, 8–13 September 1947.

**1949.** *Les quanta et la vie.*

Brussels, Belgium, 28–30 April 1949.

**1959.** *Philosophie ouverte et expérience scientifique.*

Rome, Italy, 2–8 August 1959.

**1961.** *Les conditions biologiques indispensables à la liberté de l'homme.*

Leiden, The Netherlands, 5–8 April 1961.

- 1961.** *Philosophie de la physique.*  
Paris, France, 16–18 October 1961.
- 1962.** *Information et prévision dans les différentes sciences.*  
Brussels, Belgium, 3–8 September 1962.
- 1963.** *La phénoménologie et les sciences de la nature.*  
Fribourg, Switzerland, 2–4 September 1963.
- 1964.** *Objectivité et réalité dans les différentes sciences.*  
Brussels, Belgium, 7–9 September 1964.
- 1965.** *Civilisation technique et humanisme.*  
Ouchy, Switzerland, 1–8 September 1965.
- 1966.** *Les fondements de la physique.*  
Oberwolfach, Germany, 1–6 July 1966.
- 1967.** *La symétrie comme principe heuristique dans les différentes sciences.*  
Amsterdam, The Netherlands, 1–3 September 1967.
- 1968.** *La méthode prospective.*  
Heverlee-Louvain, Belgium, 10–13 September 1968.
- 1969.** *La méthode de la recherche, méthodologies particulières et méthodologie générale.*  
Ouchy, Switzerland, 6–9 September 1969.
- 1970.** *L'explication dans les sciences.*  
Genève, Switzerland, 25–28 September 1970.
- 1971.** *Science, philosophie et foi.*  
Biel, Switzerland, 8–11 September 1971.
- 1972.** *La condition humaine: de l'atome à l'eschatologie.*  
Ghent, Belgium, 11–16 September 1972.
- 1973.** *Science et métaphysique.*  
Fribourg, Switzerland, 12–15 September 1973.
- 1974.** *La sémantique dans les sciences.*  
Rixensart, Belgium, 30 August–3 September 1974.
- 1975.** *La recherche de systèmes.*  
Santa Margherita Ligure, Italy, 18–22 July 1975.

- 1976.** *Logique et ontologie.*  
Salzburg, Austria, 21–24 September 1976.
- 1977.** *Christian theology in the context of scientific evolution.*  
New York NY, United States of America, 5–9 July 1977.
- 1978.** *Spécificité des sciences humaines en tant que sciences.*  
Trento, Italy, 4–7 May 1978.
- 1979.** *Un siècle dans la philosophie des mathématiques.*  
Orbetello, Italy, 17–21 April 1979.
- 1980.** *Le corporel et le mental—The Mind-Body Problem.*  
Genoa, Italy, 8–12 April 1980.
- 1981.** *La nature de la vérité scientifique.*  
Brussels, Belgium, 27–29 April 1981.
- 1982.** *La responsabilité de la science.*  
Castrocaro Terme, Italy, 13–16 April 1982.
- 1983.** *La responsabilité de la science en tant que réponse aux attentes de l'homme contemporain.*  
Seville, Spain, 5–8 April 1983.
- 1984.** *La responsabilité éthique face au développement biomédical.*  
Louvain-en-Woluwe, Belgium, 23–28 April 1984.
- 1985.** *Les relations mutuelles entre la philosophie des sciences et l'histoire des sciences.*  
Fribourg, Switzerland, 15–18 May 1985.
- 1986.** *Le rôle de l'expérience dans la science.*  
Heidelberg, Germany, 14–17 May 1986.
- 1987.** *La probabilité dans les sciences.*  
Vico Equense, Italy, 27–31 May 1987.
- 1988.** *Science et métaphysique.*  
Cesena, Italy, 19–21 May 1988.
- 1989.** *The origin and the evolution of the universe and the mankind.*  
Lima, Peru, 10–12 August 1989.
- 1990.** *Science et sagesse.*  
Fribourg, Switzerland, 23–25 May 1990.

- 1991.** *Science and the intelligibility of the world.*  
Uppsala, Sweden, 8–9 August 1991.
- 1992.** *Interprétations actuelles de l'homme: philosophie, science et religion.*  
Naples, Italy, 4–6 June 1992.
- 1993.** *Philosophy of mathematics today.*  
Budapest, Hungary, 20–22 May 1993.
- 1994.** *La science et l'hypothèse.*  
Nancy, France, 12–14 May 1994.
- 1995.** *Observability, unobservability and their impact on the issue of scientific realism.*  
Parma, Italy, 24–28 May 1995.
- 1996.** *Philosophy of biology today.*  
Vigo, Spain, 15–18 May 1996.
- 1997.** *Advances in the philosophy of technology.*  
Karlsruhe, Germany, 20–24 May 1997.
- 1998.** *Interpretation and meaning of illness.*  
Milan, Italy, 21–24 May 1998.
- 1999.** *Alternative logics: do sciences need them?*  
Salzburg, Austria, 12–16 May 1999.
- 2000.** *The problem of the unity of science.*  
Copenhagen & Aarhus, Denmark, 1–3 June 2000.
- 2001.** *Complexity and emergence.*  
Bergamo, Italy, 10–12 May 2001.
- 2002.** *Aspects philosophiques dans les sciences cognitives.*  
Paris, France, 20–22 June 2002.
- 2003.** *Scienza ed etica. Contesti assiologici della scienza.*  
Lecce, Italy, 16–21 October 2003.
- 2004.** *Operations and constructions in science.*  
Erlangen, Germany, 17–18 September 2004.
- 2005.** *Epistemology and the social.*  
Tenerife, Spain, 22–26 September 2005.
- 2006.** *Le naturel et l'artificiel dans les sciences de la vie.*  
Mexico City, Mexico, 11–14 September 2006.

- 2007.** *Le temps dans les différentes approches scientifiques.*  
Cerisy, France, 4–9 October 2007.
- 2008.** *Relations entre les sciences naturelles et les sciences humaines.*  
Rovereto, Italy, 15–19 September 2008.
- 2009.** *Evolutionism and religion.*  
Florence, Italy, 19–21 November 2009.
- 2010.** *Science and interpretation.*  
Zadar, Croatia, 6–10 September 2010.
- 2011.** *Representation and explanation in the sciences.*  
Louvain-la-Neuve, Belgium, 25–29 April 2011.
- 2012.** *The Legacy of A. M. Turing.*  
Urbino, Italy, 24–27 September 2012.
- 2013.** *Science—metaphysics—religion.*  
Široki Brijeg, Bosnia-Herzegovina, 24–28 July 2013.
- 2014.** *Pragmatism and the practical turn in philosophy of science.*  
Pont-à-Mousson, France, 10–14 September 2014.
- 2015.** *Scientific Realism: Objectivity and Truth in Science.*  
A Coruña, Spain, 22–25 September 2015.
- 2015.** *The European critical rationalism.*  
Varese, Italy, 28–29 September 2015.
- 2016.** *Mechanistic explanations, computability and complex systems.*  
Dortmund, Germany, 28–30 October 2016.
- 2017.** *Axiomatic thinking.*  
Lisbon, Portugal, 11–14 October 2017.
- 2018.** *Science’s voice of reflection. The philosopher of science as part of the scientific endeavour.*  
Amsterdam, The Netherlands, 4–7 September 2018.
- 2019.** *The human being facing new biomedical technology, including the subject of big data, the role of artificial intelligence for their analysis, genome editing and personal medicine.*  
Prague, Czech Republic, 11–14 August 2019.
- 2021.** *The relevance of judgment for philosophy of science.*  
Zadar, Croatia, 12–15 October 2021.



Academic publishing is currently undergoing fundamental changes. Traditional publication models that guaranteed dissemination of ideas in the past do not serve this purpose anymore. As a consequence, the AIPS decided in their General Assembly in Prague on 13 August 2019 to create an electronic publication series entitled *Comptes Rendus de l'Académie Internationale de Philosophie des Sciences* whose papers will be openly available to everyone in which papers presented at the conferences of the Academy can be published and disseminated.

This publication project is very generously supported by the *Institute for Logic, Language and Computation* at the *Universiteit van Amsterdam* which provides the online hosting of the website of the C.R. AIPS. In addition to the open access online publication, the volumes of the series can be ordered as traditional printed books via the publisher College Publications in London. We should like to thank Dov Gabbay and Jane Spurr at College Publications for their support in setting up this agreement and the new book series.

Cambridge  
June 2022

B.L.  
*Éditeur C.R. AIPS*

## Science's voice of reflection.

The 2018 conference of the *Académie Internationale de Philosophie des Sciences* was held at the *Universiteit Amsterdam* in September 2018 under the title

*Science's voice of reflection.*

*The philosopher of science as part of the scientific endeavour.*

By virtue of its subject, its methods, and its disciplinary tradition, philosophy of science straddles the borderlines between C. P. Snow's *Two Cultures*, connected equally strongly to the learned realm of the humanities and the technological domain of the sciences and thereby linking these worlds.

Philosophers of science who engage with scientists or engineers often understand their role as that of the voice of reflection; the philosophical eagle perspective allows them to engage with those questions all too often ignored in the everyday routine of scientific practice: questions about the motivation, norms, values, methods, and limitations of the scientific enterprise.

Many modern scientific projects covering all of the disciplines in the natural, medical and engineering sciences urgently require this level of philosophical reflection: large-scale collaborative scientific projects with major impact on our world and society raise concerns about sustainability, safety, objectivity, inter-subjectivity, ethics, and the fundamental concepts underlying the scientific questions, all of which are firmly within the domain of competence of the philosopher of science.

Alas, philosophers of science are rarely if ever consulted or incorporated in the decision-making processes concerning these collaborative scientific projects. We emphatically believe that the focus on only one of C. P. Snow's two cultures is detrimental to the larger goal of science as the endeavour of understanding and improving the world.

The 2018 symposium aimed to explore the possible and actual interactions of philosophy of science with the scientist's endeavour, including, e.g.,

historical studies, case studies of current collaborations between philosophers and scientists, the role of philosophy in the academic training of future scientists, and many more topics. In the following, we present the schedule of the conference with all presentations:

## **Tuesday, 4 September 2018.**

**17:15–17:35.** Opening (Gerhard Heinzmann & Benedikt Löwe).

**17:35–18:35.** Sonja Smets, Amsterdam, The Netherlands: *Where logic meets the social sciences.*

**From 19:00.** Dinner.

## **Wednesday, 5 September 2018.**

**9:50–10:30.** Gregor Schiemann, Wuppertal, Germany: *Epistemology of the LHC.*

**10:30–11:10.** Jean-Guy Meunier, Montréal QC, Canada: *Modeling the mind: Bridging philosophy and cognitive sciences.*

**11:10–11:30.** Coffee Break.

**11:30–12:10.** Valentin A. Bazhanov, Ulyanovsk, Russia: *The detour heuristic influence of philosophy upon science: The cases of ideologized science and Kant's program in neuroscience.*

**12:10–12:50.** Plenary discussion about the role of the philosopher of science in the natural and social sciences.

**12:50–13:50.** Lunch Break.

**13:50–14:30.** Michel Ghins, Louvain, Belgium: *Scientific realism and scientific practice.*

**14:30–15:10.** Jesús Zamora-Bonilla, Madrid, Spain: *Is philosophy's role to create concepts or to destroy them?*

**15:10–15:40** Coffee Break.

**15:40–16:20.** Marco Buzzoni, Macerata, Italy: *Methodological naturalism or transcendental distinction? On the relationship between philosophy, science, and philosophy of science.*

**16:20–17:00.** Inkeri Koskinen, Helsinki, Finland: *Engaging through case studies: Can empirical philosophy of science influence the development of transdisciplinarity?*

**17:00–17:20.** Coffee Break.

**17:20–19:20.** General Assembly of the *Académie Internationale de Philosophie des Sciences.*

**From 19:45.** Conference Dinner.

**Thursday, 6 September 2018.**

**9:50–10:30.** Michael Detlefsen, Notre Dame IN, United States of America: *Rigor as an epistemological ideal of mathematical proof.*

**10:30–11:10.** Brigitte Falkenburg, Dortmund, Germany: *Some remarks on the relations of philosophy to the sciences.*

**11:10–11:30.** Coffee Break.

**11:30–12:10.** Fabio Minazzi, Varese, Italy: *Historical epistemology as a meta-reflection between science and philosophy.*

**12:10–12:50.** Jure Zovko, Zadar, Croatia: *Judgment as link between C. P. Snow's two cultures.*

**12:50–13:50.** Lunch Break.

**13:50–14:30.** Martin Carrier, Bielefeld, Germany: *Responsible Research & Innovation: Prospects & Obstacles.*

**14:30–15:10.** Alberto Cordero, New York NY, United States of America: *On the Complex Interactions between Science and Philosophy of Science.*

**15:10–15:40** Coffee Break.

**15:40–16:20.** Elliott Sober, Madison WI, United States of America: *Philosophical Interventions in Science—a strategy and a Case Study (Parsimony)*

**16:20–17:00.** Closing.

The conference took place in the historical *VOC Zaal* in the *Bushuis* of the *Universiteit van Amsterdam*. The *Bushuis* dates back to the mid 16th century and was originally the gun magazine of the city of Amsterdam. In the 17th century, the Dutch East India Company (*Vereenigde Oost Indische Compagnie*; VOC) made it its headquarters by adding the *Oost-Indisch Huis* to the building complex (1606). The *VOC Zaal* was used as the meeting chamber for the *Heren XVII* (the “Lords Seventeen”), the board of the VOC elected from the shareholders. The *genius loci* and its historical reminder of the Dutch colonial past with violence and oppression in the name of progress served as an impressive reminder of the importance of grounding scientific development in the understanding and contextualisation provided by the humanities. The organisers acknowledge additional financial support from the *Institute for Logic, Language and Computation* of the *Universiteit van Amsterdam*.

That this proceedings volume appears almost four years after the symposium is due to the fact that its production fell into the phase of the creation of the new book series *Comptes Rendus de l'Académie Internationale de Philosophie des Sciences* (C.R. AIPS): the original plan was to publish the proceedings volume as a special issue of a journal, but this plan was abandoned when the opportunity to make this volume the inaugural volume of the new book series presented itself. The delays caused by this change of publication plan meant that many of the papers presented at the conference had already found some other publication venue in the meantime; as a consequence, only five of the presented papers are published in this volume: Marco Buzzoni's paper *Disunity in the philosophy of science: for and against*, Alberto Cordero's paper *Cooperation and conflict between philosophers of science and scientists*, Brigitte Falkenburg's paper *The two cultures—old and new debates on philosophy and the sciences*, Inkeri Koskinen's paper, *Engaging or not engaging with transdisciplinary research: on methodological choices in philosophical case studies*, and Fabio Minazzi's paper *Historical epistemology as a meta-reflection between science and philosophy*.

The AIPS decided that the book series C.R. AIPS will provide proceedings of the events of the AIPS as they happened and reflect the diversity among members of the AIPS as well as their disagreements. Therefore, the papers published in this volume are not formally peer-reviewed beyond the feedback that took place in the lively discussions in Amsterdam: the papers reflect the opinions of the authors alone with no editorial influence. The five papers in this volume cover a wide range of thoughts and positions on the subject of the interaction between the philosopher of science and the scientist and we hope that the readers will find the papers thought-provoking and interesting.

Nancy & Cambridge  
June 2022

G.H. B.L.