

Concept article



The interplay of belief and skepticism in advancing science and addressing global health challenges

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ABSTRACT | CONTEXT: Belief and skepticism, often seen as opposing forces, both play crucial roles in shaping scientific inquiry and addressing global health challenges. Belief provides ethical frameworks, fosters cooperation, and inspires compassion, while skepticism nurtures intellectual humility, critical thinking, and empirical rigor. **CONCEPTUALIZATION:** This article explores how these philosophical and spiritual frameworks, despite their apparent differences, mutually enrich the scientific endeavor. By integrating principles of faith, agnosticism, and organized skepticism, I examine their influence on ethics, motivation, societal development, and practical applications in medicine and global health. Through this synthesis, I highlight how these perspectives converge to support a science driven by evidence, empathy, and a commitment to the greater good.

KEYWORDS: Religion. Ethics. Medical Healthcare. Compassion. Faith.

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1. Introduction

Science, as a systematic pursuit of knowledge, thrives at the intersection of diverse philosophical and ethical frameworks. Among these, belief and skepticism often emerge as pivotal forces — one inspiring purpose and ethical guidance, the other ensuring rigor and intellectual humility. While belief often emphasizes compassion and cooperation, skepticism champions evidence-based reasoning and the provisional nature of understanding. Together, they provide a complementary lens through which science can address humanity's most pressing challenges.

This article synthesizes the dual roles of belief and skepticism, integrating insights from atheism, agnosticism, and faith, to examine their impact on scientific inquiry and global health. By responding to contemporary critiques, I aim to present a balanced narrative that underscores the value of pluralistic approaches in advancing science and ethics.

2. Philosophical foundations: atheism, agnosticism, and belief

Atheism, often misunderstood as a dogmatic rejection of the divine, aligns with organized skepticism by emphasizing the need for evidence-based reasoning.¹ However, critics argue that atheism's definitive stance on the absence of metaphysical entities may conflict with science's commitment to empirical neutrality.² Agnosticism, which denotes an absence of knowledge about the divine, may offer a more conceptually aligned framework for scientific inquiry, embracing uncertainty as a driving force for discovery.^{3,4}

Faith, on the other hand, represents a profound source of motivation and ethical grounding.⁵ Though metaphysical entities themselves lie outside the empirical realm, belief systems manifest observable social and cultural phenomena, shaping cooperation, identity, and societal structures.⁶ This duality — faith's unobservable essence and its tangible social impact⁷ — requires nuanced exploration to appreciate its role in science.

3. Skepticism and faith as catalysts for science

Skepticism, as articulated by Robert K. Merton's principles of organized skepticism⁸, underpins the scientific method by challenging assumptions and demanding empirical evidence. Historical figures like Galileo⁹ and Darwin¹⁰ exemplify how skepticism drives transformative discoveries. Philosophical frameworks, including Pyrrhonism¹¹ and Paul Feyerabend's¹² critiques of methodological rigidity, further illuminate skepticism's dynamic role in scientific progress.

Conversely, belief fosters resilience and purpose, motivating scientists to pursue breakthroughs that alleviate human suffering. Figures like Gregor Mendel¹³ and Albert Schweitzer¹⁴, inspired by their faith, illustrate how belief can coexist with scientific rigor. However, it is crucial to recognize that other sources of motivation, such as curiosity and humanism, equally propel scientific endeavors, broadening the narrative beyond faith alone.

4. Ethics and morality in science

Ethical frameworks are foundational to science, guiding its application toward the betterment of humanity. Utilitarianism, as proposed by Jeremy Bentham¹⁵ and John Stuart Mill¹⁶, emphasizes outcomes that maximize well-being, while Immanuel Kant's categorical imperative prioritizes universal moral principles.¹⁷ These frameworks provide a basis for ethical decision-making, transcending specific belief systems.

Faith contributes to this discourse by emphasizing compassion and the sanctity of life. However, ethics, as distinct from morality tied to cultural contexts, aspires to timeless principles that anticipate future needs. The intersection of belief, skepticism, and ethics thus creates a dynamic space for addressing complex challenges, from gene editing to artificial intelligence, while safeguarding human dignity and equity.

5. Social and cultural impacts of belief and skepticism

Belief systems, as sociogenic phenomena, foster cooperation and shared identity, enabling the emergence of complex societies. Religious institutions, for example, have historically driven advancements in healthcare and education.¹⁸ Yet, belief can also polarize, as evidenced by historical conflicts and contemporary ethical debates.

Skepticism counters these tendencies by promoting inclusivity and egalitarianism. The peer review system exemplifies skepticism's role in evaluating ideas on merit rather than authority. However, contemporary discussions highlight imperfections in this system, including¹⁹ biases and inequities, necessitating ongoing refinement to align with scientific ethics.²⁰

6. Applications in global health

Faith-based interventions often complement healthcare systems in underserved regions, leveraging trust and cultural relevance to improve health outcomes. Examples include community health initiatives led by religious organizations that address mental health and chronic disease management.^{21,22} While these interventions provide valuable support, they should not replace robust healthcare systems but rather serve as complementary strategies.

Skepticism ensures that such interventions are critically evaluated, emphasizing evidence-based practices and accountability. By integrating faith-inspired compassion with skepticism's rigor, global health initiatives can achieve a balance that maximizes impact while minimizing harm.

7. Conclusion

The interplay of belief and skepticism enriches the scientific endeavor, providing ethical grounding, motivation, and critical inquiry. By embracing this pluralistic approach, science can navigate the complexities of the modern world, addressing

challenges with empathy, evidence, and intellectual humility. Belief and skepticism, far from being mutually exclusive, converge to uphold the principles of a science committed to the greater good of humanity.

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References

1. Baggin J. 1. What is atheism? *Atheism: A Very Short Introduction*. Oxford: Oxford University Press; 2021.
2. Baggin J. 2. The case for atheism. *Atheism: A Very Short Introduction*. Oxford: Oxford University Press; 2021.
3. Archer A. Agnosticism, Inquiry, and Unanswerable Questions. *Disputatio*. 2019;11(53):63–88. <https://doi.org/10.2478/disp-2019-0012>
4. Clausen C. Agnosticism, Religion, and Science: Some Unexamined Implications. *Rocky Mountain Review of Language and Literature*. 1976;30(2):73–85. <https://doi.org/10.2307/1347697>
5. Weaver GR, Agle BR. Religiosity and Ethical Behavior in Organizations: A Symbolic Interactionist Perspective [Internet]. *The Academy of Management Review*. 2002;27(1):77–97. Available from: <https://www.jstor.org/stable/4134370>

6. Müller V, Gries T. Belief Systems and Ideologies as Psychological Need Reconciliation. In: Müller V, Gries T. Ideology and the Microfoundations of Conflict: From Human Needs to Intergroup Violence. London: Oxford University Press; 2024. p. 185-216. <https://doi.org/10.1093/oso/9780197670187.003.0006>
7. Gschwandtner CM. Faith, Religion, and Spirituality: A Phenomenological and Hermeneutic Contribution to Parsing the Distinctions. Religions. 2021;12(7):476. <https://doi.org/10.3390/rel12070476>
8. Merton RK. The Normative Structure of Science (1942) [Internet]. Panarchy [cited 2025 Jan 8]. Available from: <https://www.panarchy.org/merton/science.html>
9. Rowland W. Galileo's Mistake: A New Look at the Epic Confrontation Between Galileo and the Church. New York: Arcade Publishing; 2003.
10. Desmond AJ, Moore J. Darwin: The life of a tormented evolutionist. New York: W. W. Norton; 1994.
11. Bett R. Pyrrho, his Antecedents, and his Legacy. London: Oxford University Press; 2003.
12. Feyerabend PK. Against method: Outline of an anarchistic theory of knowledge. 3rd ed. London: Verso Books; 1993
13. Greene C. Gregor Mendel. New York: Dial Press; 1970.
14. Brabazon J. Albert Schweitzer: a biography [Internet]. New York: Putnam; 1975. Available from: http://archive.org/details/albertschweitzer0000brab_d9r5
15. Jeremy Bentham. An Introduction To The Principles Of Morals And Legislation [Internet]. Oxford: Clarendon Press; 1823. Available from: <http://archive.org/details/in.ernet.dli.2015.201924>
16. Mill JS. Utilitarianism. London: Parker, Son, and Bourn; 1863.
17. Kant I. Kant: Groundwork of the metaphysics of morals. Cambridge: Cambridge University Press; 2020.
18. Koenig HG. Religion, spirituality, and medicine: how are they related and what does it mean? Mayo Clinic Proceedings. 2001;76(12):1189–91. <https://doi.org/10.4065/76.12.1189>
19. Armstrong JS. Peer review for journals: Evidence on quality control, fairness, and innovation. SCI ENG ETHICS. 1997;3(1):63–84. <https://doi.org/10.1007/s11948-997-0017-3>
20. Resnik DB, Smith EM. Bias and groupthink in science's peer-review system. In: Groupthink in Science. Cham: Springer International Publishing; 2020. p. 99–113. https://doi.org/10.1007/978-3-030-36822-7_9
21. Koenig HG. Faith and mental health: Religious resources for healing. Radnor: Templeton Foundation Press; 2005.
22. Williams DR, Sternthal MJ. Spirituality, religion and health: evidence and research directions. Med J Aust. 2007;186(10):47-50. <https://doi.org/10.5694/j.1326-5377.2007.tb01040.x>