**On Epistemic Black Holes. How Self-Sealing Belief Systems Develop and Evolve**

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***Abstract***

Some belief systems postulate intelligent agents that are deliberately evading detection and thus sabotaging any possible investigation into their existence. These belief systems have the remarkable feature that they predict an absence of evidence in their favor, and even the discovery of counterevidence. Such ‘epistemic black holes’, as we call them, crop up in different guises and in different domains: history, psychology, religion. Because of their radical underdetermination by evidence and their extreme resilience to counterevidence, they develop and evolve in certain predictable ways. Shedding light on how epistemic black holes function can protect us against their allure.

Keywords: belief systems; irrationality, conspiracy theory; epistemology; cultural evolution; religion; psychoanalysis; witchcraft beliefs

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# Introduction

“To believe passionately in the palpably not true,” wrote the American essayist H. L. Mencken, is the “chief occupation of mankind”. Mencken was clearly overstating his case, as humans are by and large rational creatures and most of our beliefs are at least approximately true (Mercier 2020; Pinker 2021). But Mencken’s sentiment is understandable. Here’s a sample of some extremely implausible and unfounded beliefs that are endorsed by many apparently sane and rational people even in the age of modern science: the Moon landing never happened but was staged in a Hollywood studio; extraterrestrial visitors have abducted people in their sleep and conducted sexual experiments on them; the 9/11 attacks were an inside job carried out by the Bush administration; all living creatures were created in their present form a couple of thousands years ago; the world is secretly run by a small clique of Satan-worshipping pedophiles who run a global child sex trafficking ring from the Pizzeria Comet Ping Pong in Washington (or by a super-race of extraterrestrial lizard beings); the vaccines against COVID-19 contain nano-tech microchips invented by Bill Gates in a plan for mind control and world domination; and the Earth is a flat disc surrounded by a wall of ice known as ‘Antarctica’.

But are such beliefs really “palpably untrue”? One dimension that remains relatively unexplored in explaining the cultural success of such unfounded beliefs is the role of epistemology, in particular the structure of certain beliefs and the evidential relations between them. In this paper, we outline the existence of ‘epistemic black holes’, namely belief systems that are structured in such a way that they exert an exceptionally strong attraction on unwitting believers, and from which it is very difficult to escape, once you have fallen into their orbit. What these epistemic black holes have in common, we shall argue, is that they involve some sort of intentional agency (either a single agent or a consortium of different agents working together) that deliberately attempts to evade detection and sabotage our investigation into its/their existence. By drawing parallels between such epistemic black holes in a range of different domains, we gain more insight into their appeal, and their cultural evolution.

Here’s an outline of the paper. First, we present the conceptual outline of epistemic black holes, and explain their extreme resilience to adverse evidence and outside attacks (section 2.1). Next, we show that this structure is instantiated by a range of different belief systems, starting with the most obvious application: unfounded conspiracy theories about historical events (2.2). We then outline epistemic black holes in the domain of religious belief: after briefly discussing the tradition of ‘divine hiddenness’ in theism (3.2.1), we develop the case study of witchcraft beliefs in early modern Europe (3.2.2). Finally we look at a surprising example of an epistemic black hole in modern (pseudo)science: Freudian psychoanalysis. In section 3, we make some observations about the cultural dynamics and development of ‘black hole’ belief systems. In particular, owing to their radical underdetermination by evidence, they are liable to schisms and internal disarray (3.1), and often evolve to reflect changing cultural environments (3.2).

# Epistemic black holes

If we want to explain the visible world, we sometimes have to invoke the existence of invisible entities. Many of our best scientific theories involve such “unobservables”, entities and processes that are not (directly) observable by human senses. In some of our theoretical explanations of the world, we also have to invoke the actions of *agents*: intelligent entities capable of harboring intentions, developing plans, or forming desires. In some belief systems, both of these elements are conjoined in a way that gives rise to a special epistemological situation: the belief system postulates some form of hidden intelligent agency that is deliberately trying to escape detection, and thus to thwart our investigation into its existence or its actions. Even though agents with such intentions definitely exist, and we sometimes need to invoke them to make sense of the world, such explanations threaten to create what can be termed an *epistemic black hole*, into which unwary truth-seekers may be drawn, never to escape again (XXX). The metaphor was introduced by Stephen Law, who talked about “a bubble of belief that, while seductively easy to enter, can then be almost impossible to think your way out of again.” (Law 2011, 9) The metaphor captures the observation that, once people have endorsed such a belief system, for whatever reason, it may be very hard to shake them out of their conviction, since they can now explain away any missing evidence or counterevidence they are confronted with. Depending on the levels of power and intelligence attributed to the alleged intelligent agency, it can become very hard to refute or criticize such a belief system. As we will see, some epistemic black holes involve different agents working in consort, while others only postulate a single cohesive agent scheming behind the scenes.

Defined in the above way, epistemic black holes can be regarded as special cases of ‘unfalsifiable’ belief systems (Popper 1959, 1963/2002). According to Karl Popper, every scientific theory must rule out certain states of affairs, so that it is susceptible to refutation. If a theory is wholly unfalsifiable, meaning that it is compatible with every conceivable state of affairs, it should be regarded as pseudoscientific. In Popper’s philosophy of science, however, falsifiability is a purely logical property of a theory, which is independent from how advocates of a theory responded to refutations. In later developments of Popper’s falsificationism, such as of his disciple Imre Lakatos (1970), the focus shifted to how theorists modified the theory in the face of recalcitrant evidence. Did the amendments allows for novel predictions, or were they of a purely *ad hoc* nature? Did the adherents of the theory take empirical anomalies seriously, or did they resort to certain “immunizing strategies” to protect the theory from refutation (Boudry and Braeckman 2011)? The current approach of “epistemic black holes” also situates the problem on the level of how believers deal with recalcitrant evidence. As we will see, there is nothing especially problematic about postulating invisible agents, even invisible agents that want to escape detection. The problem is that a theory postulating such agents will naturally give rise to modifications and amendments that keep it forever out of the reach of refutation, thus opening up an epistemic black hole. It is not even clear that such modifications are ‘ad hoc’, since they follow from the central premises of the belief system. Such epistemic holes develop and evolve in analogous ways, and understanding these mechanisms can help to protect us against their allure.

# Case studies

## Unfounded conspiracy theories

If one defines a “conspiracy theory” as a theoretical account of history (or recent events) that centers around the actions of a small group of people working behind the scenes, usually with nefarious or criminal intentions, then it is clear that not all conspiracy theories are irrational. The pages of history are replete with well-documented plots and conspiracies (e.g. the Watergate scandal, the murder of Julius Caesar, the October Revolution, the Moscow show trials), and there may be others that we have not unveiled yet.

In some cases, however, theories about hidden plots adopt the contours of an epistemic black hole. If you postulate an intelligent agent working behind the scenes to cover up the evidence for his existence, then it becomes possible to maintain such beliefs in the complete absence of any evidence, and to interpret any counterevidence in terms of the alleged conspiracy. This is the case of many popular conspiracy theories about important world events, such as the belief that the moon landing was staged in a Hollywood studio, that 9/11 was an inside job perpetrated by the Bush administration, that Lee Harvey Oswald was just a patsy in a larger plot against John F. Kennedy, or that the Sandy Hook school shooting was staged with paid actors as part of a gun control campaign. It also applies to broader conspiratorial worldviews that explain all or most historical events as resulting from the intentions of a small cadre of invisible actors, such as the Elders of Zion, the Rothschilds, or the Illuminati.

It is not difficult to see how such conspiracy beliefs open up an epistemic black hole. It is in the nature of conspiracy beliefs that conspirators want to remain hidden and can even actively sabotage our investigation into their nefarious plans. Assuming the conspiracy is real, you therefore have some reason to expect an absence of evidence in its favor, and you may even expect to find apparent counterevidence, fabricated by the conspirators to throw us off the scent (Clarke 2002; Keeley 1999).[[1]](#endnote-1) Depending on how powerful and smart the culprits are, it can become very hard to definitively refute a conspiracy theory. By their very nature, conspiracy theories have an “elaborate support structure of auxiliary hypotheses” (Gershman 2019, 22) that allow them to explain away virtually any conflicting evidence.

Some philosophers have argued that the criterion of “unfalsifiability” (Popper 1963/2002, 1959) is an inappropriate one for evaluating conspiracy theories. For example, Brian Keeley wrote that “unfalsifiability is only a reasonable criterion in cases where we do not have reason to believe that there are powerful agents seeking to steer our investigation away from the truth of the matter” (Keeley 1999, 121). The problem is that exempting a belief system from the criterion of falsifiability in this way is exactly what threatens to open up an epistemic black hole. As we will see below (4.1), this is indeed problematic, as it gives rise to a problem of radical underdetermination and arbitrariness.

How do we tell apart legitimate hypothesis about conspiracies from epistemic black holes? In physics, the “event horizon” is the boundary around a black hole beyond which nothing can escape. Although there is no equivalently clear-cut “horizon” in the domain of conspiracy theorizing, a tell-tale sign of epistemic black holes is that they have a tendency to grow larger and more elaborate over time. To explain away missing evidence or apparent counterevidence, conspiracy theorists are forced to either enlarge the circle of conspirators, or attribute ever more power and cunning to them (Keeley 1999; Clarke 2002; Boudry 2022; Shermer 2022). As a result, when skeptical investigators unearth evidence against the hypothesis of a conspiracy, this is often interpreted by believers as evidence of an even larger plot.

For instance, the most infamous document in the history of conspiracy theories, which was used by the Nazis as a "warrant for genocide” (Cohn 1967), is known as the *Protocols of the Elders of Zion*. In actual fact, the document is a forgery originating in 19th century Czarist Russia, and had been exposed as such long before the Nazi party and assorted antisemitic movements throughout Europe started touting the document as evidence of a global conspiracy of international Jewry. Interestingly, when strong evidence of the forgery was unearthed, according to the historian Jovan Byford, “many of the book's admirers simply dismissed [it] as a campaign by Jews to undermine the 'leaked' document which exposes so clearly their sinister secret” (2011, 55). Although the reasoning appears blatantly question-begging, it makes good sense from the perspective of the conspiracy theory. If the Protocols had been an authentic document and if the Elders of Zion as portrayed there really existed, we would *expect* them to dissimulate the evidence for their secret plans. As the 1905 introduction to the *Protocols* already noted, we should not be fooled by the fact that no witnesses have come forward to attest to the reality of the organization and their evil plans. In fact, such an absence of evidence is exactly what we should expect:

were it possible to prove this world-wide conspiracy by means of letters or by declarations of witnesses, […] the “mysteries of iniquity,” would by this very fact, be violated. To prove itself, it has to remain unmolested till the day of its incarnation in the “son of perdition” […]. (Nilus 2009, iv)

Even today, a full century after having been debunked, the Protocols are still being regularly reprinted, disseminated and discussed as an authentic document, now predominantly in the Islamic world, but also elsewhere.[[2]](#endnote-2)

A similar self-sealing logic can be observed with many other popular conspiracy theories. When the 9/11 Commission of the U.S. government published its final 585-page report in 2002, reviewing half a million documents and detailing the responsibility of Al Qaeda and the failures of U.S. intelligence agencies in excruciating detail, conspiracy theorists were hardly impressed. After all, if the U.S. government had itself staged the attack as a false flag operation, in order to create a pretext for invading Iraq and Afghanistan, we would *expect* them to fabricate a sham report full of false evidence and distortions.

A conspiracy theory about a specific historical event (such as 9/11 or the murder of JFK) may degenerate into an epistemic black hole when it ends up attributing superhuman powers and intelligence to some unseen conspirators working behind the scenes. But there is also a more general sense in which conspiracy theorizing functions like a black hole. Empirical research shows that the best predictor of belief in any given (unfounded) conspiracy theory is belief in other conspiracy theories. Again, this is not unreasonable. If you come to believe that “they” have massively deceived us about one historical event, it becomes more plausible to suspect similar deception behind other historical events. For instance, if the U.S. government could execute a false-flag operation like the 9/11 attacks, is it not reasonable to suspect that other so-called terrorist attacks are similarly staged? Goertzel (1994) has proposed that conspiracy thinking forms a “monological belief system”, in which all beliefs reinforce one another in a self-sealing system (Swami et al. 2011). Although recent evidence has cast doubt on the “monological” character of conspiracy thinking, instead suggesting that specific conspiracy theories cluster along partisan and ideological fault lines (Enders et al. 2021), it is still true that a network of conspiracy theories can mutually reinforce together. The metaphor of an epistemic black hole seems especially apposite in situations where more reasonable conspiracy beliefs function as “gateways” to ever more lurid conspiratorial beliefs (Shermer 2022).

In sum, conspiracy believers can end up being trapped in a labyrinth from which it almost impossible to escape. This is not because of any psychological defects on the part of conspiracy theorists (although these surely also play a role), but because of the very structure of the belief system within which they reason.

## Religion and supernatural black holes

### Divine hiddenness

Some popular conspiracy theories about history deal with extraterrestrial visitors or with supernatural agents as the designated culprits, but these are mostly fringe conspiracy beliefs. The majority of popular conspiracy theories about historical events implicate ordinary human agents, although perhaps agents with unusual political powers or exceptional malice.

However, the realm of religion and supernatural belief offers a wide array of unobservable agents that are allegedly working behind the scenes and interfering with the evidence for their own existence, thus potentially opening up epistemic black holes. Such belief system are not necessarily “conspiracies” in the strict sense of the term. Notably, in the monotheist faiths of Christianity and Islam, believers envisage a single and unified agent working behind the scenes, with no-one else to conspire with (although it should be noted that nominally monotheist religions are often not strictly monotheist in practice, since they include a range of lesser supernatural creatures such as angels, demons, saints, or ghosts (Barrett 1999)).

Leaving aside such complications, it is still notable that important strands within monotheist traditions conceive of God as secretly working behind the scenes, even covering up the evidence for his own existence. In the Bible, for instance, God is sometimes portrayed as deliberately hiding from human beings, as in this complaint from the Book of Isaiah: “Truly, thou art a God who hidest thyself” (Isaiah 45:15). Many Christians believe that, after creating the universe, God has (mostly) retreated from the world. This conception of God, which is known as *deus absconditus* or the problem of divine hiddenness (Schellenberg 2006), is a recurring theme in the Christian tradition (Philipse 2012, 302-9). God seems to be not just invisible to the human senses – which is understandable given that he is immaterial and bodiless – but remains elusive even to those who actively seek him.

Theologians and ordinary believers have developed different justifications for divine hiddenness, the most dominant of which is that it is a test of faith (Schellenberg 2006; Murray 1993). If God revealed himself for all the world to see, it would be too easy to believe in his existence. By staying out of sight and leaving the evidence for his existence inconclusive or ambiguous, God can separate the unbelievers and doubters from those with true faith. Similar ideas can be found in the Quran, where God explains at some point that, though he generally supports the community of righteous believers in their fight against the infidels, he will not *always* grant them victory on the battlefield. Rather, he will allow for some occasional defeats and setbacks, in order to test the strength of their faith.[[3]](#endnote-3) A related response to the problem of divine hiddenness is that God wants to give us morally significant free will, and that revealing himself in any manifest way would take away that freedom (Swinburne 2004). Whatever the rationale for divine hiddenness, what it comes down to is a form of divine deception (Nieminen et al. 2017): God could clearly reveal himself to us, or at least leave evidence for his existence, but he decided to stay out of sight and even cover up his tracks.

In light of these features, a number of authors have recently pointed out the epistemological similarities between theism and conspiracy theorists (Edis 2019; Keeley 2007). Strictly speaking, as we mentioned, monotheism cannot be a conspiracy theory because, by definition, God has no-one to conspire with. However, the notion of a divine being deliberately covering up the traces of his own existence does show a kinship with conspiracy theories. The main difference, as Keeley (2007) has argued, is that God has “no need to conspire with anybody to bring about Providence according to His wishes” (Keeley 2007, 140), because he is by definition all-powerful and all-knowing. Only fallible humans need to collaborate with others to carry out elaborate and complex forms of deception. Since God is regarded as omnipotent, his veil of secrecy and disguise can be even more fool-proof than those of mortal plotters. Rather than calling the theist theory of divine hiddenness a “conspiracy theory” – which would strictly speaking be a *contradiction in terms* – we suggest that it is more useful to regard both belief systems as epistemic black holes, in which an intelligent form of agency is deliberately attempting to cover up the evidence for its/their existence.

It should be noted, however, that the concept of divine deception and its related justifications remains controversial. Even though it is present in some strands of Christianity and Islam, there is also a long tradition of religious arguments to the effect that God has left the evidence for his existence all around us, at least for those who are willing to see (Philipse 2012). In this conception, God *does* want to be known by his creatures and is actually revealing himself to us, although perhaps not in an ambiguous and testable way that could settle all religious disputes for once and for all (Boudry and De Smedt 2011).

For the purposes of this paper, we want to turn now to a more specific and historical case study of an epistemic black hole *within* the Christian tradition: the early modern European witch hunts.

### The cumulative concept of witchcraft

In early modern Europe, there was a widespread belief among Christian communities that “witches” were living in their midst, fellow human beings who were in league with the Devil and who used magical powers to destroy harvests, spreading illness or cause other mayhem. In many versions of the belief system, there was a literal “conspiracy” in the form of a witches’ sabbath, nightly gatherings in which witches from all across the region consorted with each other and worshipped the Devil, concocting evil plans to wreak havoc in human communities. Satan constantly tried to seduce people into this sinister alliance, especially through sexual intercourse. It was thought that women were more likely to fall for this temptation than men, so around 75 to 80 percent of the victims of witch trials were female. Estimates vary, but probably up to 50.000 or 60.000 people have been executed in total (Goodare 2016; Hofhuis 2022; Levack 2016).

 Despite the magnitude of some witch hunts and the fervor of the witch hunters, even at the time there was also pervasive skepticism about the guilt of the executed, as well as about the existence of this diabolical sect in the first place. In the eyes of skeptics, the evidence for the specific crimes of the accused witches was often insufficient. However, the witchcraft doctrine was ingeniously adapted to fend off such criticisms. It was thought to be an essential feature of the witchcraft conspiracy that the Devil, his demons and witches were continually hiding the evidence of their malfeasance. The crucial crimes, like using harmful magic and sabbath attendance, normally all happened while nobody was watching. “Much is hidden, below the surface, and secret”, one contemporary wrote (Anonymous of 2016, 28). Demons were fallen angels, so they still possessed many supernatural powers to create illusions for deceiving people (Goodare, 2016; Levack, 2016). During witchcraft investigations this implied that any counterevidence could always be interpreted as the trickery of demons, and any conceivable event could be interpreted as further confirmation that persecutors were onto the witchcraft network.

For instance, husbands of accused women often protested that their wives could not have attended any sabbaths in the night, because they had seen them sleeping next to them in their beds. But here the witch-hunters retorted that demons must have created an illusion that made it look as if the wives were decently sleeping at home, while their actual bodies were elsewhere (Hofhuis 2022, 157; Del Rio and Maxwell-Stuart 2000, 91-2; Remy 2014, 43-4). The interrogation of suspected witnesses also displays the logic of ‘heads I win, tails you lose’. If physical torments – often used in witch trials – made suspects confess quickly, it showed that they were guilty. But if they did not confess right away, this was often explained as the work of demons cleverly assisting the suspects in their ability to withstand torture, thus also indicating guilt (Roper 2004, 47; Krause 2015, 26). If the accused responded emotionally, it was deemed very suspicious. But if they did not respond emotionally *enough*, it was equally suspicious, as it suggested an evil personality or, again, demonic support (Ostling and Kounine 2016, 3-4). Probably most dubious of all were the people who disapproved of witch-hunts and were unwilling to cooperate. Were these individuals not witches themselves, or at least the victims of demonic delusion? (Hofhuis, 2022, p. 159; Rio & Maxwell-Stuart, 2000, pp. 203–206).

Not only were demons hiding all the evidence, witch hunters also believed that God and his angels ensured that no innocent people were being harmed. Skeptics complained that common gossip, which often initiated suspicions against specific persons, could also implicate perfectly innocent people. But here they were being assured that angels would not allow that to happen (Institoris 2017, 358). Similarly, critics might wonder whether the use of torture did not stimulate false confessions and denouncements, but witch-hunters responded that God himself would disallow that (Binsfeld, 1590, pp. 142–147; Hofhuis, 2022, p. 159).[[4]](#endnote-4)

 When people had thoroughly absorbed this belief system, it became difficult not to see unusual misfortune in the light of witchcraft and not to interpret further events as additional confirmation. As the sixteenth century physician and Dutch-German witch-hunt skeptic Johan Weyer put it: “Assuredly, in matters admitting of little certitude, the less cautious would not then be slipping from one single error into a thousand ones, as though trapped in an inextricable labyrinth from which no way of escape, no end, can be seen” (Weyer 1998, 522). It is hard to think of a more eloquent description of what an epistemic black hole looks like.

## Freudian psychoanalysis

A final and surprising example of an epistemic black hole can be found in Freudian psychoanalysis (Cioffi 1998; Farrell 1996). In Freud’s original version of the theory, the psychoanalytic “unconscious” is portrayed as an intelligent entity capable of pursuing intentional goals, chief among them the desire to remain hidden and to actively resist investigation by the therapist. In Freud’s most famous works, such as *The Interpretation of Dreams* and *The Psychopathology of Everyday Life* (Freud 1953, 1960), we are presented with reams of examples in which the unconscious employs clever disguises to escape detection, such as symbolism, denials, inversions, and word plays. In his perceptive book *The Psychoanalytic Movement,* ErnestGellner called Freud’s psychoanalytic unconscious “The Trickster”, an intentional agent which “can and does interfere with the behavioral evidence about its own existence and activities” (Gellner 1985, 142). In Freud’s theory, the Trickster is always trying to deceive the conscious subject (and the therapist) in unexpected and cunning ways. And just as with many conspiracy theories about history of fears about witchcraft, the intentions of the conspirator can be seen as sinister and nefarious. In Freud’s view, the unconscious harbors forbidden desires and impulses related to sexual perversion and aggression, which would be shocking to the conscious subject and must therefore be kept secret.[[5]](#endnote-5)

In some versions of psychoanalysis, there is no longer a single and unified agent but rather a dynamic interaction between multiple mental systems, each of which seems to be capable of intentional agency. In the *Interpretation of Dreams*, Freud describes the existence of an intentional “censor mechanism”, which has to negotiate between the conscious and unconscious, disguising and encrypting mental contents that are too disturbing for the conscious subject to face. In Freud’s later tripartite model of the mind, there is a constant interplay going on between three mental systems (Ego, Id, Superego), all of whom engage in intentional strategies to achieve their goals, sometimes working at cross-purposes, sometimes collaborating or striking compromises.

In any event, because of its unique epistemology, Freudian psychoanalysis has the same self-sealing quality as popular conspiracy theories about history or the witchcraft belief system in early modern Europe, in which absence of evidence or apparent counterevidence could always be interpreted in the theory’s own term. When Freud was unable to find traces of a pathological complex or unconscious desire to account for a patient’s behavior, he was undeterred and treated this as a token of unconscious resistance. Since the unconscious was motivated to hide and disguise its dark secrets, it was not surprising to find an apparent lack of evidence. According to the same logic of deception, apparent refutations of the theory could be explained away with equal ease. In his clinical practice, Freud worked on the assumption that his patients harbored a secret and unconscious desire to disprove his own explanations, so as to avoid having to confront their own repressed desires. If a patient dismissed his psychoanalytic interpretations of their symptoms or dreams, he interpreted this as evidence of “resistance” or “denial”, as predicted by the theory (Cioffi 1998; Crews 1986). Unconscious resistance could also disguise itself in the form of manifest symptoms or dreams. For instance, when one of Freud’s patients dreamt about being forced to spend the holidays with her mother-in-law, whom she despised, at face value this seemed to belie Freud’s contention that every dream is a manifestation of an unconscious wish-fulfilment. But as Freud himself explained, the apparent refutation was really a striking confirmation: “The dream showed that I was wrong. *Thus it was her wish that I might be wrong, and her dream showed that wish fulfilled*” (Freud 1953, 151).

Finally, Freud applied the same theoretical apparatus to his critics. Since every one of us is under the spell of the unconscious forces described by psychoanalysis, it was not surprising that critics of psychoanalysis tried to refute his brainchild. As Freud explained:

Psycho-analysis is seeking to bring to conscious recognition the things in mental life which are repressed; and everyone who forms a judgment on it is himself a human being, who possesses similar repressions and may perhaps be maintaining them with difficulty. They [the critics] are therefore bound to call up the same resistance in him as in our patients; and that resistance finds it easy to disguise itself as an intellectual rejection and to bring up arguments like those which we ward off in our patients by means of the fundamental rule of psycho-analysis. (Freud 1957, p. 39)

It is tempting to reject such circular reasoning as a personal quirk on Freud’s part, but the “resistance argument” has been wielded by many later psychoanalysts, against both patients and critics of psychoanalysis. This is not surprising, because it is indeed a prediction entailed by the central assumptions of the theory (Borch-Jacobsen and Shamdasani 2011). For example, in response to Frederick Crews’ series of critical essays on psychoanalysis in *The New York Review of Books* (1995), the philosopher and psychoanalyst Jonathan Lear suggested that his attacks should be seen as a “repetition and re-enactment of Oedipus’s complex” (Lear 1995). Similarly, one of the leading French psychoanalysts, Élisabeth Roudinesco, has opined that “the hostility to the Freudian theory stems less from scientific discussion than from the resistance of scientists themselves to their own unconscious” (Roudinesco 1999, 73).[[6]](#endnote-6)

# The dynamics of epistemic black holes

## Underdetermination by evidence

Because of their self-sealing character, epistemic black holes are extremely resilient against external challenges in the form of counterevidence or skeptical questions. This strong resilience, however, comes with an important downside: the belief systems suffers from a radical version of ‘underdetermination by evidence’. What this entails is that the available evidence does not fix the content of the theory because it (the evidence) is compatible with many different versions. Logically speaking, any scientific theory suffers from underdetermination (Stanford 2017), but in science there are multiple ways of rationally discriminating between rival theories (e.g. simplicity, fecundity, coherence). Moreover, in scientific theory development one of the alternative versions of theory may always be ruled out by the next piece of evidence. This is not the case for epistemic black holes, where any given version of the theory is always compatible with any evidence.In practice, this means that the free parameters of the belief system can be changed at will.

For example, for any given historical event, it is always possible to develop multiple (unfounded) conspiracy theories involving different culprits, different objectives and different schemes. An event like the 9/11 attacks could be (and has been) interpreted as an inside job by the Bush administration, or a plot by the Saudi government or the Mossad, or the Jews more generally, or by any group of agents that is sufficiently powerful to cover up its tracks and make it look like Al Qaeda orchestrated the attacks (in practice, of course, there may be *some* constraints on the answers to the *cui bono* question, since not anyone will have a plausible motive). As for the murder of John F. Kennedy, a 2013 Gallup poll asked respondents if they believed that Lee Harvey Oswald acted alone and, if not, who was really behind the plot (Swift 2013). The results proffered a wide array of culprits: the Mafia (13%), the federal government (13%), the CIA (7%), Cuba and Fidel Castro (5%), JFK’s own vice-president Lyndon Johnson (3%), the Soviet Union (3%), the Ku Klux Klan (3%), FBI director J. Edgar Hoover (1%), and various other actors. Following the logic of epistemic black holes, it is impossible to rule out the complicity of any of these potential culprits, provided that they have been careful enough to cover their tracks.

A similar problem of underdetermination also affects other parameters of the conspiracy, such as method being used by the conspirators. Most 9/11 conspiracy theorists believe that the Twin Towers were not brought down by the impact and resulting fires of the planes, as the official version claims, but by some other means. As to the precise nature of the mechanism, there is a wide array of conflicting viewpoints: some suspect a process of controlled demolition with conventional explosives, others suspect the use of exotic novel technologies like nano-thermite. Some even deny that the objects hitting the Twin Towers and the Pentagon were commercial planes at all, but rather missiles, military planes, or digitally created CGI effects or holograms (Aaronovitch 2010).[[7]](#endnote-7) There is no rational way to discriminate between such competing conspiracy theories, because all of them are, by definition, equally capable of accounting for the available evidence. As Harris (2018, 256) recently put it, “any number of conspiratorial explanations will fit the data, and hence will be equally supported”.

The problem of underdetermination can also be observed in the domain of religion and supernatural belief. If you assume that one or more powerful supernatural beings exist, but they are actively hiding and resisting your investigation, the identification of these supernatural creatures and their attributes becomes to a large extent arbitrary. In philosophy of religion, this is known as the “problem of religious diversity” (Basinger 2011). Many cultures have devised different belief systems about deities and other supernatural creatures, but these belief systems are often mutually contradictory and there is no rational way to adjudicate between them (Philipse 2012). Even the choice between monotheism and polytheism remains underdetermined. Is there a single supernatural creature pulling the strings behind the world’s curtain, or are we dealing with a genuine ‘conspiracy’ of different deities plotting together? In making his case for religious skepticism, Philo exposed this problem in David Hume’s *Dialogues*:

In such subjects, who can determine, where the truth; nay, who can conjecture where the probability lies, amidst a great number of hypotheses which may be proposed, and a still greater which may be imagined? […] And what shadow of an argument, continued Philo, can you produce, from your hypothesis, to prove the unity of the Deity? […] why may not several deities combine in contriving and framing a world? (Hume 1998 [1779], 36)

Given that supernatural creatures are alleged to have powers that transcend those of humans beings, or may even be omnipotent, it is impossible for mere mortals to find out.

In an analogous way, Freudian psychoanalysis also suffers from a problem of radical underdetermination. As Boudry and Buekens (2011) have shown, the conceptual core structure of psychoanalysis provides a sort of empty shell into which any number of rival theoretical notions can be inserted. In particular, while Freud’s original theory centered around the Oedipus complex and the notion of infantile sexual desires, later theorists have developed the theory in widely divergent (and often incompatible) directions. Otto Rank’s version of psychoanalysis reduces virtually every psychological complex to the repressed birth trauma, Alfred Adler unearthed inferiority complexes everywhere, Melanie Klein introduced the notion of unconscious breast envy as a counterweight to penis envy, Carl Jung developed the theory of unconscious archetypes (anima, persona, shadow), and so forth (Macmillan 1997). As a result of this problem of underdetermination, communities of believers are often beset by schisms and internal dissent. In the absence of any evidential constraints for fixing the parameters of conspiracy explanations, anyone can always come up with a rival conspiracy theory that fits the evidence equally well. According to Crews (1998, xxx), the epistemological structure of psychoanalysis renders the development of the psychoanalytic movement “drastically centrifugal, spinning off ever more numerous, mutually excommunicating schools and cliques” (see also Gordin 2012, 202).

In the early modern witch hunts, the various misfortunes and disasters that occasioned witch hunts could also be “explained” in a variety of different ways, with different culprits and different mechanisms. In most cases such explanations did not need to be mutually exclusive, as different witches and different magic spells could be perceived as contributing to the same result (such as an illness or natural disaster). However, the most vivid demonstration of the “underdetermination by evidence” of witchcraft beliefs, and their consequent arbitrariness, is that sometimes those who had initiated or commanded over the witch trials ended up on the stake themselves. The fact that skeptical arguments could always be disarmed was an attractive feature for witch hunters as long as witchcraft accusations were targeting *others*. But due to the arbitrariness of witchcraft explanations, the accusatory dynamics could easily spiral out of control, also targeting people who initially contributed to the trials. In the small Franconian town of Zeil, Germany, the population called for a witch-hunt after a sudden frost in May 1626 had destroyed the harvests. But the enthusiasm for the persecution wavered when chains of accusations began to widen into much of the population, including some of those who had initiated the trials. Eventually the town was to a large extent depopulated, with hardly a family left unharmed (Gehm 1999; Stickler 1994).

Or take the fate of the richest man of the German city of Trier and president of its university, Dietrich Flade. Initially, Flade had supported witch trials, and in his role as town bailiff he even operated as a notably harsh witch-hunter himself. But at some point the alleged witches began to name Flade as one of their accomplices, and within the witchcraft doctrine it was difficult to counter that. Flade’s friends brought forward that he could not possibly be a witch, since he had persecuted witches himself. But this defense failed to have much of an impact. After all, were witches not always ingeniously trying to pull the wool over people’s eyes, for instance by presenting themselves as witch-hunters? On 18 September 1589 Flade was first strangled, and then burned in public in full view of almost the entire city population (Dillinger 1999; Hofhuis 2022).

In a similar vein – but in a less literal sense – believers in conspiracy theories and psychoanalysts also sometimes become “victims” of the very same conspiratorial logic that they directed towards others. For instance, when the influential French conspiracy theorist Thierry Meyssan suggested that on 9/11 the Pentagon was hit by some sort of missile instead of a passenger plane, other 9/11 conspiracy theorists went on to argue that Meyssan himself was a Deep State agent who had infiltrated into conspiracist communities to sow doubt and discredit the conspiracy theory community (Sunstein and Vermeule 2009, 223). Analogously, the different schools of psychoanalysis after Freud have often turned one another, explaining dissent in theory-internal terms. As historians of the psychoanalytic movement have observed, Freud made a habit of accusing renegade disciples of harboring some repressed desire or unresolved complex that warranted further psychoanalytic treatment. This recurrent “pathologisation of dissent” (Borch-Jacobsen and Shamdasani 2011, 85) in the history of the psychoanalytic movement was the only way to delegitimize alternative conceptions of psychoanalysis, and thus to cover up the essential arbitrariness of the theory. Unsurprisingly, those renegade disciples returned the favor by directing this pathologizing logic at their former master (Borch-Jacobsen and Shamdasani 2011; Sulloway 1992).

In the case of the early modern witch persecutions we saw that the witchcraft doctrine benefited from the arbitrariness of invoking demonic illusions to make any finding fit their narrative. Ironically, their staunchest opponents used exactly the same line of reasoning. Many contemporary critics of witch-hunting argued that the witch-hunters had themselves fallen prey to diabolical deception (Hofhuis, 2022, pp. 310–329). In their view, the Devil was the evil designer behind the whole witch-hunt system, as he was eager to bring about the human suffering of the witch trials, as well as make people ruin their souls by killing the innocent. This is also how we should read Johann Weyer’s quote mentioned above about the “inextricable labyrinth”. In his view it was Satan who had created the illusory belief system from which no escape was possible: “From long experience, that crafty old weaver knows how to weave such webs skillfully.” (Weyer, 1998, p. 522)

The humanitarian goals of the witchcraft skeptics were laudable, but some of their arguments were as arbitrary as those of the witch-hunters. Alleged events that were brought forward as evidence for witchcraft, like people spitting up nails or speaking in strange voices, were dismissed as diabolical deception (Hofhuis 2022, 318-24). Weyer for instance alleged that demons put nails into people’s mouths, so that others might interpret the presence of those nails as evidence of witchcraft and start a trial accordingly. This arbitrariness could make things difficult for people at the time. The French literary scholar Marianne Closson remarks that “great confusion reigned: how could one know the true nature of diabolical illusion? The lack of a firm answer to this question fueled the fear of being oneself a victim of the Devil’s deceptions” (Closson 2000, 32).[[8]](#endnote-8) Whether people considered something real or illusory could eventually just depend on what seemed most convenient or plausible. The “trump card of demonology” is what Dillinger calls the idea of diabolical deception: it could be invoked to neutralize any ostensible phenomenon that appeared unfitting (Dillinger 2018, 45).[[9]](#endnote-9)

## Cultural and ideological determinants

Because empirical evidence cannot fix the parameters of an epistemic black hole, this gives free rein to other non-evidential factors. Typically, what we see is that the belief system will adapt to the local cultural environment, reflecting changing cultural sentiments and preoccupations. A striking instance is provided by the fate of antisemitic conspiracy theories about the dangers of ‘World Jewry’ during the past century. Prejudice and hostility against Jewish minorities has a long and sordid history in Christendom (and to a lesser extent in the Islamic world), dating back for many centuries. Nonetheless, contemporary forms of conspiratorial antisemitism, which obsesses over a world-spanning conspiracy of international Jewry, only emerged in the late 19th century (Pipes 1999). Unlike earlier form of anti-Jewish animus, such as the blood libel in the middle ages, in which overtly religious motives played an essential role, the novel antisemitism was often fueled by elements of blood and race, in line with the emerging pseudo-scientific theories on racial taxonomies. In the context of the emancipation and integration of Jewish people in public life in many European nations, and especially their prominent role in the world of finance and commerce, conspiracy theories emerged about Jewish organizations pulling the strings of the world economy. By the early 20th century, antisemitic conspiracism gained ascendancy throughout the Western world, appearing in both leftist and right-wing versions, and documents like the *Protocols of the Elders of Zion* were widely read, discussed and taken seriously. In the 1940s, the right-wing version of antisemitic conspiracism culminated in the genocidal fanaticism of Nazi Germany.

In the aftermath of the Second World War, however, Jews abruptly disappear from conspiracist literature. This had nothing to do with novel evidence. Instead, the widespread abhorrence of Nazism led conspiracy theorists to abandon or downplay Jews in their conspiracy theorizing. Instead, they settled for other culprits such as the CIA or FBI, which reflected the economic and cultural dominance of the United States as the new global superpower. Other favorite targets became the United Nations and the Bilderberg group, a transnational organization of political leaders and other elites which holds annual conferences since 1954 and which, owing to its notorious privacy and secrecy, was an ideal target for conspiracy theorists.

In short, this shift from Jews to other perpetrators did not reflect any novel evidence, but was driven by “changing social and political circumstances” (Byford 2011, 97). It is notable that, in recent years, the Jews have made a comeback on the conspiracist scene. Arguably, with the horrors of the Holocaust fading from collective memory, and with criticism of Israel and Zionism becoming more politically respectable, the taboo on antisemitism has lost its force in many countries. As a result, old-fashioned antisemitic conspiracy theories have reappeared on the scene, both in the form of anti-Zionism on the left and racialized conspiracism on the right. One notable example is the widespread (and false) rumor that no Jews were present in the Twin Towers during the 9/11 attacks, because they had somehow been warned about the impending plane crashes.

Beliefs about the perpetrators and crimes of diabolical witchcraft also reflect cultural and ideological determinants. When the age of European witch-hunting began in the Western Alps around the year 1430, the purported crime was not yet specifically associated with women. Yet, within a context of widespread misogyny and unequal power balances between the sexes, it is hardly surprising that women were soon disproportionally targeted. Women were widely viewed as more lustful, superstitious and irrational than men. So it made sense to think that it was relatively easier for the Devil to lure them into witchcraft through sexual intercourse and to make them abjure God (Rowlands 2013). But the concept of witchcraft remained malleable enough to integrate other cultural and ideological trends. In the late sixteenth century, parts of Europe suffered from enormous economic distress, stimulating heightened aggression against allegedly corrupted elites who enriched themselves at the expense of others. Reflecting this trend, the witchcraft beliefs and subsequent trials increasingly began to focus on witches that were rich, male and powerful – the aforementioned Dietrich Flade is a case in point (Behringer 2008, 230–45; Dillinger 1999; Hofhuis 2022).

The history of psychoanalysis offers a similar example of how theoretical developments can reflect changing cultural environment rather than a changing evidence base. In the early days of psychoanalysis, Freud touted the concept of *penis envy* as one of the most important discoveries of psychoanalysis. According to Freud, the development of the female psyche revolves around the unconscious desire to possess a penis. As the little girl discovers that her body lacks the prized appendage, her whole process of psychological maturation is being built around the unconscious desire to have a penis, and her resentment about this wish not being fulfilled. In the most favorable cases, the desire for a penis is later substituted for a desire to have a baby. Penis envy, according to Freud, was not a peculiar desire occurring in some women, but a universal and general law of female psychology.

In the second half of the 20th century, however, the doctrine of universal penis envy in women started to disappear from the psychoanalytic literature. It is unlikely that this theoretical change was driven by a changing evidence base, for Freud and his followers had confirmed the existence of penis envy in numerous cases, and the method of investigation remained unaltered. As the philosopher Frank Cioffi rhetorically asked: “When did women stop wanting penises?” (Cioffi 1998, 27 ). As in the case of the Jews disappearing from conspiracist literature, the notion of universal penis envy had just become ideologically unpalatable. Feminist critiques exposed the sexist and misogynist overtones of Freud’s “phallocentric” theory of the female psyche, and some feminist psychoanalysts like Melanie Klein and Karen Horney proposed alternative concepts like *breast envy* and *womb and vagina envy* (Sayers 1987). But these were equally arbitrary and underdetermined by evidence. Just as the prominence or absence of “the Jews” in conspiracy theories reflected the changing cultural fate of antisemitism, the specific content of psychoanalytic theory tended to reflect changing cultural sensibilities rather than changing evidence (Cioffi 1998).

# Conclusion

This paper has analyzed the warped epistemology and cultural dynamics of epistemic black holes, belief systems that are self-sealing and extremely resistant to external challenges. This epistemological analysis complements psychological explanations of the universal appeal of such belief systems, as well as more contingent historical and sociological accounts of their success in certain cultural environments. For instance, though it is plausible that the human mind has evolved tendencies to overdetect conspiracies (van Prooijen and Van Vugt 2018), the extreme resilience of conspiracy theories to counterevidence and criticism also helps to explain their perennial appeal and cross-cultural persistence. The most notable examples of such black holes are unfounded conspiracy theories about historical events, but less obvious examples include Freudian psychoanalysis, as well as certain religious and supernatural belief systems, notably the cumulative concept of witchcraft in early modern Europe. By postulating intelligent agencies that purposefully evade detection, these belief systems are by their very nature resilient against external challenges.

This epistemological analysis also helps us to understand the cultural development and dynamics of epistemic black holes. Most importantly, because of their extreme resilience to counterevidence, black holes suffer from a radical problem of underdetermination. As a result of this, such belief systems tend to be unstable and vulnerable to internal disarray, since believers can always come up with a rival version that accommodates the evidence equally well. In other cases, we see that the evolution of such belief system flexibly accommodates to changing cultural circumstances and sensibilities.

Finally, we believe that this epistemological analysis may be useful for pedagogical purposes. By understanding the self-sealing logic of conspiracy theories and other epistemic black holes, people may better appreciate the arbitrary and gratuitous nature of such beliefs. By seeing how, using the same types of inferences and evidence, entirely different theories can be concocted that are equally plausible and equally compatible with the evidence, people might be better “immunized” against the attraction of such irrational belief systems (Norman 2021; Boudry and Hofhuis 2018).

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1. In recent years, a number of philosophers have challenged the notion that “conspiracy theories” suffer from sort of general deficiency, arguing that every conspiracy theory should be evaluated on its own merits. For a defense of this “particularism”, see (Dentith 2018a, 2018b, 2019; Buenting and Taylor 2010; Pigden 1995). For a defense of more “generalist” positions, see (Stokes 2018; Harris 2018). [↑](#endnote-ref-1)
2. A list of contemporary imprints of the *Protocols* can be found on Wikipedia: bit.ly/3qU7W7a [↑](#endnote-ref-2)
3. “We alternate these days of victory and defeat among people so that Allah may reveal the true believers, choose martyrs from among you […] Do you think you will enter Paradise without Allah proving which of you truly struggled for His cause and patiently endured?” (Quran 3:137-140). [↑](#endnote-ref-3)
4. Past historians have often argued that witch persecutions were a shrewd tool, used to achieve some hidden end, like oppressing women, destroying traditional peasant culture, making money, or subjugating the poor. However, over the past decades most experts have come to the conclusion that many witch persecutions were more likely driven forward by genuine panics about the alleged dangers of witchcraft (Scarre and Callow 2001). “Witch-beliefs were not a trick; the fear of witches was very real”, states Johannes Dillinger (Dillinger, 2018, p. 127). Or as Julian Goodare says it: “a witchcraft accusation was not ‘really’ about something else; it was really about witchcraft.” (Goodare 2016, 385). [↑](#endnote-ref-4)
5. Interestingly, the analogy between Freudian psychoanalysis and medieval demonology may even extend beyond the level of epistemology. In the early days of his psychoanalytic career (around the 1890s), Freud took the extracted childhood “memories” of his patients about grisly sexual and sadistic abuse (which were in reality confabulated under intense pressure of the therapist) as phylogenetic memory traces of a “primeval devil religion” which practiced ritual sexual abuse. Furthermore, Freud speculated that the confessions extracted under torture during the European witch trials derived from *actual* memories of infantile sexual abuse, teased out by “the harsh therapy of the witches’ judges” (Crews 2017, 498-505) [↑](#endnote-ref-5)
6. Original French text: “l’hostilité au modèle freudien relève moins de la discussion scientifique que de la résistance des savants eux-mêmes à leur propre inconscient.” (Roudinesco 1999, 73) [↑](#endnote-ref-6)
7. ‘Debunking the 9/11 Myths: The Airplanes’, *Popular Mechanics*, Sep. 10, 2021. https://www.popularmechanics.com/military/a5654/debunking-911-myths-planes/ [↑](#endnote-ref-7)
8. Translated from the French original: “grande confusion règne : comment savoir en effet la véritable nature de l’illusion diabolique ? L’absence de réponse ferme à cette question attise la peur d’être soi-même victime des tromperies du diable.” [↑](#endnote-ref-8)
9. Translated from the German original: “Joker der Dämonologie” [↑](#endnote-ref-9)