Big Effects, Big Causes:
The Psychology of Pseudoarchaeology

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Abstract
Monumental human achievements — the pyramids at Giza, the geoglyphs of Nazca, the trilithon at Baalbek, the stonework of Puma Punku, the bluestones of Stonehenge — routinely attract explanations that displace human agency onto hidden or external causes, despite excavated, dated, and in several cases peer-reviewed evidence documenting how ordinary people built them. This paper asks why. Drawing on the psychology of proportionality bias, institutional distrust, and recent quantitative research on social media diffusion, it argues that hidden-agency attribution is a durable reasoning pattern rather than a knowledge gap. Construction evidence for five sites across four continents shows the pattern recurring regardless of culture, period, or evidentiary completeness. The paper identifies the cost of repeated exposure to hidden-agency narratives — eroded confidence in human capability generally, not just false belief on a given site — and proposes technique-based psychological inoculation, rather than case-by-case debunking, as the better-supported remedy. It closes by flagging, without arguing, a direction for future research: whether discounting past human capability conditions reduced confidence in present human capability under growing reliance on artificial intelligence.

Keywords: pseudoarchaeology; proportionality bias; conspiracist ideation; misinformation; psychological inoculation; cognitive archaeology

1. Introduction
A monument built from over two million quarried stone blocks, in a construction campaign lasting roughly two decades and documented in a supervisor's own surviving logbook, still draws the same question in comment sections and television specials: who really built this. Not how — who, as though the answer 'skilled people, organised over two decades' were somehow insufficient. This paper is not another rebuttal of a specific fringe claim. It asks a narrower and more tractable question: why does hidden-agency attribution for monumental achievement persist and spread across cultures despite decisive, independently verifiable contrary evidence?

The argument proceeds in five steps. Section 2 identifies the cognitive mechanism — proportionality bias — that makes hidden-agency explanations feel intuitively necessary regardless of the evidence available. Section 3 tests that mechanism against construction evidence from five megalithic sites spanning Africa, South America, and Europe, showing that the pattern recurs independent of culture, period, or archaeological completeness. Section 4 explains why the bias does not stay contained to a single claim, drawing on the psychology of institutional distrust. Section 5 examines how platform dynamics shape which claims spread, using recent quantitative social media research that complicates the assumption of runaway virality. Section 6 names the cost of repeated exposure. Section 7 proposes a remedy grounded in inoculation theory rather than in claim-by-claim correction. Section 8 closes with a single flagged hypothesis for future work, held separate from the paper's evidenced claims.

2. The Pattern: Proportionality Bias

The cognitive mechanism at issue has a name and an experimental basis. Proportionality bias is the tendency to judge the scale of a cause by the scale of its effect: large, consequential outcomes intuitively demand large, consequential causes, while modest outcomes are readily explained by modest ones (Leman and Cinnirella, 2007). In the foundational study, sixty-four participants read one of four versions of a vignette describing an assassination attempt on a hypothetical president, varying only whether the attempt succeeded or failed, then rated the likelihood of several explanatory statements. Participants were significantly more likely to endorse a conspiratorial explanation when the president died than when the same attempt, with the same evidence, left the president alive. The scale of the outcome shifted the perceived plausibility of the cause, independent of the evidence for that cause. The bias operates beneath deliberate reasoning: it is not that people lack the correct information, but that the correct information does not feel proportionate to what it explains.

Monumental architecture is close to an ideal trigger for this bias. A structure that took decades, thousands of workers, and precise engineering to build produces an effect — scale, permanence, apparent impossibility to the casual eye — that outstrips the intuitive sense of what patient, coordinated human labour should be able to produce. The bias does not require ignorance of the construction record. It operates on top of it, discounting the sufficiency of an explanation not because the explanation is wrong but because it does not feel large enough for what it is asked to explain.

3. Where It Shows Up

If proportionality bias is the general mechanism, it should recur wherever the conditions are met — regardless of the culture, continent, or period involved, and regardless of how complete the archaeological record is. The following five cases were selected for geographic and cultural spread rather than for argumentative convenience: Egypt, Peru, Lebanon, Bolivia, and Britain, spanning roughly four thousand years of construction activity. Each subsection states the documented construction evidence first, then notes the hidden-agency claim that persists despite it.

3.1 Giza

The Great Pyramid of Khufu was long reconstructed from indirect sources — chiefly Herodotus, writing roughly two thousand years after construction and repeating accounts from local guides (Tallet and Lehner, 2021). That changed in 2013, when a team led by Pierre Tallet discovered papyrus fragments at Wadi al-Jarf on Egypt's Red Sea coast, dated to around 2560 BCE, during Khufu's reign. Among them was the logbook of an inspector named Merer, who supervised a team of roughly forty workers transporting limestone blocks by boat from the Tura quarries to Giza via a canal system connected to the Nile. The logbook records daily activity, food rations, and coordination with fifteen phyles totalling around six hundred men on dam-related work at Giza itself, and names Ankhhaf, Khufu's half-brother, as the official overseeing the delivery operation. This is not inferred process; it is a contemporary administrative record naming individuals, tasks, and dates. The hidden-agency claim these papyri directly displace — that the pyramid's precision or scale exceeds Bronze Age organisational capacity — has to be maintained in spite of, not because of, the best-documented ancient construction record in Egyptology.

3.2 Nazca

The Nazca geoglyphs, created between roughly 200 BCE and 600 CE on Peru's southern coastal desert, are frequently cited as landing markers for external visitors. The construction method, however, is well characterised: workers removed a shallow layer of iron-oxide-coated surface stone to expose lighter soil beneath, using wooden stakes and cord to maintain straight lines and geometric proportion (Johnson, 1999). Stake holes have been found in situ and dated to the relevant period, and experimental archaeology has replicated individual figures using only period-appropriate tools, confirming that no technology beyond rope, stakes, and coordinated labour is required. Settlement surveys of the Nazca valley show a relatively flat social hierarchy without the centralised, coercive authority sometimes assumed necessary for large communal projects; the geoglyphs instead fit a well-documented pattern of communal ceremonial labour in pre-state Andean societies. The claim that the lines required aerial visibility to design — and therefore an external vantage point — does not survive contact with the demonstrated grid-and-cord method, which required no aerial view at any stage of production.

3.3 Baalbek

The Trilithon at Baalbek, Lebanon — three stones each weighing 800 to 1000 tonnes, forming part of the Temple of Jupiter's podium — is among the most frequently cited 'impossible' megalithic constructions. French archaeologist Jean-Pierre Adam's published engineering study (Adam, 1977) calculated the workforce size, lever-arm lengths, and draught-animal requirements needed to move the stones using methods securely attested elsewhere in Roman engineering practice, and concluded the operation was achievable within the Roman imperial construction programme. The quarry itself, Hajjar al-Hibla, sits roughly 800 metres from the temple site, at a comparable or slightly higher elevation — meaning the transport route was level or downhill rather than requiring stones to be hauled uphill, as popular accounts sometimes claim. A 2014 excavation by the German Archaeological Institute uncovered a fourth, even larger dressed stone still in the quarry, alongside in-situ Latin inscriptions naming the Roman builders. The claim that the Trilithon exceeds Roman capability persists against a quarry that is excavated, a transport route that is geographically documented, and inscriptions that name who built it.

3.4 Puma Punku

The precisely cut andesite 'H-blocks' at Puma Punku, part of the Tiwanaku civilisation's ceremonial complex in the Bolivian altiplano (500 to 1000 CE), are commonly presented as evidence of technology unavailable to a Bronze Age Andean society. The Tiwanaku, however, are independently documented as accomplished metalworkers who produced intentional copper-tin bronze alloys and used bronze T- and I-shaped clamps, examples of which have been recovered in situ at the site, to join adjoining blocks (Protzen, 1993). The precision of the H-blocks — flat channel bottoms level within roughly one millimetre, sharp internal corners — is real and not exaggerated, but it is achievable, as Protzen's comparative study of Andean stonework demonstrates, through labour-intensive hand grinding with harder stone and metal tools rather than through any technology absent from the Tiwanaku toolkit. The claim of impossibility conflates difficulty with impossibility: the site required extraordinary skill and time, not capabilities the builders did not possess.

3.5 Stonehenge

Stonehenge's smaller 'bluestones' were long known, from the 1920s onward, to originate in the Preseli Hills of west Wales, roughly 230 kilometres from Salisbury Plain — but the exact quarries and extraction method remained undetermined for decades, leaving room for glacial-transport and other non-human-agency theories. That changed with excavations at two quarry sites, Carn Goedog and Craig Rhos-y-felin, published in the peer-reviewed journal Antiquity (Parker Pearson et al., 2019). The excavations recovered stone wedges still lodged in the joints of a partially detached rhyolite pillar, geochemically confirmed as quarrying tools distinct from the surrounding rock, alongside radiocarbon dates placing extraction activity at approximately 3000 BCE — the same period as the first construction phase at Stonehenge itself. The dating and the tool evidence together confirm human quarrying and transport rather than the natural glacial movement some earlier accounts proposed, in what the excavators describe as the longest confirmed megalith transport distance known anywhere in the world. Of the five cases reviewed here, Stonehenge carries the most direct, dated, peer-reviewed physical evidence — wedges still in the stone — and the hidden-agency claim persists regardless.

The five cases share a structure. In each, the construction method is independently documented — logbook, quarry, engineering calculation, in-situ tooling, or radiocarbon-dated wedge — and in four of five cases the documentation appears in peer-reviewed excavation literature, not popular summary. This is consistent with what proportionality bias predicts: hidden-agency attribution does not appear to track the completeness of the evidence available. Giza and Stonehenge, arguably the two most exhaustively documented cases reviewed here, remain among the most frequently attributed to external agency in popular discourse. This paper has not measured attribution prevalence across sites and does not claim a demonstrated statistical relationship between documentation completeness and persistence of belief; the observation is qualitative, drawn from five purposively selected cases, and offered as consistent with the mechanism in Section 2 rather than as independent proof of it.

4. Distrust Does the Rest

Proportionality bias explains why a hidden-agency explanation feels necessary for any single monument. It does not, by itself, explain why belief in one such claim predicts belief in others, or why refuting the pyramid claim rarely changes a person's view of Nazca or Baalbek. That generalisation is better explained by the psychology of institutional distrust than by any evidentiary gap specific to archaeology.

Conspiracist ideation research characterises belief in hidden-agency explanations as driven by epistemic, existential, and social motives — the need to understand one's environment, to feel safe and in control of it, and to maintain a positive image of oneself and one's group (Douglas, Sutton and Cichocka, 2017). Critically, this research finds that conspiracy beliefs are internally correlated: endorsing one such claim predicts endorsing others, even in unrelated domains, and that exposure to conspiratorial material measurably reduces trust in the institutions responsible for the correct account, independent of whether the specific claim is later retracted or shown false (Jolley and Douglas, 2014; Douglas and Sutton, 2008). In an early demonstration of this effect, Douglas and Sutton showed that British participants exposed to conspiracy theories about Princess Diana's death became more inclined to endorse them while remaining

unaware that their views had shifted at all — the influence operated without the belief being consciously updated as new information.
Applied to pseudoarchaeology, this reframes what the hidden-agency claim is actually doing. It is not a competing factual account waiting to be corrected by better evidence. It is, in significant part, an expression of distrust toward the archaeologists, historians, and institutions that produced the accepted account — a distrust that generalises across sites and disciplines rather than resolving site by site. This is why the Giza case, with its uniquely direct administrative record, does not settle the broader pattern: the papyri answer a factual question the belief was never primarily about.

5. Platforms

Digital platforms shape which explanations circulate, and the mechanism is content-based rather than accuracy-based: recommendation systems and sharing behaviour favour material that produces strong affective response — surprise, awe, threat, moral outrage — largely independent of whether the material is true (Acerbi, 2019). Hidden-agency narratives are, on their face, well suited to this dynamic: an external-agent explanation for a monument is inherently more visually and emotionally arresting than an explanation involving ropes, canals, and organised labour over two decades.
The most direct test of this expectation, however, complicates rather than confirms it. A large-scale quantitative study of 132,230 English-language tweets tagged #archaeology, analysed through a cultural-evolution framework, found that content expressing positive sentiment and authored by identifiable experts was significantly more likely to be shared than negative or threat-laden content, reversing the negativity bias commonly observed elsewhere on social media (Bonacchi, Krzyzanska and Acerbi, 2025). Within that same dataset, posts on the topic the authors label 'ancient civilisations and aliens' — the archetypal hidden-agency content — were reposted less than content on prehistory, classical, Egyptian, and medieval archaeology. The authors explicitly caution against overestimating the reach of pseudoarchaeological content on this evidence, noting that its low relative sharing rate suggests the material remains comparatively niche within the archaeology-tagged community they studied.
This finding does not soften the argument; it sharpens it. A claim's low relative sharing rate is not, in 2026, a mitigating fact. Every site reviewed in Section 3 has its construction evidence a search away, in several cases published in leading peer-reviewed journals with open-access text. A committed minority sustaining hidden-agency belief against that availability is not an information-access problem being slowly solved by better outreach. It is a standing choice, made in full view of the record, and made repeatedly. The same study notes that the disproportionate visibility of a hostile, vocal minority can shape the platform experience of a much larger audience regardless of that minority's actual share of total content (Bonacchi, Krzyzanska and Acerbi, 2025) — meaning the practical danger of hidden-agency content is better measured by its cultural volume and reach into general audiences than by its share within specialist archaeology discourse.

6. The Cost: The Numbing Effect

The damage repeated exposure to hidden-agency narratives does is not limited to the specific false belief adopted. Conspiracist ideation research finds that engaging with these narratives correlates with anomie — a diffuse sense of alienation and disconnection from the social and epistemic world — and that this correlation runs in both directions: people already experiencing powerlessness

are more drawn to hidden-agency explanations, and repeated engagement with those explanations appears to deepen rather than relieve the underlying frustration (Douglas, Sutton and Cichocka, 2017).

Applied to pseudoarchaeology specifically, the mechanism suggests a further, more targeted cost, though this extension has not itself been directly tested and should be read as an inference from the general finding rather than an established result. Each time a reader accepts that a demonstrated human achievement required an external agent, the achievement is quietly reclassified: not evidence of what organised, patient, skilled human effort can do, but evidence that it could not have been enough on its own. Repeated across enough sites, the pattern would not just distort a reader's picture of the past; it would lower their baseline estimate of what people — including themselves — are capable of when they work together over time. This proposed numbing effect — an eroding confidence in human capability as a category, rather than a single false belief about a single monument — follows plausibly from Douglas, Sutton and Cichocka's (2017) anomie findings but is, at present, a hypothesis extended from adjacent research rather than a direct finding of it.

7. The Fix: Technique-Based Inoculation

The conventional response to pseudoarchaeology is claim-by-claim correction: refute the pyramid theory, then the Nazca theory, then Baalbek, as each surfaces. Section 4 already indicates why this is a poor strategy — if the underlying driver is generalised institutional distrust rather than a site-specific evidentiary gap, correcting one claim does little to prevent the same reasoning pattern from attaching to the next site. Debunking after exposure also faces a documented structural problem: misinformation continues to influence judgement even after formal correction, a phenomenon termed the continued influence effect, and corrections are frequently forgotten or discounted well before the original claim is (Traberg, Roozenbeek and van der Linden, 2022).

Inoculation theory offers a different target. First developed by McGuire in the early 1960s using the analogy of biological immunisation, the theory holds that pre-exposing someone to a weakened form of a persuasive technique, alongside an explicit refutation of that technique, builds resistance that transfers to future, stronger versions of the same manipulation (McGuire and Papageorgis, 1961). Contemporary research distinguishes issue-specific inoculation, which targets one particular false claim, from technique-based inoculation, which targets the underlying persuasive mechanism itself — proportionality-driven reasoning, appeals to hidden or suppressed knowledge, cherry-picked precision statistics — so that resistance generalises across claims the person has never specifically encountered (Roozenbeek and van der Linden, 2022). Field trials of this approach, including video-based interventions distributed at platform scale, have demonstrated measurable, durable reductions in susceptibility to manipulation techniques across cultural contexts (Traberg, Roozenbeek and van der Linden, 2022).

Cognitive-archaeology literacy — understanding how the wedge sits in the Preseli rock, how Merer's boats moved through the canal, how a bronze clamp locks two andesite blocks together — functions as exactly this kind of inoculation, provided it is taught as method rather than as a list of refuted claims. A reader who understands the pattern by which extraordinary effects get mismatched to extraordinary causes is equipped to recognise that pattern at the next site, the next claim, in a domain the paper has not covered at all. That transfer, not the correction of any single belief, is the outcome technique-based inoculation is designed to produce, and it is the more defensible remedy

available given what Sections 4 through 6 establish about how and why the belief spreads and what it costs.

8. Conclusion

Hidden-agency attribution for monumental human achievement is not a gap waiting to be closed by better evidence. Proportionality bias makes the true account feel insufficient regardless of how completely it is documented; institutional distrust generalises that insufficiency across sites and disciplines; platform dynamics concentrate the resulting belief in a committed minority whose cultural reach exceeds its share of total content; and repeated exposure erodes confidence in human capability as a general category, not only in the specific site under discussion. Technique-based psychological inoculation, targeting the reasoning pattern rather than any single claim, is the remedy best supported by this evidence.

One further question follows from this argument but is not established by it, and is offered here only as a direction for future research. If proportionality bias and institutional distrust generalise as robustly as the literature reviewed here suggests, a testable hypothesis emerges: does habitual discounting of past human capability correlate with reduced confidence in present human capability under conditions of increasing reliance on artificial intelligence — the same reasoning pattern applied to a contemporary rather than an ancient hidden agent. This paper does not test that hypothesis and takes no position on it beyond proposing it as worth testing.

Sustainable Development Goals Statement

This paper relates most directly to SDG 4 (Quality Education), through its argument for technique-based psychological inoculation as a form of critical-thinking education that generalises across claims rather than requiring case-by-case correction. It also relates to SDG 11 (Sustainable Cities and Communities), Target 11.4, through its underlying concern with the accurate public understanding and protection of world cultural heritage sites, several of which — Giza, Stonehenge, Tiwanaku — hold UNESCO World Heritage status.

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