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EPISTEMIC RESPONSIBILITY IN THE CONTEXT OF THE PHILOSOPHY OF SCIENCE

RESPONSABILIDADE EPISTEMIC NO CONTEXTO DA FILOSOFIA DA CIÊNCIA

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Abstract
Objective: This article examines epistemic responsibility as a normative condition for the legitimacy of scientific knowledge within contemporary philosophy of science. Method: It provides a conceptual analysis and a critical review of the recent philosophical literature, reconstructing epistemic responsibility in two key dimensions—individual and collective—and connecting this framework to the debates on inductive risk and values in science. Results: The analysis demonstrates that epistemic responsibility encompasses individual obligations (such as intellectual integrity and transparency) and collective mechanisms (like peer review and replication). It is intrinsically linked to managing inductive risk, where choices about evidence standards involve value judgments. Furthermore, it serves as a crucial foundation for public trust in science by requiring transparent communication of uncertainty. Conclusion: Epistemic responsibility functions as a key mechanism for sustaining the reproducibility and legitimacy of scientific knowledge, particularly under conditions of social complexity and growing interdisciplinary collaboration. It is not merely an individual

Resumo
Objetivo: Este artigo examina a responsabilidade epistêmica como condição normativa para a legitimidade do conhecimento científico na filosofia contemporânea da ciência. Método: Ele fornece uma análise conceitual e uma revisão crítica da literatura filosófica recente, reconstruindo a responsabilidade epistêmica em duas dimensões principais — individual e coletiva — e conectando essa estrutura aos debates sobre risco indutivo e valores na ciência. Resultados: A análise demonstra que a responsabilidade epistêmica abrange obrigações individuais (como integridade intelectual e transparência) e mecanismos coletivos (como revisão por pares e replicação). Ela está intrinsecamente ligada ao gerenciamento do risco indutivo, onde as escolhas sobre padrões de evidência envolvem julgamentos de valor. Além disso, ela serve como uma base crucial para a confiança pública na ciência, exigindo uma comunicação transparente da incerteza. Conclusão: A responsabilidade epistêmica funciona como um mecanismo fundamental para sustentar a reprodutibilidade e a legitimidade do conhecimento científico, particularmente em

virtue but a structural, normative feature of scientific practice.

Keywords: Epistemic Responsibility. Philosophy of Science. Scientific Norms. Inductive Risk. Trust in Science. Collective Responsibility.

condições de complexidade social e crescente colaboração interdisciplinar. Não é apenas uma virtude individual, mas uma característica estrutural e normativa da prática científica.

Palavras-chave: *Responsabilidade epistêmica. Filosofia da Ciência. Normas Científicas. Risco Indutivo. Confiança na Ciência. Responsabilidade Coletiva.*

1 INTRODUCTION

The concept of epistemic responsibility today finds itself at the center of the philosophy of science for two primary reasons. First, scientific knowledge is increasingly incorporated into social decisions—from technological policy to public risk management—and therefore the question of who is responsible, and in what sense, for the quality of knowledge ceases to be a purely internal affair of the scientific community (Politi, 2025; Fleisher & Seselja, 2022). Second, the very conditions of knowledge production are changing: interdisciplinarity is intensifying, the scale of collective projects is growing, and dependence on data infrastructures is increasing, along with vulnerability to systematic distortions and collective epistemic harms (Fleisher & Seselja, 2022; Bright, Dang & Heesen, 2023).

In the philosophy of science, epistemic responsibility is usually understood not as an external moral requirement, but as a normative structure without which science loses its ability to substantiate its claim to knowledge (Tang, 2024; Wilholt, 2023). It includes obligations related to working with evidence, correctly representing uncertainty, and disciplinary self-correction, which is particularly important in situations where knowledge is used as a basis for decisions and risk assessments (Steel, 2022).

A particularly productive framework for discussing responsibility has become the argument from inductive risk, according to which the choice of standards of evidence is inevitably associated with the risk of errors and the assessment of their consequences (Havstad, 2022; Brown & Stegenga, 2023; Levy, 2025; Douglas, 2021). In this perspective, epistemic responsibility requires not denying the role of values, but ensuring procedural transparency of methodological decisions and distinguishing between results and interpretations (Menon & Stegenga, 2023; Elliott, 2022).

At the same time, responsibility cannot be reduced to the individual virtue of a researcher. Contemporary science produces knowledge collectively and institutionally, thus raising the question of collective epistemic responsibility and how to prevent collective epistemic harms generated by the incentive structure and organization of scientific communication (Politi, 2025; Fleisher & Seselja, 2022; Politi, 2024). Finally, epistemic responsibility is closely linked to epistemic trust in science and experts: in public communication, responsibility means the ability to manage uncertainty without rhetorically inflating confidence (Barimah, 2024; Wilholt, 2023).

The purpose of this article is to conceptually clarify epistemic responsibility in the philosophy of science, demonstrating its individual and collective components, its connection to debates on values and inductive risk, and its significance for trust and scientific communication.

2 EPISTEMIC RESPONSIBILITY AS A PHILOSOPHICAL PROBLEM

Posing the question of epistemic responsibility involves addressing the normative foundations of scientific cognition. Unlike classical epistemological themes focused on truth and justification, the problem of responsibility brings to the forefront the question of how cognitive actions relate to epistemic norms and the consequences of errors (Douglas, 2021; Steel, 2022).

In contemporary philosophy of science, epistemic responsibility is discussed against the backdrop of expanding conceptions of the knowing subject: scientific cognition is increasingly difficult to describe as the activity of an isolated individual, as it is realized in collective practices and institutional structures (Politi, 2025; Fleisher & Seselja, 2022; Bright, Dang & Heesen, 2023). It follows that responsibility acquires a multi-layered character and cannot be reduced to individual virtue (Fleisher & Seselja, 2022).

The philosophical problematization of responsibility arises at the intersection of normative and epistemic dimensions. The norms of validity, reproducibility, and criticality are not external requirements for knowledge, but conditions of its legitimacy (Wilholt, 2023). At the same time, the contemporary debate on the "value-ladenness" of science shows that methodological decisions inevitably include evaluative components

(Ward, 2021; Elliott, 2022; Rolin, 2021; Carrier, 2022). Consequently, responsibility presupposes reflection and articulation of those points where values participate in shaping standards of evidence (Menon & Stegenga, 2023; Elliott, 2022; Douglas, 2021).

The problem acquires particular significance where the risk of error is socially sensitive: inductive risk demonstrates that the choice of evidence thresholds and criteria for the acceptability of uncertainty is linked to assessing which errors are worse in a specific context (Havstad, 2022; Brown & Stegenga, 2023; Levy, 2025; Douglas, 2021). Therefore, epistemic responsibility involves not only methodological correctness but also clarity of assumptions, boundaries of applicability, and the status of conclusions (Menon & Stegenga, 2023; Elliott, 2022).

Finally, modern science functions as a system of roles (researchers, reviewers, editors, grant and institutional structures), and therefore responsibility is distributed and requires mechanisms for collective provision (Politi, 2025; Politi, 2024). This leads to the question: which institutional norms allow minimizing collective epistemic harms and maintaining trust in science (Fleisher & Seselja, 2022; Barimah, 2024; Wilholt, 2023).

3 EPISTEMIC RESPONSIBILITY AND SCIENTIFIC PRACTICE: INDIVIDUAL AND COLLECTIVE DIMENSIONS

At the individual level, epistemic responsibility is traditionally associated with intellectual integrity: transparent work with data, correct citation, readiness to revise conclusions, and adherence to argumentation standards (Tang, 2024). However, individual virtues operate within the context of collective science and therefore must be supported by practices of quality control of knowledge (Politi, 2025; Politi, 2024; Bright, Dang & Heesen, 2023).

The collective nature of science is manifested in the fact that the significance of a claim is confirmed through procedures of peer review, discussion, reproducibility, and replication (Politi, 2025; Politi, 2024). These mechanisms simultaneously distribute responsibility and create the risk of its "dilution": when responsibility is shared, the question arises of who is accountable for systematic failures—selective reporting, incentive distortions, and publication bias (Fleisher & Seselja, 2022; Steel, 2022).

This is precisely why contemporary philosophy of science increasingly speaks of collective epistemic harms and the need for a normative framework of collective responsibility (Fleisher & Seselja, 2022; Politi, 2025). This includes requirements for openness of data and materials, standards of replication and transparency, as well as institutional regimes that prevent distortions for the sake of "significant" results (Steel, 2022; Wilholt, 2023).

A special place is occupied by the practices of expert knowledge and scientific communication. When findings enter the public space, responsibility includes the correct presentation of the degree of certainty and boundaries of applicability; otherwise, trust in science and experts is undermined (Barimah, 2024; Wilholt, 2023).

Thus, epistemic responsibility in scientific practice is not only a personal virtue but also a set of collective procedures and institutions that support the stability and reproducibility of knowledge (Politi, 2025; Politi, 2024; Bright, Dang & Heesen, 2023).

4 NORMATIVE FOUNDATIONS OF EPISTEMIC RESPONSIBILITY AND TRUST IN SCIENCE

The problem of trust in scientific knowledge is closely related to how science implements its own norms: reproducibility, criticality, transparency, and accountability (Wilholt, 2023). Epistemic responsibility in this context acts as a condition for trust, since it regulates the correct handling of uncertainty and the limitations of knowledge (Barimah, 2024; Wilholt, 2023).

Normative requirements cannot be guaranteed solely by formal procedures: even developed systems of expert evaluation do not replace responsibility as a practice of critical reflection and honest presentation of assumptions (Wilholt, 2023). In contemporary debates on values and objectivity, it is emphasized that the problem is not the participation of values themselves, but their concealment and implicit influence on standards of evidence (Menon & Stegenga, 2023; Elliott, 2022; Rolin, 2021; Carrier, 2022).

In conditions of the public use of scientific knowledge, responsibility means the obligation to distinguish between results, hypotheses, and expert recommendations, and not to substitute argumentation with the rhetoric of "finality" (Barimah, 2024; Wilholt,

2023). This is especially important where inductive risk is high and the social consequences of errors are significant (Douglas, 2021; Steel, 2022).

Consequently, epistemic responsibility supports trust in science not through a promise of infallibility, but through norms that minimize the likelihood of systematic distortions and ensure the verifiability of knowledge (Fleisher & Seselja, 2022; Steel, 2022; Wilholt, 2023).

5 EPISTEMIC RESPONSIBILITY, INDUCTIVE RISK, AND VALUES IN SCIENTIFIC KNOWLEDGE

The argument from inductive risk shows that scientific conclusions based on probabilistic models and incomplete data are inevitably associated with the risk of errors that differ in their consequences (Havstad, 2022; Brown & Stegenga, 2023; Levy, 2025; Douglas, 2021). Therefore, epistemic responsibility requires considering what risks are taken when choosing standards of evidence and what consequences errors may have (Steel, 2022).

This calls into question the strong version of the ideal of "value-free science." If the choice of confirmation criteria depends on which errors are worse, then methodological decisions include an evaluative component (Menon & Stegenga, 2023; Elliott, 2022; Douglas, 2021). At the same time, the philosophical task is not to "eliminate" values, but to make their participation procedurally transparent and debatable (Elliott, 2022; Rolin, 2021; Carrier, 2022).

Epistemically responsible practice requires fixing assumptions, distinguishing levels of claims (result / interpretation / recommendation), and ensuring the possibility of critique and replication (Politi, 2024; Steel, 2022; Wilholt, 2023). It is through such norms that the probability of collective epistemic harms is reduced—situations where the systemic logic of publications and incentives produces distortions of knowledge (Fleisher & Seselja, 2022; Steel, 2022).

Thus, the analysis of inductive risk allows us to refine epistemic responsibility as a normative principle regulating the connection between knowledge, uncertainty, and values, and supporting trust in scientific knowledge (Barimah, 2024; Wilholt, 2023; Bright, Dang & Heesen, 2023).

6 CONCLUSION

The conducted analysis shows that epistemic responsibility is a key normative category in contemporary philosophy of science. In the context of the increasing complexity of scientific practices, the intensification of interdisciplinarity, and the growing social significance of scientific knowledge, it acquires a structural character and ceases to be only an individual ethical stance (Politi, 2025; Politi, 2024; Bright, Dang & Heesen, 2023).

Epistemic responsibility includes, firstly, individual obligations (integrity, transparency, readiness to revise conclusions) (Tang, 2024), and secondly, collective mechanisms (peer review, replication, data openness, institutional quality regimes), without which it is impossible to prevent collective epistemic harms (Fleisher & Seselja, 2022; Politi, 2025; Steel, 2022).

Responsibility plays a special role in contexts of inductive risk, where standards of evidence and thresholds of acceptable uncertainty are inevitably associated with the assessment of the consequences of errors (Havstad, 2022; Brown & Stegenga, 2023; Levy, 2025; Douglas, 2021; Steel, 2022). In this perspective, what is philosophically significant is not the denial of values, but their transparent articulation and procedural accountability (Menon & Stegenga, 2023; Elliott, 2022; Rolin, 2021; Carrier, 2022).

Finally, epistemic responsibility strengthens trust in science in public communication, requiring careful management of uncertainty and preventing rhetorical inflation of confidence (Barimah, 2024; Wilholt, 2023). Thus, epistemic responsibility acts as a mechanism for maintaining the reproducibility and legitimacy of scientific knowledge in conditions of social complexity and the expansion of collective forms of research (Politi, 2025; Politi, 2024; Bright, Dang & Heesen, 2023).

REFERENCES

BARIMAH, G. K. Epistemic Trust in Scientific Experts: A Moral Dimension. Science and Engineering Ethics, v. 30, Article 21, 2024. https://doi.org/10.1007/s11948-024-00489-x

BRIGHT, L. K.; DANG, H. A.; HEESEN, R. Science, Values, and the Priority of the Collective. Philosophy of Science, v. 90, n. 4, p. 658-680, 2023. https://doi.org/10.1017/psa.2023.14

BROWN, M. J.; STEGENGA, J. The Validity of the Argument from Inductive Risk. Canadian Journal of Philosophy, v. 53, n. 2, p. 187-190, 2023. https://doi.org/10.1017/can.2023.37

CARRIER, M. Values and Objectivity in Science: Value-Ladenness, Pluralism and the Epistemic Authority of Science. Studies in History and Philosophy of Science Part A, v. 92, p. 14-24, 2022. https://doi.org/10.1016/j.shpsa.2021.11.003

DOUGLAS, H. Inductive Risk and Values in Science. Philosophy of Science, v. 88, n. 2, p. 307-317, 2021.

ELLIOTT, K. C. Values in Science. Philosophy Compass, v. 17, n. 8, e12835, 2022.

FLEISHER, W.; SESELJA, D. Responsibility for Collective Epistemic Harms. Philosophy of Science, v. 90, n. 1, p. 1-20, 2022. https://doi.org/10.1017/psa.2022.9

HAVSTAD, J. C. Sensational Science, Archaic Hominin Genetics, and Amplified Inductive Risk. Canadian Journal of Philosophy, v. 52, n. 3, p. 295-320, 2022. https://doi.org/10.1017/can.2021.15

LEVY, A. A (Consequence-Oriented) Critique of the Argument from Inductive Risk. Philosophical Studies, v. 182, p. 2079-2099, 2025. https://doi.org/10.1007/s11098-025-02319-7

MENON, T.; STEGENGA, J. Sisyphean Science: Why Value Freedom Is Worth Pursuing. European Journal for Philosophy of Science, v. 13, n. 4, Article 48, 2023. https://doi.org/10.1007/s13194-023-00552-7

POLITI, V. The Collective Responsibilities of Science: Toward a Normative Framework. Philosophy of Science, v. 92, n. 1, p. 1-18, 2025. https://doi.org/10.1017/psa.2024.28

POLITI, V. Who Ought to Look towards the Horizon? European Journal for Philosophy of Science, v. 14, Article 19, 2024. https://doi.org/10.1007/s13194-024-00580-x

ROLIN, K. Values, Ideals, and the Objectivity of Scientific Knowledge. European Journal for Philosophy of Science, v. 11, n. 2, Article 39, 2021. https://doi.org/10.1007/s13194-021-00365-9

STEEL, D. Epistemic Responsibility and Risk Assessment. Synthese, v. 200, n. 4, Article 388, 2022.

TANG, B. L. The Academic Scientist's Commitment to Epistemic Responsibility. Philosophies, v. 9, n. 6, Article 174, 2024. https://doi.org/10.3390/philosophies9060174

WARD, Z. B. On Value-Laden Science. Studies in History and Philosophy of Science Part A, v. 85, p. 54-62, 2021.

WILHOLT, T. Epistemic Trust in Science. Synthese, v. 201, n. 5, Article 214, 2023. https://doi.org/10.1007/s11229-023-04102-4

Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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