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Kuhn, Conspiracy Theories, and Scientific Progress

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This article offers an appreciative but critical response to Donovan Schaefer's book *Wild Experiment*, focusing on the connection between emotion and reason, particularly in the context of conspiracy theories and scientific inquiry. While acknowledging the valuable insights provided by Schaefer's cogency theory and its emphasis on the role of emotions in shaping beliefs and reasoning, I argue for a more nuanced understanding of the factors that contribute to the popularity of conspiracy theories and the success of science. In particular, I challenge Schaefer's characterization of scientists as primarily driven by cold emotions and a fear of making mistakes. Instead, I emphasize the social structure of science and institutional practices that enable collective intellectual vigilance and the advancement of reliable knowledge.

It is an honor to respond to Donovan Schaefer's book *Wild Experiment*. As a member of the 2022 International Society for Science and Religion book prize committee, I am on record about what a valuable and enjoyable book it is, one that expertly navigates through an impressive number of topics while avoiding superficiality. Schaefer's overarching thesis is not only compelling but also contributes substantially to ongoing discussions across multiple fields.

My research (Reeves 2012, 2021, 2022) focuses on Christian mistrust of science and religious vulnerability to conspiracy theories, and so my response to *Wild Experiment* will focus on these topics. My main questions are not about the connection of emotion and reason, for which Schaefer compellingly argues, but how well this insight can account for the popularity of conspiracy theories or scientific progress. In the epilogue, Schaefer (2022, 231) suggests that cogency theory enhances our understanding of scientific success alongside its social character and sustained engagement of the world. However, a considerable portion of the book leans heavily on cogency theory as the main lens through which science is explained, potentially overlooking the chance to weave in additional dimensions for a fuller and more nuanced exploration of scientific inquiry. My response invites Schaefer to explore how these other elements might expand or adjust his depiction of science.

Emotion and Conspiracy Theories

This first section aims to accurately summarize Schaefer's discussion of conspiracy theories and science. Upon my initial reading of *Wild Experiment*, I perceived it as challenging the traditional dichotomy between emotion and reason, an argument that I was well-acquainted with from my undergraduate studies in psychology. There I learned that thinking and feeling are so deeply interwoven that attempting to separate them into distinct categories is not only impractical but also misleading. This perspective echoes the longstanding nature versus nurture debates, where efforts to isolate one aspect from the other oversimplify the intricate interplay that shapes human behavior and development.

However, it quickly became clear that Schaefer is arguing for a stronger thesis. Instead of viewing reason and emotion as intertwined entities, he posits thinking itself is a manifestation of feeling. As he (2022, 5) contends, there is "no thinking that is not feeling" and to change our minds is to change how we feel (2022, 9). Or more succinctly: "thinking is feeling" (2022, 29).

For those adhering to a more conventional perspective, which acknowledges the entanglement of reason and emotion but does not equate reason entirely with emotion, a question arises: How do we find the truth? Traditionally, reason is seen as the faculty that evaluates the congruence between our thoughts and reality. If we were to suggest that truth can be discerned through emotion alone, then the challenge becomes how to determine the reliability or "truthfulness"

of our feelings. While the process of reasoning towards the truth often brings a sense of satisfaction, it is conceivable to encounter situations where the truth is discomforting or painful, such as the moment one acknowledges an addiction. How do we pursue the truth when it is not always pleasurable?

Schaefer addresses this dilemma by drawing upon David Hume's differentiation between hot and cold emotions. Hot emotions, like anger, fear, and love, move us to direct action because they are pleasurable. Cold emotions, which include the fear or shame associated with potential errors or deceit, also motivate action but on slower time scale. For instance, an individual grappling with addiction might opt for decisions that favor their long-term emotional health, despite potential short-term discomfort. Cold emotions allow one to endure uncertainty and resist the temptation to embrace beliefs merely because they are desirable. Ideally, hot and cold emotions work together and balance out the limitations of the other.

With this framework, Schaefer explains the lure of conspiracy theories and the success of science. According to a more traditional understanding of reason and emotion, conspiracy theories are a failure of thinking correctly. But for Schaefer (2022, 34), this cannot account for the role of emotions in reasoning. As he says, "Conspiracy theory doesn't try to explain. It aims to electrify the world with significance, saturating it with click." Those who accept conspiracy theories believe because it feels good; they want it to be true and will artificially simplify the messiness of the world to experience more pleasure. Conspiracy theorists, in his view, have removed the dampeners on their emotions provided by the cold emotions (2022, 53).

By contrast, science can uncover truths and facts about the natural world because it harnesses the power of cold emotions to maintain its immune system against the pleasure of confirmation bias (2022, 55). This establishes a delicate balance between the joy derived from engaging with the world and the discipline to resist seductive but unfounded "truths." The interplay of pleasure with a vigilant skepticism forms the core of scientific inquiry, allowing it to navigate and demystify the complexities of the natural world without succumbing to the simplistic and emotionally gratifying narratives favored by conspiracy theories.

Three Types of Conspiracy Theorists

In this section, I explore the reasons people are drawn to conspiracy theories by proposing three distinct categories. My concern is that while Schaefer's analysis offers valuable insights into some aspects of conspiracy theory psychology, it might not capture the full range of those who subscribe to such theories.

The first type of conspiracy theorist can be dubbed the "True Believer" and is vividly captured by *Wild Experiment*. These individuals approach conspiracy theories with enthusiasm because they provide a thrilling alternative narrative that transforms the mundanity of the real world into an intricate, gamelike

puzzle. They enjoy taking the adventure down the proverbial YouTube rabbit hole, where each click leads to increasingly novel and unorthodox interpretations of reality. It is hard to convince these individuals of an alternative way of considering the facts because their beliefs feel too good to give up.

In my experience, this type of conspiracy theorist is best exemplified by those who deny that the US landed on the moon in 1969, a view which seems to be popular with young males who consume lots of social media. The moon landing conspiracy theory is not just about disbelief in mainstream sources of information; it is about the joy of assembling an alternate version of reality from the pieces found along the way, challenging the status quo, and transgressing what is acceptable knowledge.

The next type of conspiracy theorist can be called the "spiritually anxious." This classification diverges significantly from the True Believer because of its foundation in intense negative emotions, predominantly fear, and suspicion towards perceived outsiders. Unlike the True Believer, who delights in the exploration and challenge of conventional narratives, individuals within this information bubble are often driven by a profound sense of distrust and anxiety about forces or entities they believe are working against them or society at large.

This category of conspiracy theorist frequently belongs to conservative Christian groups, particularly those influenced by dispensational theology. This theological perspective can lead followers to harbor irrational fears towards public figures, perceiving them as potential Antichrists, and to possess exaggerated concerns about technology and the emergence of a one-world government. It often encourages the aggressive confrontation of nations labeled as "evil" in an effort to fulfill biblical prophecies. For instance, Pat Robertson (1991, 37, a well-known televangelist, in his book *New World Order*, suggests that even well-meaning presidents are unwittingly furthering the agenda of a secretive group aiming to establish a global dominion under the influence of Lucifer and dark spiritual forces (Clouse et al. 1999, 132).

I worry that this second type of conspiracy theorist does not fit well in the framework of *Wild Experiment*. Schaefer would presumably explain these groups by the pleasure derived from animosity towards out-groups. For those who grow up in these communities, however, conspiracy theories are often not enjoyable and cause spiritual trauma that comes from living with a pervasive sense of danger, mistrust, and paranoia. Individuals are conditioned to be perpetually vigilant against an invisible adversary believed to be manipulating global events and power structures.

An important aspect that is absent from Schaefer's analysis is the role of leadership within these communities in leveraging conspiracy theories as tools of control. By framing certain groups as different and alien, conspiracy theories effectively create out-groups, a strategy employed to solidify the authority of religious leaders. This mechanism might indeed generate a sense

of engagement or "click" for the leaders, yet it results in an overall net-negative emotional satisfaction for the followers themselves. While I doubt Schaefer would disagree with the way emotions can be manipulated to reinforce existing power structures, *Wild Experiment* does not say much about this possibility. As Schaefer continues to expand his research program on cogency theory, I think there is much more he can add to integrate fearful emotions and social control into his account of conspiracy theories. However, addressing this dimension might necessitate shifting away from the primacy of emotional pleasure as the central explanatory variable.

The third and final type of conspiracy theorist are those who live in "skeptical information environments." In my experience, many people in Christian communities accept conspiracy theories in the way high school students memorize facts for a history class: no excitement of "click," only the drudgery of mental effort. Most teachers have the experience of being unable to get students to emotionally engage class material. Likewise, many students in Christian high schools and youth groups can be forced to internalize information when they rather be socializing or playing video games. One way to identify this type is that they often hold irreconcilable views without feeling the emotional need to resolve them. They comply with the expectations of their community, providing the "correct" responses with no genuine curiosity or inclination to investigate further.

This raises the question: do humans accept all beliefs because of emotional investment, or are some beliefs accepted "secondhand" from trusted figures from one's communities? Schaefer's position can be read in a way to say that we emotionally vet all our beliefs, reminiscent of Descartes supposedly subjecting all his beliefs to critical doubt in his *Discourse on Method*. While I would agree in general with Schaefer's (2022, 11) statement that "[g]ood knowledge isn't knowledge that has been drained of feeling," I would argue that we also hold many beliefs that are emotionally inert. William James (2000, 91) captures this well, "Truth lives . . . for the most part on a credit system. Our thoughts and beliefs 'pass' so long as nothing challenges them, just as bank-notes pass so long as nobody refuses them." An example might be my belief that water is composed of one water and two hydrogen atoms or that my mother was born in the state of Alabama. These beliefs are accepted without question until a sense of discomfort suggests that it might call for closer examination. Emotion, in this context, acts more as a detector for questionable beliefs rather than as a source of pleasure, but it takes too much effort to assess all our new beliefs. As two psychologists have recently argued, susceptibility to partisan fake news is better explained by lack of reasoning (i.e., laziness) than by motivated reasoning (i.e., a dopamine hit of pleasure) (Pennycook and Rand 2019).

If this is correct, then it requires a reevaluation of why some individuals are susceptible to conspiracy theories. The issue may not lie in an overreliance on hot emotions or a lack of concern for accuracy, but in the low quality of secondhand information that individuals receive. As noted by a scholar in scientific communication (Kahan 2017, 1), "The problem, in short, is not a gullible, manipulated public; it is a polluted science communication environment." Skepticism towards science is often fueled by an information landscape that poses significant challenges for the average person to navigate independently. Encouraging laypeople to apply their cold emotions is insufficient if they lack the background knowledge to make informed decisions on their own and cannot easily identify sources of reliable information.

What Makes Science?

Another concern that I had while reading *Wild Experiment*: it seems to place conspiracy theorists and scientists on a continuum, with emotional sophistication (represented by scientists) at one end and emotional naivety at the other. Schaefer (2022, 9) argues that scientists are motivated by cold emotions and a fear of making mistakes, asserting, "Science possesses a potent mechanism for self-correction: our inherent desire to be accurate." This contrasts with conspiracy theorists, who are depicted as simplifying reality to indulge in the satisfaction derived from "clicks." But I think this oversimplifies a complex reality: scientists, like anyone else, are susceptible to confirmation bias. As I have previously discussed, individuals can fall into the trap of conspiracy theories even when employing cold emotions, showing that the dichotomy between scientists' and conspiracy theorists' emotional engagements may not be as clear-cut as suggested.

I think the psychological literature shows that most humans, regardless of scientific training, are inclined to weigh information (using the cold emotions), otherwise we would then lack the skills we need to navigate modern life. Without "epistemic vigilance," we would fall for every get-rich-quick scheme or other plan to take our money and attention (Sperber et al. 2010). Because of the importance of discernment regarding information, even children are not automatically trusting when it comes to accepting beliefs from others (Sperber et al. 2010, 377). Children have been shown in developmental studies to resist testimony that conflicts with their own prior observations. They can also grasp the difference between stories that aim to represent reality and those that do not, can monitor informants to assess their reliability, and will correct a parent/teacher who gives inaccurate information.

Other research shows that lay communities are not impermeable echo chambers (Barberá et al. 2015; Dvir-Gvirsman et al. 2016; Gentzkow and Shapiro 2011). While people express a preference for information that is consistent with their own previous beliefs, they do not automatically reject

information from other ideological sources (Scharrer et al. 2017). Rather than viewing the public as emotionally credulous consumers of misinformation, it is better to see much of the public as constrained consumers who reason by seeking information and beliefs from cultural groups with which they identify (Kahan 2017, 9). The difference is that the public will not believe just anything but can be misled by relying upon faulty information from trusted sources. "Tribal rationality," from this perspective, is not an illogical tendency to believe whatever your superiors tell you but is rather a useful shortcut that relieves one of the cognitive burdens of having to assess someone's trustworthiness (Ehret et al. 2017; Goldberg et al. 2019).[1] Many conspiracy theorists are driven not by the allure of "click," but by the desire to avoid work, which, like physical labor, can be unpleasant. Increased analytic thinking has been shown to reduce belief in conspiracy theories, it is just difficult to motivate the public to engage in such scrutiny. As the psychologist J. W. van Prooijen (2018, 90) says, "Analytic thinking reduces the tendency to believe conspiracy theories, and, consistently, efforts to stimulate analytic thinking (e.g., education) are associated with decreased conspiracy beliefs."

I would also not agree that scientists are primarily characterized by their reliance on cold emotions. This perspective may unwittingly perpetuate a historical stereotype that attributes exceptional emotional and intellectual virtues to scientists that are supposedly uncommon in the rest of society. As the historian Steven Shapin (2008) has shown, this notion has deep roots, often linked to narratives about "the scientific method" and its purported capacity to foster intellectual honesty. For example, the French physiologist Claude Bernard (Daston and Galison 1992, 122) once remarked, "The experimenter's mind differs from the metaphysician's or the scholastic's in its modesty because experiment makes him, moment by moment, conscious of both his relative and absolute ignorance. In teaching man, experimental science results in lessening his pride more and more." This quote underscores the idea that scientists, through their engagement with experimentation, gain a unique awareness of the limits of human understanding, equipping them to avoid baseless speculation and superstition.

However, acknowledging the "moral ordinariness" of scientists offers a more grounded and realistic perspective. Research in social psychology shows that academics, like individuals in any other sector, are susceptible to the same coercive social pressures and groupthink prevalent throughout wider society (Duarte et al. 2015). This vulnerability often manifests as confirmation bias, where researchers are inclined to interpret data in ways that reinforce their existing beliefs, rather than seeking evidence that might contradict them. Echoing this sentiment, an expert (Goodstein 2002) on scientific misconduct observes, "Scientists are not disinterested truth seekers; they are more like

players in an intense, winner-take-all competition for scientific prestige and the resources that follow from that prestige." This view challenges the idealized image of scientists as emotionally detached, highlighting the complex human dimensions of scientific endeavor.

A better way to account for the success of science is to focus on its social structure. Given the limits individuals encounter in seeking truth, we in modern societies solve the problem of distinguishing good from bad information by forming institutions and collectively practicing intellectual vigilance through the structured contestation and deliberation of different points of view (Sperber et al. 2010, 383). Rationality emerges from critical interaction with diverse perspectives and by relying on others to help gather and evaluate evidence. As the psychologist Jonathan Haidt (2013, 105) argues,

> Each individual reasoner is really good at one thing: finding evidence to support the position he or she already holds, usually for intuitive reasons. We should not expect individuals to produce good, open-minded, truth-seeking reasoning, particularly when self-interest or reputational concerns are in play. But if you put individuals together in the right ways, such that some individuals can use their reasoning powers to disconfirm the claims of others, and all individuals feel some common bond or shared fate that allows them to interact civilly, you can create a group that ends up producing good reasoning as an emergent property of the social system.

The success of science is best attributed to the social nature of reasoning, which is embedded within formal institutions. While individual scientists may struggle to identify flaws in their own work, the system incentivizes vigilance over the work of peers to prevent any unfair advantages. Scholars are motivated to expose subpar scholarship and to remain open to innovative and potentially groundbreaking theories, understanding that overlooking such theories could place them at a competitive disadvantage (Turner 2013, 266). This mutual oversight ensures that only competent scholarship is advanced, thereby enhancing the discipline's social authority. A scholar's credibility is derived from their affiliation with reputable institutions. Consequently, our trust in experts is fundamentally a trust in the integrity and rigor of the institutions that validate their work (Menand 2010, 105). We should believe in scientific experts not because of their cold emotions but because we believe in the institutions in which they participate (Wells 2013, 85).

If this section is accurate, then much more needs to be added to the argument of *Wild Experiment* to account for why science generates reliable knowledge. While the concept of "click" undoubtedly contributes to the narrative, it would be beneficial for Schaefer to enrich his analysis by weaving cogency theory

together with additional dimensions of scientific inquiry. This would offer a more comprehensive understanding of the mechanisms through which science achieves its reliability, emphasizing the importance of the social structures and institutional practices that underpin scientific progress.

Kuhn and the Training of Desire

Perhaps the place where I had the most disagreement with Schaefer was with his characterization of Thomas Kuhn. I do not know Michael Polanyi's work well enough to comment on its similarity to Kuhn, or to the influence of the former on the latter. But I think Kuhn, for all the attention and scholarship on his work, still has insights to offer the field of science and religion (Reeves, forthcoming).

Kuhn spent his career post-*Structure* clarifying that he did not advocate for relativism, a plea that I find persuasive. He proposed a Darwinian model of scientific progress, which says that while scientists cannot claim to have attained absolute truth—where theories perfectly reflect reality—they can judge that some theories are superior to others. Indeed, that scientific communities do transition to new and better (in terms of puzzle-solving ability) paradigms is a central thesis of *Structure*. And his incommensurability thesis is just the idea that there is no common standard to judge between competing paradigms, which I think fits the messy history of scientific change.

Kuhn's theory of tacit knowledge is relevant to Schaefer's point about cognitive emotions in the scientific process. While I would hesitate to attribute to scientists any traits not found in other professions, I would agree with Schaefer that scientists have learned to use their cold emotions—a desire to avoid error and the shame that comes from mistakes—in their scientific practice. But I think this point can be developed further. For example, this question remains unanswered in *Wild Experiment*: Is it just people with this emotional profile that are attracted to the sciences, or is there something about scientific training that teaches one to use cold emotions? What Kuhn can offer to cogency theory is an account of scientific training, describing how the emotions of scientists are shaped by scientific practices.

Science for Kuhn "was much more like the work of the goldsmith than the contemplative art of the philosopher" (Buchwald and Smith 1997, 364). Many have missed or underplayed Kuhn's theory of tacit knowledge because *Structure* has been read in an epistemological (or what Schaefer might call cognitivist) way. Because of the focus on epistemology, Kuhnian paradigms were interpreted as a core set of *beliefs* or a worldview that guides scientific inquiry, without which inquiry would be impossible. Scientists have difficulty talking to those who are committed to different paradigms because a paradigm supplies the lens through which one views the world. Acceptance of a new paradigm is like a religious

conversion or Gestalt switch—a sudden shift in belief and perception—because there is no common criterion with which to adjudicate between rival paradigms.

An epistemological interpretation of Kuhn is commonplace—indeed, Kuhn himself sometimes promoted it—but misses the more original and important meaning of paradigm given by him. As Kuhn (2012, 187) says in the postscript, "The paradigm as shared example is the central element of what I now take to be the most novel and least understood aspect of this book." Though he uses the word in multiple ways, the most original meaning of paradigm is that of an *exemplar*, a concrete achievement that guides the subsequent course of research in a discipline. Exemplars are specific problem solutions, not universal theories or principles, which provide scientists with a shared research trajectory. Because paradigms are exemplary ways of intervening in particular situations, advocates of those paradigms will try to generalize the skills and actions needed to perform the exemplar to new situations. As Rouse (2003, 108) argues, "accepting a paradigm is more like acquiring and using a set of skills than it is like understanding and believing a statement."

Dropping the "mentalism" behind the notion of paradigm transforms the meaning of incommensurability (Warwick and Kaiser 2005, 405). When members committed to different paradigms have trouble communicating, the problem is not that they cannot construe one another's sentences or follow one another's arguments, but that they cannot grasp the significance of what the other scientists are doing (Rouse 2003, 112). As Rouse (2003, 112) explains, "The more basic issue between proponents of alternative paradigms concerns how to proceed with research: what experimental systems or theoretical models are worth using, what they should be used for, what other achievements must be considered, and what would count as a significant and reliable result." Without an exemplar to provide a common context for the solving of problems, it is difficult to agree to the future course or even proper interpretation of research (Kuhn 2012, 200).

Kuhn's exploration of scientific skill as an embodied practice offers a compelling framework for understanding how scientific emotions (both hot and cold) are cultivated. The sensation of achieving a "click" is not innate; it must be nurtured through education. Although a natural curiosity is common to humanity, the mental discipline to pursue learning is not universal. Learning presents a challenge because it initially involves absorbing information that requires effort and does not immediately gratify. Taking chess as an example, a novice must place faith in their instructor, believing that the teacher has their best interests in mind and can illuminate aspects of the game that the student cannot yet perceive (Herdt 2010, 28). It is often necessary to find motivation in external rewards—whether it is the desire to make one's parents proud or the promise of a treat after a lesson—to dedicate oneself to learning. Only after mastering the fundamentals can one derive enjoyment from the game itself.

Mastering science shares similarities with learning chess, where the initial drive often stems not from immediate enjoyment of the subject but from the anticipation of rewarding outcomes through perseverance. Becoming a physicist, for example, is more than just memorization or reflecting upon the inner meaning of theories; it involves the joy derived from mastering skills such as identifying forces, masses, and accelerations in new physical situations (Kuhn 2012, 189). The acquisition of tacit knowledge brings with it the satisfaction of intuitive understanding and the ability to solve complex problems with ease. Tacit knowledge is typically acquired through immersion in a community already proficient in the field—similar to how one learns to cook by working under an experienced chef. Kuhn's account of scientific progress, then, is also an account of scientific training, showing how the emotions of scientists are formed and calibrated in a larger community.

In sum, I believe Kuhn's perspective on scientific training complements and could enrich Schaefer's discussion on the influence of emotions in scientific inquiry. I am curious to see if Schaefer views this exposition of Kuhn's insights as a constructive addition to his research program.

Conclusion

This paper has used Schaefer's important work in *Wild Experiment* to explore the complex relationship between emotion, conspiracy theories, and science. While Schaefer's arguments for the connection between emotion and reason is persuasively argued, my discussion has highlighted areas where Schaefer can expand and deepen his analysis. I have argued for more complexity in the way people are drawn into conspiracy theories, the reason why science successfully uncovers reliable knowledge, and the role of training in shaping pleasure and emotion.

I conclude by posing some last questions. In discussing the motivations behind scientists' pursuit of their fields, *Wild Experiment* attributes a primary role to pleasure. Although scientists may be more disciplined than conspiracy theorists, the thrill of discovery, or the "click," justifies the endeavor. But this emphasis on pleasure raises questions: is the pursuit of pleasure inherently selfish, tied to personal prestige and status? Or do our natural inclinations lead us beyond self-interest towards a greater good, as suggested by Aristotelian ethics? Essentially, is there a convergence between what is pleasurable and what is good, or is the pursuit of science always an extension of self-interest? These are not trivial questions, of course, but if Schaefer were to address larger questions of human nature, he would have more explanatory resources than just pleasure upon which to explain human behavior in the scientific and religious spheres. A nonreductive account of human nature would point to higher goods and pleasures beyond "click." The power of Schaefer's book comes from his intense focus on examples of the power and danger of pleasure, but I would

be very interested if he were to bring his analytic insight to bear on larger questions of human nature.

I look forward to Schaefer's response and to following his research agenda over the coming years.

Note

[1] Kahan (2016, 11): "It is perfectly rational for them consciously to seek out guidance from such individuals, then, or to form unconscious habits of mind that privilege them as sources of guidance on what science knows. This process is admittedly insular, but it clearly works in the main."

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