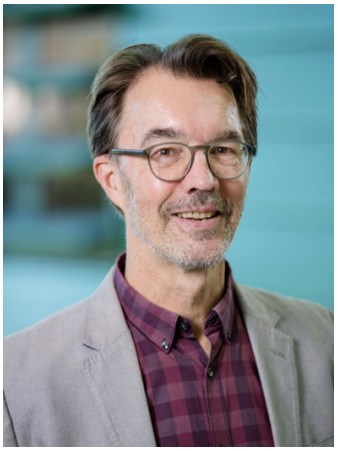
Information Sheet Speakers

Part I - Scientific understanding and AI

Presenter
Prof. Dr. Henk de Regt (Radboud University)



Title
Scientific understanding with/by AI

Summary
In many areas of present-day science AI plays an increasingly important role. While it is clear that AI can assist scientists in their quest for understanding the world, a more controversial question is whether it can also generate scientific understanding independently of human scientists. The answer to this question obviously depends on how we define (scientific) understanding. In this talk, Professor De Regt will outline his
contextual theory of scientific understanding and explore the prospects of 'artificial scientific understanding' from the perspective of this theory.

Bio
Henk de Regt is Professor of Philosophy of Natural Sciences at the Institute of Science in Society, Radboud University. His research centers on the theme of 'understanding'. He has investigated the nature of scientific understanding, as it is produced by expert scientists, via philosophical analysis and historical case studies. This has led him to develop a contextual theory of scientific understanding that acknowledges the historical and disciplinary variation in criteria for understanding. His work on scientific understanding culminated in the monograph 'Understanding Scientific Understanding' (Oxford University Press, 2017), which received the

Lakatos Award in 2019.

Response
Dr. Emily Sullivan (Utrecht University)

Part II – Technological understanding and quantum technology

Presenters
Eline de Jong & Dr. Sebastian De Haro (University of Amsterdam)

Title
Technological Understanding

Summary
Philosophical discussions of 'understanding' have usually taken place in the context of science and scientific theories: hence the phrase 'scientific understanding'. However, 'understanding' also plays a crucial role in technology development. Sebastian De Haro and Eline de Jong argue that designing a technological artefact is an activity that requires and reflects a type of *understanding*. Like scientific understanding, 'technological understanding' entails the ability to use knowledge. In a context of design, to have technological understanding means to be able to realise a practical aim by using knowledge to design an appropriate technological artefact. In this talk, the notion of technological understanding is introduced and applied to a design context. This account serves as the starting point for a brief exploration of what technological understanding could amount to in other contexts.

Bio
Sebastian De Haro is Assistant Professor in Philosophy of Science at the University

of Amsterdam and Senior Researcher in the Quantum for Society and Business research line at QuSoft. His areas of research are philosophy of science, philosophy of physics, and philosophical aspects of quantum technologies. He is the project leader of the NWA
funded project *Quantum Impact on Societal Security* and a member of Trinity College, Cambridge. His recent publications include *The Philosophy and Physics of Duality* (co authored with Jeremy Butterfield, forthcoming at Oxford University Press), *A Precipice Below Which Lies Absurdity? Theories without a Spacetime and Scientific Understanding* (with Henk de Regt, published in Synthese, 2020), and *Science and Philosophy: A Love-Hate Relationship* (published in Foundations of Science, 2020).

Eline de Jong is a PhD candidate in the Philosophy and Ethics of Quantum Technology at the University of Amsterdam, as part of the project *Quantum Impact on Societal Security*. She is a^iliated with the Institute for Logic, Language and Computation, the Institute of Physics, and QuSoft. Her research focuses on the societal impact of large-scale quantum computers and the philosophical and ethical questions that come with it. In particular, she focuses on the cybersecurity threat posed by future quantum computers. In this project, Eline combines philosophy of science, philosophy of technology, philosophy of risk, and ethics of technology. Eline is also a research fellow at the Stanford Center for Responsible Quantum Technology. Previously, she worked at the Netherlands Scientific Council for Government Policy, as a member of the project group on the societal impact of AI.

Respondent
Aletta Meinsma (Leiden University)

Part III – Collective understanding

Presenter
Dr. Federica Malfatti (University of Innsbruck)

Title

Can Communities Understand?

Summary

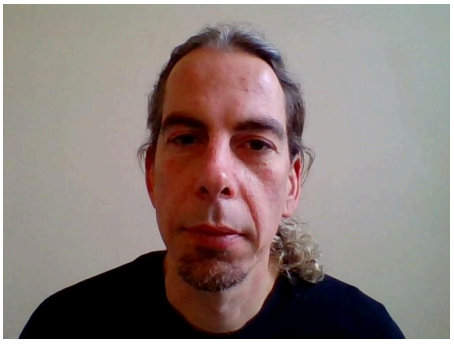
In targeting understanding, we typically rely on one another's competence and expertise. Thanks to a division of cognitive labor, depths of understanding that would be unreachable by any single mind become easily accessible. But when understanding is reached by the joint e^ort of the members of a community, who is the subject of understanding? Is it the community, or are the individuals belonging to the community? Federica will argue that communities should be acknowledged as potential proper subjects of understanding. This is because there are certain understanding dynamics that cannot be well accounted for from within a purely individualistic picture.

Bio

Federica Isabella Malfatti is Assistant Professor at the Department of Philosophy of the University of Innsbruck. She studied Philosophy at the Universities of Pavia, Mainz and Heidelberg. She was visiting fellow at the University of Cologne and spent research periods at the Harvard Graduate School of Education and at UCLA. She works at the intersection between epistemology and philosophy of science. She is the leader and primary investigator of the TrAU! project, a project funded by the Tyrolean Government which aims at exploring the relation between trust, autonomy, and understanding.

Respondent

Dr. Dingmar van Eck (University of Amsterdam)



Part IV – Public understanding

Presentation
Dr. Anne Dijkstra (University of Twente)

Title
Public Understanding of Science and Technology

Summary
In this final contribution, public understanding will be discussed. Often it is thought that it is important that a public, or an audience, understands science and technology, because this will help the cause of science and technology. But what does public understanding mean? Who is the public anyway? Is itthe public that needs to understand better, for example, the processes of science or technology, or is it also a responsibility for researchers to understand better how publics understand? And what are the implications for communicating science?

Bio
Anne Dijkstra is assistant professor in Science Communication at the University of Twente. Her research focuses on understanding the changing science-society relationship from a communication perspective. Key words: engagement, science communication, science journalism, citizen science, risk communication, emerging technologies, and responsible research and innovation. Anne is an elected scientific member of the international PCST network and coordinated the PCST2023 conference. She is co-editor of the book *Science Communication. An Introduction* (WSP). She conducted research for EU projects ENJOI, RRI2SCALE, NUCLEUS, and GoNano. She coaches motivated students in the Research Honours master programme and organizes Science Café Deventer meetings.