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Performative Skepticism: Pseudoscientific Dogmatism Under the Veil of Rhetorical Doubt

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ABSTRACT

This essay explores the concept of "performative skepticism," a rhetorical strategy that mimics the language and principles of scientific skepticism, but is employed to shield beliefs and practices from rigorous empirical scrutiny. Unlike legitimate epistemic skepticism, a foundational component of scientific inquiry, performative skepticism exploits the appearance of critical inquiry to undermine evidence-based knowledge, particularly in the field of health. The analysis begins with a philosophical examination of skepticism, tracing its evolution from Cartesian doubt to the critical methodologies of Popper, Kuhn, and Feyerabend. It then distinguishes performative skepticism from legitimate skepticism, highlighting its asymmetric application of critical standards and reliance on the rhetorical appropriation of scientific language. This essay further examines how performative skepticism manifests in health practices, including anti-vaccine movements, alternative therapies, and digital misinformation. These cases illustrate how performative skepticism distorts scientific values, presenting unsubstantiated claims as though they were scientifically valid. Finally, this essay proposes criteria for distinguishing between legitimate skepticism and performative skepticism, emphasizing the need for proportionate scrutiny and methodological transparency. Understanding and countering performative skepticism are essential for preserving the integrity of science and protecting patients from unfounded interventions.

Keywords: Skepticism; Evidence-Based Medicine; Pseudoscience; Epistemology; Health Communication

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1. Introduction

The history of modern science can be understood as a constant tension between the pursuit of reliable knowledge and recognition of the epistemic limits inherent in that pursuit. Since René Descartes established methodological skepticism as the foundation of modern philosophical thought, science operated in a perpetual dialectic between skepticism and affirmation. As Popper (2002) observes, the accumulation of unshakable certainties does not constitute scientific knowledge, but rather by the provisional survival of theories subjected to systematic attempts at refutation. Doubt, therefore, is not an obstacle to scientific knowledge, but its constitutive element [1].

However, this inherently skeptical nature of the scientific methodology has been distorted by discourses that, while invoking a posture of perpetual questioning, do so not to enhance knowledge, but to shield practices and beliefs that would not withstand the rigorous methodological scrutiny of science. Rather than employing skepticism as a heuristic tool for approaching truth, these discourses use it as a rhetorical strategy to protect positions resistant to scientific investigation. This phenomenon, increasingly present in the field of health, is here termed "performative skepticism"—a form of sophisticated denialism cloaked in a false epistemic rigor.

Evidence-Based Practice (EBP), as the contemporary paradigm of healthcare practices [2], inherently incorporates organized skepticism into its epistemological core, requiring the critical and systematic evaluation of available knowledge before it is incorporated into clinical practice [3]. Paradoxically, it is precisely this appeal to scientific evidence that has been rhetorically appropriated by discourses that, in essence, contradict the principles of EBP. Consequently, there is a growing trend of using scientific vocabulary to legitimize practices that would not withstand the methodological scrutiny of rigorous scientific investigation [4].

This essay aims to analyze the epistemological and rhetorical dimensions of performative skepticism, establishing a conceptual framework to distinguish it from the legitimate methodological skepticism that underpins scientific practice itself. This distinction is essential not only for the theoretical debate on the nature of scientific knowledge but also to preserve the integrity of science as a social practice and, specifically in the field of health, to protect patients from interventions lacking solid empirical foundations.

2. The Role of Skepticism in the Epistemological Foundations of Science

2.1. Doubt as a Constitutive Element

Skepticism, as an epistemological stance that questions the possibility of definitive knowledge, has deep roots in the Western philosophical tradition, tracing back to the philosophers of Ancient Greece. However, it is in modernity—particularly with Descartes—that doubt is established, not merely as a philosophical posture but as a method of inquiry. Cartesian methodological skepticism inaugurates a tradition in which systematic questioning becomes the privileged means for establishing reliable knowledge [5].

In the tradition of contemporary philosophy of science, methodological skepticism assumes a central role in the primary approaches to understanding the nature of scientific knowledge. For Popper, science is distinguished precisely by its commitment to falsifiability—the willingness to subject its theories to tests that could, in principle, refute them [1]. From this perspective, what makes a theory scientific is not its capacity to accumulate confirmations but its fundamental openness to the risk of refutation.

This centrality of methodological skepticism is reaffirmed, though with significant reformulations, in subsequent contributions to Popperian epistemology. Imre Lakatos, in developing his methodology of scientific research programs, maintains that the critical element at the core of his approach is the recognition of the complexity of the process of refutation. For Lakatos, a theory is not abandoned simply because it encounters some empirical anomalies; instead, scientific research programs possess a "hardcore" protected by a "protective belt" of auxiliary hypotheses [6]. Skepticism is primarily directed at this protective belt, allowing the core to develop its explanatory potential.

Thomas Kuhn, in turn, by emphasizing the sociological and historical dimensions of science, demonstrates how skepticism operates differently during periods of "normal science" and "scientific revolutions". During normal sci-

ence, skepticism is directed, not at the fundamental paradigms, but at the "puzzles" that arise within them [7]. It is only during periods of crisis, when anomalies accumulate, that skepticism turns toward the foundational paradigms themselves, enabling a scientific revolution.

What unifies these diverse perspectives in the philosophy of science is the recognition that skepticism, in various forms and degrees, is a constitutive rather than accidental element of the scientific enterprise. As Hoyningen-Huene succinctly puts it, "the willingness to subject theories to rigorous testing and to abandon them when they do not withstand empirical scrutiny is a distinctive characteristic of the scientific ethos" [8].

2.2. The Problem of Demarcation

The question of how to distinguish science from non-science—the so-called "demarcation problem"—has been central to the philosophy of science since at least the era of positivism [9]. Although the verificationism of the logical positivists eventually gave way to Popperian falsificationism, which was later refined by figures such as Lakatos and criticized by others, including Feyerabend, the problem of demarcation remains a persistent issue, especially in contexts where pseudoscientific practices seek social legitimacy.

In his influential essay "The Demise of the Demarcation Problem," Larry Laudan argued that the quest for a single demarcation criterion was doomed to fail, given that science is not a unified enterprise with a single epistemic essence [10]. However, as Pigliucci observes, abandoning a rigid demarcation does not entail epistemic relativism. Even though the boundary between science and non-science is more porous and complex than earlier philosophers assumed, it remains possible and necessary to establish criteria for assessing the epistemic quality of different practices and knowledge claims [11].

Within this framework, Pigliucci proposes a gradualist or multi-criterial approach to demarcation, in which epistemic practices are evaluated along a multidimensional continuum rather than being simply classified as scientific or non-scientific. This approach operationalizes demarcation through specific, measurable dimensions: theoretical framework (coherence with established scientific knowledge), empirical content (testability and observational consequences), and social dimensions (peer review, institutional support, and methodological transparency).[11] For instance, theoretical physics might score high on theoretical framework but lower on immediate empirical testability, while clinical medicine scores high on empirical content and social validation. Astrology, conversely, would score low across all dimensions, lacking both theoretical coherence with established physics and empirical support, while operating outside recognized scientific institutions [12]. This perspective acknowledges the heterogeneity of science while preserving the possibility of critically assessing practices that diverge significantly from the minimal epistemic standards that characterize scientific inquiry. Rather than offering a binary classification, this framework provides a diagnostic tool that reveals why certain practices lack epistemic credibility without requiring an essentialist definition of science [13].

The problem of demarcation takes on particular importance in the contemporary context of health, where empirically unsupported practices often seek legitimacy by appealing to scientific rhetoric. In this setting, the current challenge is not only to distinguish science from pseudoscience in abstract terms, but to understand the rhetorical and social mechanisms by which pseudoscientific practices gain credibility in specific contexts [14].

2.3. Critique of Scientific Dogmatism

Paul Feyerabend holds a unique position in the contemporary philosophy of science. His famous slogan, "anything goes," often misunderstood, does not advocate epistemic relativism, but rather criticizes rigid methodologicalism that could stifle scientific creativity. As he clarifies in "Against Method" [15], his opposition is not to scientific methodology itself, but to the imposition of a single, invariant method across all investigative contexts.

Feyerabend's relevance to our discussion on skepticism lies in his insistence that methodological dogmatism can be just as detrimental to scientific progress as a complete absence of method. In this sense, Feyerabend advocates a form of "theoretical pluralism," where different approaches, even those initially deemed implausible, should be allowed to develop and demonstrate their explanatory potential [16].

However, this critique of dogmatism does not

amount to an epistemic free-for-all. Feyerabend himself acknowledged that while science should remain open to unconventional approaches, these approaches must eventually demonstrate their empirical and theoretical fertility. In other words, initial openness does not exempt theories from empirical accountability [17].

Feyerabend's criticism of "scientism" should not be mistaken for a rejection of scientific rigor, but rather understood as a defense of methodological diversity within a shared commitment to honest inquiry. To invoke Feyerabend as a justification for persisting in practices that consistently fail to demonstrate effectiveness is to distort his thought [18].

2.4. Experimental Realism

Ian Hacking's contribution to the contemporary philosophy of science offers a perspective particularly relevant to our discussion of skepticism. Hacking advocates for "experimental realism," which emphasizes the interventional rather than merely representational dimension of scientific practice. In this view, science is not merely a set of theories about the world, but a practice of experimental intervention that manipulates phenomena and creates new effects [19].

What makes this approach especially pertinent to our discussion is its focus on the material and practical dimension of science [19], a dimension often obscured in the discourse of performative skepticism. It highlights that the epistemic authority of science does not stem solely from its theoretical coherence, but from its capacity to intervene effectively in the material world [20].

In the field of health, this interventional dimension is particularly evident. The effectiveness of a medical intervention is not merely a matter of theoretical coherence, but of a probabilistic demonstration of the intended therapeutic effects under controlled conditions. This interventional and material dimension is often downplayed in the rhetoric of performative skepticism, which tends to privilege theoretical explanations over empirical evidence of efficacy.

In this sense, science does not merely represent the world; it intervenes in it in measurable and reproducible ways (as in health interventions). This material and interventional dimension provides an additional criterion for distinguishing legitimate methodological skepticism, which is concerned with the practical outcomes of interventions, from performative skepticism, which often retreats to theoretical explanations when confronted with the absence of reproducible effects [19].

2.5. The Challenge of Post-Truth

To adequately understand performative skepticism, it is essential to examine its sociological roots. Robert Merton, in his analysis of the scientific ethos, identified four institutional norms of science: universalism, communalism, disinterestedness, and organized skepticism [21]. Performative skepticism represents a systematic distortion of these norms, particularly of organized skepticism, transforming it from a collective mechanism of correction into an instrument of resistance to evidence. This distortion operates through what Pierre Bourdieu termed "scientific capital"—a specific form of cultural capital that confers authority within the scientific field [22]. In this sense, performative skepticism appropriates the symbolic capital of science without adhering to the practices that legitimize that capital, creating what may be called a simulacrum of epistemic authority.

Furthermore, contemporary challenges to the epistemic authority of science have been incisively analyzed by Lee McIntyre in "Post-Truth" and "The Scientific Attitude." For McIntyre, the phenomenon of post-truth is not merely a matter of misinformation or ignorance. Still, it reflects a deeper crisis in the relationship between knowledge, power, and identity within contemporary societies [23,24]. In this context, what defines science is not so much a specific method, but an attitude: the willingness to subject beliefs to empirical testing and to abandon them when they fail to withstand scrutiny. It is this "scientific attitude," more than any particular method, that distinguishes science from other forms of inquiry and belief.

This perspective is particularly relevant to the analysis of performative skepticism because it helps explain how seemingly skeptical discourses can, in practice, function as sophisticated forms of resistance to evidence. Performative skepticism often adopts the language of science, but rejects its fundamental attitude: the willingness to revise beliefs in light of empirical evidence.

McIntyre also identifies the phenomenon of the "organized assault on truth," in which political and economic

interests mobilize sophisticated rhetorical strategies to undermine public confidence in scientific research that contradicts their agendas. This analysis is particularly relevant to understanding how performative skepticism operates, not only as an epistemological phenomenon, but also as a sociopolitical strategy, aligning with specific economic interests—especially in fields such as health, where discrediting scientific evidence on the ineffectiveness of certain products or the harmfulness of others can generate substantial profits.

2.6. Balancing Openness and Skepticism

In "The Demon-Haunted World," Carl Sagan directly addresses the challenge of maintaining a balance between openness to new ideas and the skepticism necessary to evaluate extraordinary claims critically. Sagan popularized the famous maxim, "extraordinary claims require extraordinary evidence", establishing an epistemological principle that recognizes the need to calibrate the evidential standard to the initial plausibility of a claim [25].

Sagan's perspective is particularly valuable because it acknowledges that both closed-minded dogmatism and uncritical credulity are obstacles to the advancement of knowledge. As he observes, the balance between openness and skepticism is essential for both. Scientific progress requires openness to new ideas, no matter how strange they may initially appear, but it also demands rigorous skeptical scrutiny of all ideas, especially our own.

This balance, however, is precisely what the performative skepticism described here distorts. False skepticism invokes the virtue of openness to new ideas to protect practices that systematically evade skeptical scrutiny, creating an epistemic asymmetry in which conventional science is held to exceptionally rigorous standards of evidence. In contrast, alternative practices are exempted from demonstrating comparable efficacy.

Sagan's contribution is further enriched by his concept of the "baloney detection kit," a set of conceptual tools for the critical evaluation of claims [26]. Among these tools, the most notable are the insistence on independent verification, the preference for testable hypotheses, and the willingness to abandon hypotheses that fail controlled tests. These tools provide operational criteria to distinguish legitimate epistemic skepticism, which demands evidence proportional to the implausibility of a claim, from performative skepticism, which selectively and asymmetrically invokes doubt.

3. Performative Skepticism

3.1. Definition and Characterization of the Phenomenon

We can define "performative skepticism" as the strategic use of the rhetoric of scientific questioning, not to advance knowledge, but to protect beliefs and practices that would not withstand the rigorous methodological scrutiny of science [27]. Unlike legitimate methodological skepticism, which is an essential element of scientific practice, performative skepticism operates through an epistemic antagonism: it employs the language and values of science to shield positions resistant to scientific investigation paradoxically.

What distinguishes performative skepticism is not the act of questioning itself, but the motivation and pattern of that questioning. While legitimate scientific skepticism questions to approach truth, willingly revising its positions in light of the evidence, performative skepticism questions to protect predetermined positions, systematically resisting contrary evidence.

This distinction is supported by Boudry and Braeckman (2012), who identify the central characteristic of pseudoscience, not as the absence of scientific vocabulary, but as strategic immunization against criticism. Performative skepticism, in this sense, represents a sophisticated form of this immunization, where the very rhetoric of scientific questioning is mobilized to avoid refutation [28].

In the field of health, recurring patterns of performative skepticism can be identified, including:

1. *Asymmetry in Standards of Evidence:* Conventional practices are subjected to exceptionally rigorous criteria, while alternative practices are defended based on minimal evidence.

2. *Selective Appeal to Complexity and Holism:* This approach is used to disqualify controlled studies that demonstrate the ineffectiveness of certain interventions.

3. *Reinterpretation of Negative Results:* Negative findings are reinterpreted as confirmation of the initial theory, following a pattern that Lakatos (1978) would de-

scribe as a "degenerative problem shift."

4. *Use of Scientific Language without Specific References:* Terms like "studies show" or "research indicates" are employed without specifying methodologies, samples, or verifiable results.

5. *Reversal of the Burden of Proof:* Critics are required to demonstrate the impossibility of an intervention, rather than proponents bearing the responsibility to demonstrate its efficacy.

Performative skepticism is not merely an "isolated epistemic error," but rather an argumentative fallacy that operates through these recurring patterns. In this sense, one could say that performative skepticism does not doubt to discover knowledge, but rather to protect ignorance from the rigors of scientific investigation.

A central aspect of performative skepticism is the appropriation of scientific language as a rhetorical tool of authority. What makes this strategy particularly effective is its ability to simulate the discursive register of science while subverting its fundamental methodological principles [4]. This phenomenon aligns with George Orwell's analysis, in which he demonstrates how pretentious diction, and ready-made phrases can be used to create an appearance of profundity while obscuring the absence of genuine thought. As Orwell observes, words like "phenomenon," "objective," and "scientific" are often employed "to dress up a simple statement and give an air of scientific impartiality to biased judgments" [29]. The performative skeptic operates through this mechanism, using scientific vocabulary to create false epistemic authority.

The philosopher of science Alan Sokal, known for the "Sokal Affair," in which he submitted a deliberately nonsensical article to an academic journal to expose flaws in the peer-review process, later analyzed the use of scientific language as a rhetorical device. Sokal argues that the appropriation of scientific vocabulary without corresponding methodological rigor constitutes a form of "intellectual imposture" that compromises both scientific communication and informed public debate [30]. Together, both authors demonstrate how language can be weaponized (whether through general pretentiousness or specific appropriation of scientific terminology) to simulate intellectual rigor while avoiding substantive engagement with evidence.

In the field of health, this appropriation of scientific language is particularly evident in the marketing of products and therapies without evidence of efficacy. Terms such as "clinically tested," "scientifically proven," or "research-based" are often used without any verifiable references to studies that approach the methodological rigor typically expected in peer-reviewed research - such as controlled trials, systematic reviews, or studies with adequate sample sizes and appropriate controls.

Another linguistic strategy is the use of the first-person plural ("we, scientists") to create a false impression of scientific consensus around marginal positions. This strategy exploits the "disguised argument from authority," in which the speaker implicitly claims an epistemic authority without demonstrating the credentials that would justify such a position [31]. While we acknowledge that defining "scientific standards" is itself contested and contextual, the key issue is not adherence to a universal template but rather the transparency about methodological choices and the willingness to subject claims to the kinds of scrutiny that characterize the scientific communities in which one claims membership.

This linguistic dimension of performative skepticism underscores the importance of the ability, not only to understand scientific terms, but also to critically evaluate claims that present themselves with the appearance of scientific legitimacy.

The power of these strategies derives, in part, from their resonance with psychological processes. Performative skepticism thus exploits well-documented cognitive biases that affect both laypeople and experts. Confirmation bias—the tendency to seek, interpret, and remember information that supports pre-existing beliefs—is particularly exploited by performative skepticism [32]. For instance, when an individual with a strong prior commitment to alternative therapies encounters evidence-based criticism, performative skepticism provides a psychologically comforting mechanism to reject such criticism without abandoning the original belief.

Cognitive dissonance theory further illuminates this phenomenon. When confronted with evidence that contradicts significant beliefs, individuals experience psychological discomfort that they seek to alleviate. Performative skepticism offers a cognitively economical strategy to minimize this dissonance, allowing individuals to maintain

their original beliefs by selectively disqualifying contrary evidence [33].

Understanding these and other psychological mechanisms is essential for developing effective interventions against performative skepticism, as purely information-based strategies often fail when confronted with these deep psychological dynamics.

3.2. Using Science Against Itself

Performative skepticism operates through a paradoxical inversion: it employs the constitutive values and principles of science, such as methodological doubt, openness to revision, and rejection of dogma—to protect beliefs and practices that, in essence, contradict Merton's institutional *ethos* of science. Specifically, it violates universalism by applying different evidential standards to different claims, subverts communalism by avoiding peer scrutiny, compromises disinterestedness through undisclosed conflicts of interest, and perverts organized skepticism into selective doubt [21]. This is a form of "epistemic parasitism," in which the prestige of science is mobilized against its methodological foundations, and scientific concepts are stripped of their original meaning [34].

This inversion manifests in various ways. One of the most common is the selective appropriation of the history of science, where historically contingent examples of resistance to new ideas that later proved correct are generalized to delegitimize contemporary scientific consensus. Thus, any criticism of evidence-lacking practices is equated with initial resistance to ideas like the heliocentric theory or plate tectonics, ignoring the fundamental contextual and methodological differences between these. Another manifestation of this inversion is the reversal of the burden of proof. In this scenario, the scientific principle that extraordinary claims require extraordinary evidence is flipped, so that critics of evidence-free interventions are required to prove their inefficacy, rather than proponents bearing the responsibility to demonstrate their effectiveness. This reversal contradicts a basic epistemological principle of scientific inquiry: the burden of proof lies with those making a positive claim [35].

A third strategy is the "hypertrophy of fallibilism," which strategically exaggerates the fallible and provisional nature of scientific knowledge to undermine its most robust conclusions. While fallibilism is an essential component of scientific epistemology, recognizing that all knowledge is subject to revision in light of new evidence, its rhetorical exaggeration transforms this epistemic virtue into a justification for relativism [36,37]. In this sense, performative skepticism mobilizes legitimate scientific values for anti-scientific purposes. Unlike explicit rejection of science, it presents itself as a defense of science's highest values [38].

A particularly subtle and frequent manifestation of performative skepticism occurs in dialogical encounters where the scientific principle of openness to questioning is instrumentalized to, paradoxically, silence scientific questioning itself. These interactions reveal the rhetorical complexity of this phenomenon and its impact on interpersonal relationships and public dialogue about scientific evidence.

When a professional questions a clinical practice for lack of robust scientific evidence, they often encounter not a substantive defense of the practice, but a counter-interrogation about their credentials, accompanied by a rhetorical invocation of scientific principles of questioning and doubt. The typical response does not present evidence supporting the practice but instead questions the critic's legitimacy with phrases such as, "How much have you studied this?" or "Science advances through questioning, and you are being dogmatic".

What makes this strategy particularly effective is its appropriation of a legitimate epistemological principle—the centrality of methodological doubt in the scientific enterprise—for an opposing purpose: shielding certain practices from the scientific scrutiny that the principle should promote. This creates a "deliberative asymmetry" in which defenders of practices without a solid scientific foundation invoke the questioning nature of science not to subject their practices to scrutiny but to disqualify those who question them.

This strategy can be characterized as a form of "paradoxical epistemic silencing," in which the appeal to values of open-mindedness and questioning functions in practice as a mechanism to end the debate before evidence (or its absence) can be adequately examined. The practical effect of this rhetorical maneuver is to transform what should be a substantive discussion about evidence into a meta-debate about attitudes and epistemic dispositions, where the defender of an unevidenced practice positions themselves as

more "open" and "scientific" than their critic [39].

In this dynamic, if the critic persists in evidence-based questioning, they are accused of dogmatism; if they withdraw, the absence of questioning is interpreted as tacit validation of the practice. In both cases, the substantive discussion about empirical evidence is strategically avoided. This discursive strategy constitutes a sophisticated form of the "straw man fallacy." Rather than distorting the opponent's position to make it easier to attack (as in the traditional straw man), it attributes a distorted epistemic virtue to the opponent (dogmatism disguised as rigor). At the same time, the interlocutor claims the opposing virtue (epistemic openness) to evade scrutiny of their claims.

An analysis of this discursive pattern reveals that performative skepticism operates not only at the level of content but also in interpersonal relationships and the distribution of epistemic authority.

4. Absence of Evidence and Evidence of Absence

A conceptual distinction often obscured in the discourse of performative skepticism is that between "absence of evidence" and "evidence of absence." As Carl Sagan aptly noted, "absence of evidence is not evidence of absence" [25], an epistemological principle recognizing the limits of negative knowledge. However, this maxim, though correct in itself, has often been distorted to shield practices that consistently fail in systematic investigations that employ controls, adequate sample sizes, and transparent methodologies.

The principle is valid primarily in contexts of preliminary investigation, when a phenomenon has not yet been adequately studied. In such circumstances, the lack of positive evidence does not permit a conclusion of non-existence. However, after multiple independent investigations using methodologies appropriate to the phenomenon under study, the persistent absence of evidence can, indeed, constitute indirect and probabilistic evidence of absence.

This distinction is formalized in the work of statistician Douglas Altman, who introduced the concept of "significance drowning" to describe situations where multiple independent studies consistently fail to find a statistically significant effect [40]. In these cases, the accumulation of negative results constitutes probabilistic evidence of the absence of an effect. Moreover, while absence of evidence is not necessarily evidence of absence, it is also not evidence of presence. Clinical decision-making in health cannot be based on this ambiguity without risking the phenomenon of the burden of proof reversal, which we previously discussed.

The distinction between the absence of evidence and evidence of absence has direct implications for clinical decision-making. Evidence-based medicine (EBM) requires not only the evaluation of the quality of available evidence but also decisions on how to proceed when that evidence is scarce or inconclusive [3].

When dealing with a genuine absence of evidence, such as a new or poorly studied intervention, the precautionary principle suggests caution, particularly if there are alternatives with established efficacy [41]. After all, in such circumstances, the burden of proof falls on the proponents of the new intervention, who must demonstrate its safety and efficacy before it can be widely adopted in clinical practice.

However, performative skepticism often inverts this logic, suggesting that interventions without evidence of efficacy should be offered as equivalent options to evidence-based treatments under the pretext of "giving patients all options." While respecting patient autonomy requires preserving choice, substantial autonomy (as distinct from merely formal autonomy) depends on patients having transparent information about the evidential status of different options. This principle does not advocate for paternalistic restriction of choices, but rather for honest communication about what is known and unknown about different interventions.

The artificial equivalence between the empirically grounded and the unfounded violates the principle of quaternary prevention, which is anchored in the Hippocratic maxim: "first, do no harm" [42], not by limiting options, but by ensuring that patients can make genuinely informed decisions that align with their values and risk preferences.

In contrast to the concept of "performative skepticism," scientific decision-making in health requires a "proportional skepticism." The degree of skepticism toward an intervention should be proportional to its theoretical implausibility and the amount of high-quality clinical evidence it has already been subjected to without demonstrat-

ing efficacy. The more implausible the proposed mechanism and the more negative tests accumulated, the more justified skepticism becomes.

For interventions with low theoretical plausibility and multiple negative tests (such as homeopathy) [43], persistent clinical offering is not legitimate scientific skepticism, but rather a disregard for the very foundations of evidence-based decision-making.

5. Performative Skepticism in Health

The contemporary anti-vaccine movement provides a paradigmatic example of performative skepticism, as it typically does not present itself as an explicit rejection of science but rather as a defense of "better science" or "more critical science." This strategy involves appropriating the language of scientific inquiry to delegitimize the broad consensus on vaccine safety and efficacy.

A pivotal moment in this strategy was the publication of Andrew Wakefield's 1998 article in The Lancet [44], which suggested an association between the measles, mumps, and rubella (MMR) vaccine and autism. Although the journal later retracted the study due to severe methodological flaws and undeclared conflicts of interest, and multiple subsequent studies with much larger samples and more robust methodologies consistently refuted any association between vaccination and autism, the case continues to be invoked by the anti-vaccine movement as an example of "suppressed scientific truth."

This strategy involves a reversal of the burden of proof: rather than demanding positive evidence of an association between vaccines and autism, the anti-vaccine movement demands "definitive proof" of the absence of any risk, establishing a virtually impossible evidential standard. After all, no epidemiological study, no matter how large, can demonstrate absolute zero risk. The COVID-19 pandemic further expanded and diversified the rhetorical repertoire of performative skepticism toward vaccines, employing strategies such as:

1. *Amplification of Preliminary Studies:* Emphasizing early or methodologically weak studies that suggest potential risks while ignoring subsequent, methodologically stronger studies that refute those risks.

2. *Demand for "Long-Term Safety":* Insisting on long-term safety data before any vaccination, even though such certainty is epistemologically impossible in real-time during a pandemic.

3. *Appropriation of "Informed Consent" Language:* Using the concept of informed consent to spread systematic misinformation about non-existent or extremely rare risks.

4. *Appeal to "Medical Freedom" and "Individual Choice":* Framing vaccine refusal as a matter of personal rights while ignoring the collective dimension of herd immunity.

What unites these strategies is the selective and distorted use of legitimate scientific values and concepts associated with skepticism, such as precaution, critical analysis of evidence, informed consent, and research freedom, to serve purposes that contradict the scientific spirit and public health principles.

The field of "alternative" and "complementary" medicine provides another rich set of examples of performative skepticism. As Ernst notes, a recurring rhetorical pattern in this field is the transition of claims from "alternative" to "complementary" and, more recently, to "integrative," without any substantial change in the evidence base for the practices in question [45].

This terminological evolution reflects a rhetorical sophistication aimed at gaining legitimacy by suggesting integration with conventional medicine while maintaining the same epistemic asymmetry: conventional practices are subjected to rigorous evidence standards, while "integrative" practices are defended based on abstract principles, methodologically weak studies, or purely anecdotal evidence.

By shifting from claims of specific efficacy to claims of a "holistic" and "patient-centered" approach—claims that are impossible to test in the same terms as conventional interventions—this strategic change exemplifies what Boudry (2019) characterizes as an "immunizing mutation." When a claim becomes empirically unsustainable, it is reformulated in terms that make it resistant to empirical testing, preserving the practice while shielding it from refutation [12].

Thus, performative skepticism in the field of "alternative medicine" is not a genuine epistemic stance but a rhetorical strategy for maintaining practices without evidence of specific efficacy within the realm of clinical

legitimacy.

The contemporary digital ecosystem has amplified the dissemination and impact of performative skepticism in health through the phenomenon of structured medical misinformation. Unlike simple errors or inaccuracies, structured misinformation involves the systematic creation and dissemination of content that mimics the form of scientific discourse while distorting or contradicting the established scientific consensus.

Digital platforms facilitate the spread of performative skepticism through algorithms that prioritize engagement over accuracy, creating "epistemic bubbles"—digital spaces where certain claims circulate and are reinforced without encountering opposing evidence.

Moreover, the phenomenon of "false journalistic parity", in which digital media outlets, under the pretext of "presenting all sides," amplifies marginal voices without adequately contextualizing their distance from the scientific consensus - creates the impression of legitimate scientific controversy on issues where there is, in fact, a solid consensus.

This contributes to the "viralization of exceptions," where atypical or anecdotal cases are widely disseminated as a refutation of patterns established by systematic studies. A common example is the digital circulation of isolated reports of adverse vaccine reactions without the statistical context needed to assess their rarity about the benefits.

Digital performative skepticism is also characterized by an endless chain of links and cross-references that, when followed, often lead to sources that do not support the original claims or to new, equally unsubstantiated claims. This strategy relies on the expectation that few readers will follow the complete chain of references. Understanding and responding to this phenomenon, therefore, requires not only content analysis but also interventions in the very systems that structure the production and circulation of digital knowledge.

6. Legitimate Roots of Scientific Distrust

Before establishing criteria to distinguish legitimate epistemic skepticism from performative skepticism, it is crucial to acknowledge that skepticism toward scientific authority does not emerge in a social vacuum. The historical record reveals that scientific institutions and practitioners have at various times systematically violated the very epistemic values they purport to uphold, often in service of oppressive social arrangements. Understanding these legitimate origins of scientific distrust is essential for developing an effective response to performative skepticism that does not dismiss genuine concerns about scientific accountability.

Similar narrative structures have historically sustained problematic practices and theories within the scientific establishment itself. These cases do not represent isolated aberrations but systematic patterns in which scientific authority has been used to reinforce social hierarchies and justify forms of exploitation. Perhaps no example better illustrates this dynamic than scientific racism, popular from the Enlightenment to the mid-twentieth century. During this period, respected scientific authorities constructed elaborate theoretical frameworks that claimed to demonstrate the biological inferiority of non-white races, women, and people with disabilities.

The history of medical research includes numerous episodes of exploitation and abuse that provide rational grounds for wariness about scientific claims. The Tuskegee Syphilis Study (1932-1972), in which the U.S. Public Health Service deliberately withheld treatment from African American men to study the progression of untreated syphilis, represents perhaps the most notorious example. Medical hypotheses about racial and gender differences in pain sensitivity offer another parallel. In the 19th century, American physician Samuel Cartwright introduced the diagnosis of *dysaesthesia aethiopica,* a supposed insensitivity to pain among enslaved Africans, used to justify brutal physical punishments. J. Marion Sims performed surgical experiments on enslaved Black women without anesthesia based on similar beliefs about their pain tolerance [46].

Eugenics perhaps represents the most far-reaching application of such problematic "scientific certainties." Originating from Francis Galton's hypotheses and embraced across diverse political spectrums, eugenics claimed to offer comprehensive solutions to social problems through selective reproduction. Its institutional acceptance was remarkable: eugenic theories were taught at Harvard, Yale, and Stanford, funded by the Carnegie and Rockefeller foundations, and provided the basis for legislation in 32

U.S. states [47].

International examples further illustrate how scientific authority can be corrupted. Lysenkoism in the Soviet Union demonstrates how legitimate scientific institutions can be co-opted to promote ideologically motivated claims. This represents what might be termed "internal epistemicide", the suppression of established knowledge for political reasons [48]. Perhaps most fundamentally, the inherent fallibilist nature of science—while epistemologically virtuous—can be psychologically unsettling for individuals seeking certainty in health decisions. The admission that scientific knowledge is provisional and subject to revision may appear as institutional uncertainty to those unfamiliar with scientific methodology. When scientific consensus shifts legitimately in response to new evidence, this can reinforce perceptions that "science keeps changing its mind".

Economic conflicts of interest in medical research provide additional rational grounds for skepticism. The influence of pharmaceutical companies on research priorities and clinical guidelines represents a legitimate concern that has been documented across the political spectrum [49]. Understanding these legitimate origins reveals that performative skepticism operates not by creating distrust from nothing, but by exploiting and amplifying genuine concerns about scientific accountability. The rhetorical strategy involves taking valid criticisms of scientific institutions and extending these critiques beyond their appropriate scope to shield unfounded practices from scrutiny.

This analysis suggests that addressing performative skepticism effectively requires more than simply defending an idealized version of scientific practice. It demands acknowledging science's actual historical failures, promoting transparency about uncertainty, and creating institutional mechanisms that address the legitimate concerns that make performative skepticism psychologically appealing.

7. Distinguishing Legitimate Epistemic Skepticism from Performative Rhetorical Skepticism

Based on the preceding analyses, we propose a conceptual framework to distinguish legitimate epistemic skepticism, a constitutive and necessary element of scientific practice, from performative rhetorical skepticism, which operates as a sophisticated form of denialism. This distinction is essential not only for the theoretical debate on the nature of scientific knowledge, but also for the everyday practice of evidence-based medicine and public discourse on science and health. This essay proposes five criteria for this distinction:

1. *Methodological Reciprocity:* Legitimate epistemic skepticism applies the same methodological standards to all claims, regardless of their alignment with prior beliefs. In contrast, performative skepticism applies asymmetric standards, demanding extraordinary levels of evidence for claims that contradict its positions while accepting minimal evidence for those that support them. However, it is important to acknowledge that the very possibility of such asymmetric application reveals the inherent fallibility of human reasoning, even among well-intentioned scientists. The distinction lies not in the complete absence of bias, which would be epistemologically naïve, but in the systematic versus incidental nature of such asymmetries. While legitimate scientists may unconsciously apply different standards due to cognitive biases, they remain open to correction when such inconsistencies are brought to their attention. Performative skepticism, conversely, strategically maintains asymmetric standards as a deliberate immunization strategy against contrary evidence.[50]

2. *Sensitivity to Accumulated Evidence:* Legitimate epistemic skepticism adjusts its intensity in response to the accumulation of evidence. For hypotheses that are poorly studied, it maintains a high degree of openness; for hypotheses that have been extensively tested with consistently negative results, it acknowledges probabilistic evidence of absence. Performative skepticism, in contrast, maintains the same level of "doubt" regardless of the amount of accumulated evidence.

3. *Consistent Fallibilism:* Legitimate epistemic skepticism recognizes the fallibility of all knowledge, including its own. Performative skepticism, however, invokes fallibilism only about positions contrary to its own, while presenting its favored positions with dogmatic certainty disguised as openness to new ideas.

4. *Constructive Criticism:* Legitimate epistemic skepticism offers specific, falsifiable critiques that can, in principle, be addressed with additional evidence. Performative skepticism offers generic, non-falsifiable criticisms that no

amount of additional evidence could ever answer.

5. *Epistemic Proportionality:* Legitimate epistemic skepticism calibrates the level of evidential demand to the initial plausibility of the claim and its practical implications. Performative skepticism, on the other hand, demands "absolute proof" for claims that contradict its views, ignoring the fact that such a standard is epistemologically unattainable in empirical science.

While these procedural criteria help identify performative skepticism in discourse, understanding why individuals adopt and maintain such stances requires examining the psychological, social, and economic motivations that drive this phenomenon. Many practitioners of performative skepticism appear genuinely convinced of their epistemic virtue, viewing themselves as defending scientific integrity against institutional dogma. This self-perception is reinforced by communities that provide identity, belonging, and social validation for maintaining contrarian positions [51]. Economic interests also play a significant role, particularly in health contexts where questioning established interventions can create markets for alternative products or services [52]. Crucially, performative skeptics often fail to recognize the potential harm of their approach (both to public health and to their credibility) because they operate within "epistemic bubbles", where their reasoning appears internally consistent and is rarely challenged by contrary perspectives [53]. The psychological investment in maintaining these positions can be so significant that acknowledging error would threaten core aspects of identity and community membership, making genuine engagement with contrary evidence psychologically costly rather than merely intellectually challenging.

Understanding these underlying motivations is important for developing effective responses. These criteria provide a framework not only for theoretical analysis but also for the practical evaluation of discourses that invoke skepticism in health contexts. Notably, this framework does not refer to individuals or positions, but rather to specific discursive patterns that can be identified and addressed.

Beyond this conceptual distinction, it is essential to develop pedagogical strategies that promote legitimate skepticism and identify performative skepticism. These strategies must operate at multiple levels, from formal education to public scientific communication.

In the context of higher education in health, the explicit development of critical thinking through structured exercises that confront students with contradictory evidence can significantly enhance their ability to evaluate evidence [43]. Applied to performative skepticism, this model suggests the importance of exposing students to contrasting examples of legitimate and performative questioning, thereby fostering what might be termed epistemic metacognition—the ability to reflect on one's knowledge evaluation processes.

Moreover, interprofessional groups dedicated to the collaborative discussion of scientific evidence can create learning environments where legitimate skepticism is valued and normalized, while performative skepticism is collectively identified and challenged. Experiences such as journal clubs based on social learning principles demonstrate the potential of this approach [54].

In the realm of public science education, the "inoculation" model against misinformation offers particular applicability against performative skepticism. Prior exposure to weakened versions of rhetoric based on performative skepticism, accompanied by refutations, can "vaccinate" the public against subsequent encounters with these strategies [55].

8. Conclusions

Performative skepticism is a rhetorical distortion that appropriates the language of science and its methodological principles to shield beliefs and practices that cannot withstand empirical scrutiny. Rather than promoting the advancement of knowledge, it uses doubt as a tool for stagnation, fostering false equivalence between scientific evidence and unfounded speculation. Throughout this essay, we have established a clear distinction between legitimate epistemic skepticism, an essential component of the scientific method, and performative skepticism, which employs selective doubt as a strategy to immunize against criticism.

Our historical and philosophical analysis has shown that methodological skepticism is a fundamental characteristic of science, as reflected in the contributions of Descartes, Popper, Kuhn, Lakatos, Feyerabend, and Hacking. This skepticism is not a rejection of knowledge but a critical stance that seeks to refine it through constant

confrontation with evidence. In contrast, performative skepticism distorts this stance by transforming questioning into an end in itself, systematically refusing to accept any evidence that threatens its pre-established positions.

In the field of health, this rhetorical strategy is evident in anti-vaccine movements, alternative therapies without evidence, and the digital proliferation of misinformation. By mobilizing the vocabulary of science—studies, evidence, consensus—without corresponding methodological rigor, performative skepticism presents itself as a defender of "better science" when, in reality, it constitutes a threat to the epistemic integrity of evidence-based practice. Its pragmatic effect is the promotion of ineffective practices, the erosion of trust in scientific medicine, and the disorientation of the public, especially in times of crisis.

Distinguishing legitimate skepticism from performative skepticism is an urgent task to preserve the value of science as a social practice and to protect patients from unfounded interventions. Achieving this requires reinforcing a commitment to critical scrutiny, methodological transparency, and clear communication of the criteria that underpin the evaluation of evidence.

Valid skepticism is not the one that takes refuge in doubt to protect beliefs but the one that is willing to question them equitably and proportionately.

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