

Is free speech the enemy of science?

Science is important; so is free speech. Science can only progress if it is objective to reality — now the question becomes whether free speech can withstand that condition. I argue that free speech does not inherently oppose science; however, in the absence of epistemic filters within an uncontained environment, it threatens the conditions necessary for scientific progress. For free speech to aid scientific progress, it must operate within a contained framework that subjects claims to standards of objectivity. Information should be treated differently depending on what process it has undergone. I believe that epistemic filters are mechanisms that evaluate information by passing it through a threshold of objectivity before granting it epistemic legitimacy. For an environment to be contained, it must be a system wherein the dissemination and acceptance of information is governed by such epistemic filters before it is treated as knowledge, whereas an uncontained environment is one in which information can be distributed and approved as knowledge without testing it against standards of validity or objectivity.

The human race has developed a daily reliance on science and its progress. Healthcare systems, communication networks, and digital infrastructure are all examples of scientific frameworks we rely on. Due to the margin of error in science being exceptionally small, failures within these systems are not merely inconvenient but disruptions to economies, industries, and innovation itself. With impacts scaling to lives being lost^[2] and economies collapsing^[1], an epistemic filter rigorously follows objectivity and minimises the possibility of such collapse.

We rely on epistemic filters because objectivity cannot be individually achieved upon perception. Human cognition is stupendously susceptible to bias^[3], which we encounter unintentionally but in multiple forms upon gaining information. Confirmation bias is an infamous demonstration of perception altering reality: it states that once someone develops a perspective, they will actively but subconsciously find information that substantiates that perspective and fail to subconsciously obtain insights that oppose it.^[4] This can become dangerous and uncontrollable in uncontained environments and hinder one's ability to obtain nuance. Epistemic filters ensure that information is nuanced to all perspectives and is not subject to bias. In addition, the bandwagon effect is equally distorting. It states that an individual is significantly more inclined to believe something if numerous other people believe it too. This particular effect grows in power as more people are victim to it^[5] — making it dangerous in public uncontained environments.

Furthermore, bias does not merely blind one to nuance; it escalates the likelihood of the spread of misinformation. The transmission of information between individuals accelerates the effect of bias rapidly. Each interpretation distorts the information slightly until eventually, the information warps significantly from what was originally disseminated. Thus, due to the inaccurate spread of information in uncontained environments, epistemic filters avoid this consequence of dissemination.

In addition to dissemination, uncontained environments are flawed as they tend to favour more emotionally compelling narratives that are intended for virality rather than less engaging truth. To maximise reach and engagement, uncontained systems often selectively emphasise, exaggerate, or distort certain aspects of the truth so that they are tailored to garner attention and satisfy the audience's emotions and biases.^[6] In the absence of epistemic filters, such narratives are often amplified without proper verification. As a consequence, this generates a complicated feedback loop where distorted information gains the most visibility, whilst ac-

curate but less compelling truths remain marginalised. Epistemic filters are focused on the truth, not virality, and therefore, overcome this inclination.

However, critics may question how objectivity is treated as objectivity. I argue that objectivity is how close a claim is to our current, substantiated understanding of reality. If reality reflects it without opposing valid contradictions, then it is objective. Moreover, critics may argue that epistemic filters contradict the very foundation of free speech. If epistemic filters require information to pass a threshold of objectivity, it renders them as a restriction and therefore, a contradiction to free speech. However, the purpose of epistemic filters is misunderstood by these critics. Epistemic filters ultimately grant epistemic legitimacy to information. Information can be expressed without epistemic filters, but to be treated as knowledge, it must be defended by objectivity. Therefore, epistemic filters do not restrict free speech; they merely put a condition before it is recognised as fact. Additionally, evaluators may be sceptical about how everyone would simultaneously recognise information as fact just because it passed through an epistemic condition. I contend that it is dependent on how objectively persuasive the creator frames and defends their claims. If it were to conflict with a theory, scientific dissent is possible and necessary to point out the flaws; if nobody can identify a flaw, the claim is considered a fact. Analysts may continue to argue that conditional free speech cannot be classified as free speech, as it is a direct act toward censorship. For this statement to be true, it would require epistemic filters to suppress people and ideas. A question that arises due to misinterpretation is whether suppression is justified when it's 'protecting society'. Whilst I do agree that contained systems protect society from believing misinformation, the truth is that epistemic conditions do not suppress. For example, peer review, often used in academic journalism, is also an epistemic filter, yet it is not inherently suppressive to any group or individual. I firmly believe that the actual harm stems from society blindly classifying information as fact in an uncontained environment. Because of bias and virality, society is not reliable for a claim to be treated as knowledge. Take the example of the persistent historic misogynistic perspective; it was within an uncontained environment, and misinformation about gender superiority led to centuries of oppression. In addition, historic racism against dark-complexion groups, as well as severe classism, all stem from the same root cause: the absence of epistemic filters to ground these claims in objectivity. Yet if this happened with the presence of epistemic filters — such as the current day landscape — the subsequent oppression and mistreatment could have been prevented because those claims would be debunked with our understanding of science. Therefore, the function of epistemic filters is not limited to granting epistemic legitimacy, but to avoiding disastrous ramifications caused by society in an uncontained system. The one question that continues to persist despite this is whether society should change or the way we grant information as knowledge. Considering that society is immense, rearranging the framework at such a large scale is unreasonable. Therefore, epistemic filters are the only way to reliably and safely accept information as knowledge.

If epistemic filters fail, they simply were not implemented sufficiently or used effectively. If power structures influence such filters, then the particular filter itself is flawed. A filter should also meet standards of being independent of bias, simply because objectivity is.

Applications

A demonstration of the effects of misinformation in an uncontained environment was during the Salem Witch Trials. These trials were a series of investigations and speculations of witchcraft inside the Massachusetts Bay Colony between June 1692 and May 1693. The impacts ranged from widespread hysteria and fear, imprisonment of several women, and 19

executions of individuals accused of witchcraft. Early accusations spread fast, and tensions escalated — likely due to society's natural attention inclined toward intense narratives such as these. The public perception during these trials was especially vulnerable to bias as it was driven by fear, and both confirmation bias and the bandwagon effect can be observed. Subsequent to early allegations, the public perception of bewitchment was developed, and 'signs' appeared even when they were normal behaviour. Moreover, the collective population believed it, which could have influenced more people to believe it too. Due to the overwhelming anxiety among the community, extra, illogical, and unnecessary observations or tests were taken. A few examples are mysterious illnesses, accusations, body marks, scratching, etc.^[7] With modern science, these can be explained and show no sign of bewitchment; yet, bias and fear dominating a society display how the spread of misinformation, combined with it being treated as fact with no test of objectivity, contributed to chaos and harm within an uncontained system.

Whilst the Salem witch trials in the 1690's corroborate the effects of fear in an uncontained system, the transatlantic slave trade between the 16th and 19th centuries further demonstrates the harmful effects of misinformation being treated as fact in an uncontained system. This particular triangular trade effectively exploited Africans, where goods from Europe were sent to Africa, enslaved people from Africa were taken to the Americas, and raw materials from the Americas were taken back to Europe. The only two stakeholders benefiting here are the Americas and Europe, whilst Africa suffered from major depopulation and severe economic crises. Enslaved individuals had very limited legal rights, and the law, at the time, imposed strict racial hierarchy and shifted the public perception to believe in racial superiority. It also generated a feedback loop where enslaved people were ordered to perform labour-intensive tasks that were often considered 'filthy' jobs, and the more this practice continued, the more it fed the loop. Additionally, they were not granted permission to buy or own property, which further confirmed the biases of the public that black people were incapable of 'ordinary' things and, therefore, were fundamentally flawed compared to white people.^[8] Modern science has proved multiple times that these outdated racial and classist beliefs are inaccurate in realistic human biology¹⁰. Furthermore, this example also illustrates how misinformation accepted as fact led to people developing rigid beliefs that shaped even more rigid systems that escalated the scale of impacts. This oppression was partially a byproduct of no epistemic filters present to verify a claim, leading to misinformation being treated as knowledge in an uncontained system.

Whilst the triangular slave trade highlights the impacts of misinformation, the extensive history of feminism and misogyny elucidates both bias in an uncontained system as well as the difficulty to rectify and amending these sexist ideologies from current world frameworks. Gender superiority can be traced back to ancient Greece, as well as influential philosophers introducing the prospect, such as Aristotle. Sexism against women started with limiting rights to property, then shifting to limiting women's education in the Middle Ages, to child marriage and sexual abuse. Essentially, misogyny persisted through time so much that it was infused with lifestyle and was normalised in most regions. This led to an embedded public mindset on gender superiority, and any idea or individual who questioned it faced censorship. Bias led to completely unsubstantiated claims to be treated as knowledge, and it was tedious to reverse and rectify the damage misogyny did. The Enlightenment was a European intellectual movement that spanned from the 17th to the 18th century. Many philosophers, such as John Locke, started exploring social class inequities, but gender inequality was not prominently spoken about. 1791 and 1792 were when the first works on women's partnership with men emerged, demanding reform of the economic and social landscape. Olympe de Gouges, the au-

thor of these works, challenged the male-centric rhetoric — but was eventually silenced. The second wave of feminism began in the 20th century, when theoretical developments translated into landmark victories such as equal pay. However, these milestones do not redact the history of oppression and abuse.^[9] The Feminist Movement demonstrates that once misinformation is treated as fact without epistemic verification, the harm it causes is very difficult to reverse or rectify and therefore should be avoided, potentially through epistemic filters.

Conclusion

Collectively, all these insights illuminate that free speech is not the enemy of science, but it can be harmful under uncontained conditions. The goal is not to restrict free speech, but to prevent the consequences of unjustified expression being treated as knowledge. The only way to achieve a contained environment is to make use of sufficient and effective epistemic filters. Such filters do not suppress; they merely demand objective reasoning to defend them. Epistemic filters are necessary because without them, the boundary between knowledge and noise collapses.

Bibliography

[1] National Bureau of Economic Research. Technology and the Global Economy. NBER Reporter, 1 June 1999, <https://www.nber.org/reporter/technology-and-global-economy?page=1\&perPage=50>.

[2] Grissinger, Matthew. "Understanding Human Over-Reliance on Technology." Pharmacy and Therapeutics, vol. 44, no. 6, 2019, pp. 320–375.

[3] Blanco, Fernando. "Cognitive Bias." Encyclopedia of Animal Cognition and Behavior, edited by Jennifer Vonk and Todd K. Shackelford, Springer, 2017.

[4] Casad, Bettina J., Luebering, J.E.. "confirmation bias". Encyclopedia Britannica, 30 Mar. 2026, <https://www.britannica.com/science/confirmation-bias>.

[5] "Bandwagon Effect." EBSCO Research Starters: Social Sciences and Humanities, EBSCO Information Services, <https://www.ebsco.com/research-starters/social-sciences-and-humanities/bandwagon-effect>.

[6] Witynski, Max. "Emotion in Stories Gets Our Attention—and Attention Affects Our Memories." University of Chicago News, 16 Aug. 2021, <https://news.uchicago.edu/story/emotion-stories-gets-our-attention-and-attention-affects-our-memories>.

[7] Wallenfeldt, Jeff. "Salem witch trials". Encyclopedia Britannica, 1 Mar. 2026, <https://www.britannica.com/event/Salem-witch-trials>.

[8] Lewis, Thomas. "transatlantic slave trade". Encyclopedia Britannica, 28 Mar. 2026, <https://www.britannica.com/topic/transatlantic-slave-trade>.

[9] Burkett, Elinor. "women's rights movement". Encyclopedia Britannica, 2 Mar. 2026, <https://www.britannica.com/event/womens-movement>.

[10] Racism as a Case of Ignorance and Prejudice." Aithor, 27 May 2024, <https://aithor.com/essay-examples/racism-as-a-case-of-ignorance-and-prejudice>.