

# *Bayesian Epistemology in the Age of Disinformation, Bologna, 4–5 December*

:: Lorenzo Casini

## Abstract

This article reports the content of the talks given at the workshop “Bayesian Epistemology in the Age of Disinformation”, which was held at the University of Bologna on 4–5 December 2025.

## Keywords

Bayesian epistemology; disinformation; polarization; expert knowledge

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## How to Cite

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The workshop “Bayesian Epistemology in the Age of Disinformation”, organized by Lorenzo Casini at the University of Bologna, brought together cognitive scientists and formal epistemologists to examine how Bayesian epistemology can illuminate the mechanisms of belief formation, polarization, and susceptibility to disinformation in imperfect information environments.

In the opening talk, *Identity, Dependence, and Polarization: A Bayesian Study*, Jürgen Landes (LMU) examined the influence of perceived dependencies among information sources on polarization between groups. Building on and generalizing recent formal results, Landes demonstrated analytically and through simulations that disagreements about in-group and out-group dependencies are sufficient, even without any difference in group reliability, to produce polarization across a wide range of parameter settings, such as numbers of agents and their reliability.

The second talk, *A Bayesian Analysis of Witness Reliability*, was given by Paolo Garbolino (IUAV), who presented a structured Bayesian network that models witness credibility by disentangling perceptual sensitivity, cognitive belief formation, and ideological sincerity. He argued that this layered approach allows for



a more precise assessment of evidential weight in legal and epistemic contexts, and showed how the same framework can be extended beyond human witnesses to assess the reliability of online opinions and outputs generated by artificial intelligence systems.

Next, in *How Industry Influence on Science Interacts with Assertion Practices*, Klee Schöppel (Groningen) explored how strategic industry interventions can undermine collective inquiry within scientific communities. Using agent-based simulations grounded in the NormAN framework, Schöppel showed that both obfuscating strategies that redirect inquiry and misleading strategies that selectively communicate evidence can significantly increase polarization and error, with their epistemic impact being strongly mediated by the norms governing what scientists choose to assert and share.

In the talk *Rational or Biased? Examining Belief Updating in Politically Charged Context Using Bayesian Networks*, Greta Sanna (UCL) reported experimental results that challenge prevailing pessimism about reasoning in politically polarized environments. Through studies with U.S. partisan participants, they showed that belief updating in response to corrective evidence often closely tracks Bayesian predictions, suggesting that apparent resistance to correction is better explained by the strength of prior beliefs than by identity-driven irrationality.

The final talk, *Bayes, Bias, and Bots: (Ir)rational Updating on Expert Advice*, given by Piero Avitabile (IMT), investigated how people update their beliefs when confronted with expert testimony from different kinds of sources. Presenting results from a pilot study, Avitabile showed how participants' posterior beliefs deviated from Bayesian norms and how these deviations varied depending on whether the expert was described as a human or a large language model, shedding light on people's heuristics when using expert knowledge.

The event was very successful. Overall, the talks highlighted the dual role of Bayesian epistemology as both a normative ideal and an explanatory framework for diagnosing epistemic failures. By combining formal modeling, simulations, and experimental evidence, the workshop advanced our understanding of how cognitive limitations, social identity, and information structures interact to shape belief formation, trust in expertise, and the dynamics of polarization in scientific, legal, and public discourse.

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