

Understanding Scientific Disagreement and its Impact on Society

Context and State of the Art

Disagreement is ubiquitous: people, including scientists in all fields of knowledge, disagree about a wide variety of topics—from mundane facts about what’s the best way to reach the airport, to complex matters such as the degree of reliability of climate models. Clearly, disagreement plays a crucial role in virtually all our intellectual practices. The literature on the topic is growing, but core epistemological features of disagreement remain unclear, especially in scientific contexts. The project for this research fellowship aims to fill this lacuna by working towards a framework to analyze scientific disagreement. This helps clarify the nature as well as the mechanics of disagreement. Relevant will be an investigation of the public’s understanding of scientific disagreement from which it could be gained a fine picture of common misconceptions that folk have in relation to scientific disagreement so as to identify some basic strategies to counter an increasingly common form of science denialism which poses a threat to society. To convey an accurate picture of how science works, disagreement cannot be simply dismissed as something devaluing science and thus something to avoid. On the contrary, it must be conceived for what it is: a central constituent of the scientific enterprise.

Research Methods and Objectives

The project for this research fellowship consists of two research objectives (RO1 and RO2). In RO1 the researcher will work toward a general framework to assess the nature and epistemic roles of scientific disagreement. In RO2 the researcher will investigate some fundamental misunderstandings in the ways folk conceive of scientific disagreement also to understand the impact that these misunderstanding has with respect to science denialism.

RESEARCH OBJECTIVES

RO1 — A Comprehensive Framework of Disagreement

The recent debate on the epistemic nature and normative significance of disagreement has highlighted the need for a pluralistic understanding of this complex phenomenon. Thus, it is important to develop a nuanced and comprehensive framework for understanding disagreement and the mechanisms that bring it about, possibly by providing, in addition to an epistemological analysis, also formal models of disagreement. The main focus will be contexts of scientific practices. This is the main result that the project aims to achieve in RO1.

CORE RESEARCH QUESTIONS:

- How can we properly distinguish disagreement and dispute?
- How many types of disagreements are there and what is their nature?
- What is the normative and epistemic significance of the occurrence of a genuine disagreement among scientists?
- Relatedly, how should we respond to cases of disagreement to maximize the acquisition of truth?
- How can we properly assess the relations of epistemic responsibility in cases of disagreement?
- How do social settings influence the formation of disagreement in complex communities?

EXPECTED RESULT

To deepen our understanding of disagreement and in particular its normative and epistemological significance in relation to the scientific culture.

RO2 — The main aim of the second research objective is to investigate common misconceptions of disagreement and scientific practices and their role in relation to science denialism. Recent events connected to the Covid-19 crisis, as well as the ongoing debate about climate change have highlighted how delicate is the balance between the transparency of the procedures that underlie scientific research and folk's proper understanding of the nature of science. It is desirable to make science open and transparent to the public since open science promotes a healthy democratic idea of scientific culture where the methodologies and results of science impact on the opinions of citizens on key decisional matters. However, several aspects of science can be misunderstood by non-experts giving rise to misconceptions that motivate ungrounded decisions on public issues. The research will focus on two of significant misconceptions:

MISCONCEPTION 1: the fact that experts with seemingly equal levels of justification disagree is taken as evidence that experts are permitted to stick with their respective opinions and, crucially, that also non-experts are entitled to form their own view on the matter, given their available evidence. This encourages a sceptical attitude on the primacy of science as rational means to answer questions about reality.

MISCONCEPTION 2: disagreement is taken to provide reasons for thinking that scientists don't have robust enough evidence to support their judgments. This is because they are taken to be answerable to unreasonably high standards. Disagreement is wrongly taken as a symptom of a significant epistemic defect, whereas it is instead a beneficial aspect of science.

CORE RESEARCH QUESTIONS:

- What is the nature and rationale of misconceptions about disagreement in science?
- Relatedly, what is the role of the educational system in forming these misconceptions?
- What are the exact epistemic dynamics underlying the adoption of science scepticism once one has misconceptions about disagreement in science?
- Relatedly, how can we formally model these dynamics to get a precise understanding of them that can inform decision-making?
- What is the exact role of conspiracy theories in persuading a science sceptic to embrace science denialism?

EXPECTED RESULT

To improve understanding of common misconceptions on scientific disagreement and assess their connection to science denialism. To provide new tools to develop strategies to counter science denialism.

Within the scope of the project, the research fellow must carry out the following **research activities**:

- Participation in seminars and conferences.
- Stay updated on the latest publications about the project's topics.
- Produce at least two research articles to submit to top-tier peer-reviewed international journals.
- Assistance in organizing research seminars and the conference.
- Be active in presenting their own research both nationally and internationally.