Introduction to the special issue on the nature and scope of information

Elizabeth Black · Luciano Floridi · Allan Third

Information and its cognate concepts are frequently used in increasingly varied areas of scientific and scholarly investigations, from computing and engineering to philosophy and the social sciences. As a consequence, a great deal of interesting and exciting research is taking place in a wide range of fields, which do not always communicate with each other. So the second workshop[1] of the IEG (the interdepartmental research group in philosophy of information at the University of Oxford[2]), took the shape of a series of seminars, hosted in Oxford by the Department of Engineering Science, during the academic year 2008–2009. The project aimed to bring together leading experts in the broadly construed area of information research, with the goal of offering a stimulating series of talks and discussions on "the nature and scope of information".

The series explored the links and commonalities between various disciplines with an interest in the nature of information. The focus was on conceptual and theoretical approaches as well as practical implications, with an emphasis on future directions and programmes of research about information and the open questions currently facing us.

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[1] The proceedings of the first workshop were published in Floridi and Sequoiah-Grayson (2009).
[2] http://web.comlab.ox.ac.uk/oucl/research/areas/ieg/.

E. Black · A. Third
Department of Engineering Science, University of Oxford, Oxford, UK
e-mail: lizblack@robots.ox.ac.uk

A. Third
e-mail: allan.third@eng.ox.ac.uk

L. Floridi (✉)
Department of Philosophy, University of Hertfordshire, de Havilland Campus, Hatfield, Hertfordshire AL10 9AB, UK
e-mail: l.floridi@herts.ac.uk

The University of Oxford's Department of Engineering Science supports a wide range of research under the broad heading of "information engineering", working on practical and computational solutions, with a sound theoretical basis, to the problems of information. There is a particular interest in applications to the medical domain. The IEG is Oxford's research group in philosophy of information. It is a collaboration between the Oxford University Computing Laboratory (OUCL) and the Faculty of Philosophy. The group works on the conceptual foundations of the nature, scope and life of information. The partnership between the Department of Engineering Science and the IEG turned out to be a remarkable success, well above our optimistic expectations.

The seminars were strongly interdisciplinary. Researchers from both philosophy and computer science departments were invited in order to present their current research to a mixed audience of philosophers, engineers, logicians, mathematicians and social scientists. The format of the seminars was slightly unorthodox. Speakers were invited to give a one-hour, broad presentation on their current and future research, and then to engage in a one-hour session of questions and answers. The result was a great variety of approaches and insights, ranging from the philosophy of economics to computational theory, from the philosophy of science to the theory of multiagent systems, all focusing on the nature and scope of information. Here is a quick overview.

The revised versions of the following talks will be found in this special issue: Alexander Bird, *The Epistemology of Science: a Bird's Overview*; Richard Bradley, *Proposition-valued Random Variables as Information*. Michael Wooldridge presented a very interesting talk on the use of alternating-time temporal logic for the specification and automated verification of interaction mechanisms (for more details on this work see, for example, van der Hoek et al. (2007)); however, for this special issue he presents his work with John Grant, Sarit Kraus and Donald Perlis on *Postulates for Revising BDI Structures*.

Four papers included in this special issue were also planned for the seminars: Luciano Floridi, *Information, Possible Worlds and the Cooptation of Scepticism*; Steven French, *The Interdependence of Structure, Objects and Dependence*; Ed Mares, *The Nature of Information: A Relevant Approach*; and Duncan Pritchard, *Cognitive Ability and the Extended Cognition Thesis*. Three other talks delivered during the seminars unfortunately do not appear in this volume. We provide their abstracts for the convenience of the reader.

Dov Gabbay (Kings College, London), *Non-Deductive Reasoning and Matrix Abduction*. Gabbay motivated and introduced a new method of abduction, called Matrix Abduction, and applied it to modelling the use of a variety of non-deductive inferences, including reasoning by analogy and the rule of argumentum a fortiori. He argued that in fact Matrix Abduction can be treated as a general method for executing non-deductive inferences.

Hannes Leitgeb (Bristol), *The Prospects of Formal Philosophy*. The talk provided various examples that highlighted the importance of logical and mathematical methods in current philosophy. Leitgeb argued that these methods will become even more prominent in future philosophy. In particular, he dealt with the following questions (which emerged from his work and which were also related to the "information theme" of the seminar): is it possible to reconstruct properties from similarity? Are there true but

absolutely unprovable statements? Do connectionism and symbolic computationalism exclude each other? Can we justify probability theory from closeness to the truth? Is there a probabilistic way out of semantic paradoxes? Leitgeb argued that giving good answers to these questions relies crucially on doing philosophy in mathematical terms and by means of mathematical proof.

Jon Williamson (Kent), *Do Probability and Causality Exist?* Bruno de Finetti famously stated that probability does not exist. In this talk, Williamson gave an overview of his own research, which develops de Finetti's position and extends it to causality. However, he also maintained—contra de Finetti—that while neither probability nor causality exist, they are both objective in the sense that there is a fact of the matter as to whether a probabilistic or causal claim is true. So the views that he advocated—an objective Bayesian account of probability and an analogous epistemic account of causality—steered a course between realism and subjectivism. Information ties these views together: an agent's probabilistic and causal beliefs should capture the information she has to hand, but they should not be any more informative than that. Probability and causality themselves can be construed as the probabilistic and causal beliefs of an agent who is maximally informed.

Many people and institutions contributed to the success of the initiative. We would like to express our sincerest gratitude to the Department of Engineering Science, for providing a most convenient venue and for its extremely generous financial support. Without the Department's unwavering support the project would have been impossible. We would also like to convey our gratitude to Vincent F. Hendricks and Weibe van der Hoek, both at *Synthese*, for their continuous interest, support and patience. Especially Weibe van der Hoek gave us all the necessary advice and encouragement to complete this volume.

We are very grateful to all of speakers and the contributors to this volume, for their intellectual efforts and for the patience they exercised towards our many requests and invitations. All of the participants in the seminars, both presenters and audience, succeeded in making it a great workshop thanks to their lively and insightful contributions.

Finally, we would like to thank you, the reader, for taking the time to read this volume. The informational turn in philosophy Floridi (2010) has gained a remarkable momentum and we hope that this special issue will further contribute to its success.

References

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