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Overlapping Magisteria: Motivated Cognition and the Places Where Science and Religion Mingle

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ABSTRACT

Scientific insights can help us better understand ourselves, others, and the world we share. These insights can also radically challenge our sense of who we are, our place in the universe, and the very nature of the universe. When science communicators venture into this metaphysical terrain they quickly encounter dearly held religious beliefs. Where these two meaning-making systems overlap can often become places of friction as communicators and audiences alike are asked to balance our need for accuracy with our needs for psychological security, all while humbly considering the limitations of scientific inference. This paper brings together research on motivated cognition and science communication in order to better understand these challenges and to offer a way to navigate this potentially fraught terrain.

Keywords: science and religion, motivated cognition, metaphysics, science communication

Editors' Comment

*In this manuscript, **Jonathan Morgan, Ph.D., (2015-2017 Fellow)**, revisits Gould's portrayal of science and religion as non-overlapping magisteria (NOMA) and rightfully reminds the reader that they often fail to stay within their boundaries. In the science classroom, studying neurobiology can evoke questions of free will just as exploring the vastness of the universe can cause us to question our own importance in the great scheme of things. Such questions are not easily answered by science alone and extend into the realm of the metaphysical. Learners often have preconceived ideas about concepts such as these - often informed by their religious backgrounds; what they bring to the classroom will certainly impact their ability to engage in the content. Morgan suggests that current research into motivated cognition could help educators better navigate the metaphysical space between science and religion to more effectively engage students.*

Introduction

The great science communicator Stephen Jay Gould (1997) coined the now infamous phrase *nonoverlapping magisteria* (NOMA) to try and broker a détente in the conflict between science and religion. While the name was novel, the idea is old: science has teaching authority over facts while religion's domain of authority covers values (the fancy word "magisteria" comes from the Latin for teacher: *magister*). Or as Galileo put it, the purpose of religion "*is to teach us how one goes to heaven, not how heaven goes*" (1615, para. 25). The idea may be old, but it is also quite current. The National Academy of Sciences (2021) still uses a version of this idea to argue that religion and science are compatible:

> Science and religion are based on different aspects of human experience. In science, explanations must be based on evidence drawn from examining the natural world... Religious faith, in contrast, does not depend only on empirical evidence, is not necessarily modified in

> the face of conflicting evidence, and typically involves supernatural forces or entities… In this sense, science and religion are separate and address aspects of human understanding in different ways. Attempts to pit science and religion against each other create controversy where none needs to exist. (para. 3)

This statement expands the focus of religion from values to anything extra-empirical, but the spirit is the same. If we could all just abide by this simple boundary then the border skirmishes between religion and science would settle down, right?

As intuitive and crisp as NOMA might be, it does not appear to be how we actually engage the meaning-making systems of religion and science. Religions clearly deal with non-empirical content and it may be tempting to try and fence that terrain off. But, these supernatural entities are conceived of as directly interacting with very physical experiences, such as illnesses (Laird et al., 2017), working conditions (Taussig, 1980), or even the most ordinary parts of one's everyday life (Luhrmann, 2012). Where then should we put the fence? Faith without any material consequence is not going to be satisfying to most religious people. Most of the critiques of NOMA have focused on this side of the overlap– religions clearly deal with domains that we consider empirical (e.g., Dawkins, 1998; Jacoby, 2010; Stenger, 2007).

The focus of this essay is on the other direction. Science may profess to restrict itself to matters of empirical evidence. But scientists and the public alike rarely stay confined to the intersubjectively verifiable. Neurocognitive studies show us how substance use impacts our dopamine system (Leshner, 1997; Volkow & Li, 2005), but we then take that evidence and leap to conclusions about metaphysical subjects such as free-will (Greene & Cohen, 2004). The complexity and distance of that inferential leap is huge and lands well beyond the territory of facts. When we look at how people actually engage with scientific and religious meaning-making systems, it is not just religion that ventures onto scientific turf, science regularly ventures into the metaphysical terrain that NOMA supposedly ceded to religion.

There are many fronts on which scientific research is taken as evidence of metaphysical positions. Gods (Dawkins, 2008), dualism (Crick, 1994), teleology (Krauss, 2017), morality (Harris, 2010), free-will (Coyne, 2014), etc.– these are just a few of the metaphysical positions which some science communicators are attempting to annex into the domain of empirical facts. The relevance of empirical evidence on these matters is philosophically complicated, to say the least. Belief or disbelief in God and free-will, for example, are two of the antinomies that Kant (1781/1999) argued cannot be grounded by empirical reason. Plenty of work has been done since Kant, of course, but I think we can agree that the move from focused scientific studies to metaphysical claims is far from straightforward.

Rather than attempt to chart some path or erect some boundary here, I think it is helpful to stick with the practical reality that we all move quite readily between questions of fact and questions of morality, value, and metaphysics. When we recognize that we are all exploring this rocky terrain, then we can begin to ask different sorts of questions. Instead of asking whether or not neurocognitive evidence denies free-will, we can begin to wonder why some people believe it does while others do not? If we can leave behind the idea that these are purely rational debates, then we can more clearly see why this terrain is so contested.

In this paper, I suggest that research on motivated cognition can help us navigate this metaphysical borderland between religion and science. Not only does this research help us see why and how people move within this terrain, it can also (hopefully) foster a sense of humility and compassion as we recognize that our movements are pulled by more than just the pursuit of truth. My hope is that recognizing the other needs that shape how we process information will equip us to explore this ambiguous space together rather than stake it out as a battleground.

Motivated Cognition

The way we process information is shaped by various goals other than accuracy (Kruglanski, 1996; Pyszczynski & Greenberg, 1987). While this may seem, and is, psychologically complex, the effects are quite ordinary. Think of watching a basketball game with a friend who supports the opposing team. Your judgments about the referees' calls are almost certainly going to be different from your friends. Sure, it would be nice to think that she is the one being biased, but neither of you are trying to be objective about this. You are both motivated to interpret the calls in a certain light. This is motivated cognition.

In the sports example we may be playfully aware of our bias and jokingly defend our opinions while knowing we are biased. But often the goals that shape how we process information are working without our awareness and are far from joking matters. For example, Kahan (2017) has built a research program looking at the way motivated reasoning influences how people think about climate change, vaccinations, and the disposal of nuclear waste. Similar to the sports example, how people interpret evidence that weighs on these issues depends heavily on their social identity. The motivation that guides reasoning here is the motivation to maintain affiliation with one's group. As Kahan (2017) puts it, *"[we] have a bigger personal stake in fitting in with important affinity groups than in forming correct perceptions of scientific evidence"* (p. 1). In other words, our need to belong exerts a stronger pull on the way we process information than our need to be correct.

While we may be tempted to shake our heads at the irrationality of this behavior, doing so would miss the ways in which motivated cognition is deeply rational. Holding and expressing different beliefs from your social network can be very risky– it risks being marginalized within that network and having less access to the material and emotional support our groups provide (Over, 2016). In other words, prioritizing our need to belong over our need to be right is a rational assessment of the situation. Perhaps more importantly, bemoaning the irrationality of motivated cognition also tempts us to avoid recognizing that the way we scientists process information is also drawn by needs other than accuracy.

Metaphysical Motivations

The social goal of belonging is not the only motivation that shapes our thought processes. The field of experimental existential psychology (Pyszczynski et al., 2010) has shown that our needs for a sense of autonomy, self-worth, meaning, certainty, control, and continuity after death all shape our thoughts, attitudes, and actions (Hart, 2014). For example, when people's sense of control and security is threatened, they tend to lean more strongly on the cultural systems that have provided them with felt security in the past (Kay et al., 2008). Similarly, disruptions in one's sense of self-esteem can often lead to a compensatory defense of their in-group (Sherman & Cohen, 2006). In other words, people act and interpret information in order to preserve their sense that these psychological needs are being met.

Importantly, these *existential needs* are not wholly distinct from the social motivation to belong. Metaphysical positions on issues, ranging from agency to meaning are deeply interwoven with the communities to which we belong. For Protestants in the US, a strong position on free-will may be a key part of their worldview, but in other cultural contexts this belief may be less central. Rather than see these existential motivations as a distinct domain, we can think of them as particularly sensitive issues that tie together a sense of who we are, to whom we belong, and what the world is like.

Rather than consider all of these diverse metaphysical concerns, each of which likely has its own psycho-social dynamics, let us focus on the issue of free-will. Debates about the nature or existence of free-will go back thousands of years. More recently, psychologists have shifted the question from the character of free-will to the determinants of belief in free-will (Baumeister, 2008;

Baumeister & Monroe, 2014). The studies that have grown out of this shift reveal that whether or not we believe in free-will is largely influenced by factors other than philosophical reflection and that this belief may address important personal and social needs.

Taking up the first of these points, the degree to which someone believes in free-will appears to vary depending on contextual and personal factors. Some evidence suggests that the belief may be the majority position cross-culturally (Sarkissian, 2010), but researchers in the US found that religious and conservative individuals tend to be more confident in their beliefs in free-will (Baumeister & Monroe, 2014; Carey & Paulhus, 2013). There is also evidence that belief in free-will increases when people are confronted with antisocial behaviors (Clark et al., 2014) and decreases when people are confronted with their own desires (Ent & Baumeister, 2014). In other words, the strength with which we hold this metaphysical position ebbs and flows with our changing social and subjective circumstances.

The belief in free-will also serves important functions. For example, Vohs and Schooler (2008) found that priming students to disbelieve in free-will led to increased student cheating on academic tests within the experiment. Subsequent similar studies found that participants who were encouraged to reject the belief in free-will were less helpful and more aggressive in social settings (Baumeister et al., 2009). Conversely, experimentally bolstering one's sense of free-will has been found to increase volunteering (Stillman & Baumeister, 2010) and foster more reflection on one's past misdeeds (Alquist et al., 2015). There are also more personal functions served by this belief. Crescioni et al. (2016) found that belief in free-will corresponded with lower stress, greater happiness, more experiences of meaning in life, greater self-efficacy, higher self-worth, and stronger commitment in close relationships. This correlational evidence is backed up by experimental studies finding that reduced belief in free-will tended to impact people's willingness to exercise self-control (Rigoni et al., 2012). In short, the belief in free-will appears to be functionally linked with important social and personal outcomes.

What I am suggesting is that the fluctuation and the function of this belief are connected. Bolstering one's belief in free-will may provide people with a way to signal their social affiliations, nurture their sense of self-control and efficacy, preserve an experience of social cohesion, and perhaps regain a sense of meaning. Not everyone will relate to this belief in the same way, but for those people whose sense of agency is interwoven with these positive outcomes then it is likely that they will be highly motivated to maintain that belief.

From the perspective of motivated cognition, the psycho-social needs met by metaphysical beliefs such as free-will suggests that we are not going to be neutral in our judgments about these matters. Rather than dispassionately weighing the evidence for or against the issue, we are going to be drawn towards the positions that help meet our needs at any given moment.

Consequences for Science Communication and Education

This matters for science communication and education because it is often scientists that are attempting to take possession of these metaphysical areas (e.g., Bargh, 2005; Kaufman & Baumeister, 2008; Wegner, 2017). For example, the experimental designs used in the studies mentioned above regularly use some form of science communication as the anti-free-will condition. Vohs and Schooler (2008) used a quote from Francis Crick claiming that "who you are is nothing but a pack of neurons" (1994, p. 3) This is typical of the designs as Baumeister and Monroe (2014) describe: "participants are randomly assigned to read a series of statements that either deny the reality of free will (e.g., '*Science has demonstrated that free will is an illusion*') or that express scientific facts irrelevant to free will (e.g., 'Oceans cover 71% of the Earth's surface')" (p. 16, emphasis added). Why is science being used as the authority here when this is a metaphysical claim?

The effectiveness of these experimental designs reveals a common association between science and the belief that free-will is an illusion. As Vohs and Schooler put it: "rational, high-minded people

- including, according to Crick, most scientists - now recognize that actual free will is an illusion" (Vohs & Schooler, 2008, p. 50). This is not an unwarranted association. As I have noted throughout, many prominent science communicators and educators, from neuroscientists (Libet et al., 1983) to biologists (Coyne, 2014), to secular proselytizers (Harris, 2012), all argue that science disproves free-will. It is no surprise therefore to regularly see headlines such as "free will could all be an illusion, scientists suggest after study shows choice may just be brain tricking itself" (Griffin, 2016) or "There's no such thing as free will" (Cave, 2016). In other words, this is not an obscure association limited to a small community of philosophical scientists. Instead it is a deliberately public example of science advocates attempting to stake out terrain that was supposedly ceded to religion. With motivated cognition in mind, what do we expect to be the consequences of this incursion?

Motivated cognition cuts both ways here. Simply because we are researchers, does not mean we are immune to the pull of needs and goals on our thought processes. As science increasingly becomes not just a method of inquiry but a social identity (Carlone & Johnson, 2007; Kim & Sinatra, 2018), it also becomes increasingly easy for those of us who adopt that identity to accept what is touted as scientific fact without full scrutiny. In other words, it is easy to adopt beliefs that are presented as part of the scientific worldview, even if the evidential grounds for those beliefs are somewhat shaky.

Conversely, if you do not see science as part of your identity, or have experienced science as adversarial, then the beliefs presented by scientists are likely to be rejected without full or fair scrutiny. Consider Kahan's (2017) description of how people engage with scientific information that diverges from their group's beliefs: "What they are doing instead [of objectively weighing evidence] is using the consistency of new evidence with their groups' positions to determine whether that evidence should be given any weight at all" (p. 3). In other words, when scientists present metaphysical opinions as scientific conclusions, it obstructs any engagement with the actual evidence among those who disagree.

In order to navigate these dynamics in the classroom and lecture halls, it is crucial to prioritize relationships over information. Establishing trust by demonstrating integrity and benevolence alongside your expertise (see Hendriks et al., 2016 and Mayer et al., 1995), is a necessary precondition for avoiding this epistemic polarization, especially for those students who do not necessarily see scientists as trustworthy authorities.

The risk here is not that people will simply reject arguments about free-will. Instead, when science communicators venture onto metaphysical grounds, they risk threatening broad swaths of the public who hold different theological views. In early research on motivated cognition, Kahan and colleagues (2011) found that when people were presented with a highly credentialed scientist who was advocating for a position with which they disagreed, they were significantly less likely to rank that scientist as an expert. In other words, they did not dismiss the argument, they dismissed the source.

When science communicators are representing capital "S" Science while staking out metaphysical disagreements with religious worldviews, they risk undermining a broader sense of trust in the expertise of science. This is risky because there are plenty of other issues around which scientists are making well-founded inferences that people may still dislike–evolution, climate change, and vaccinations are among the most well studied. We make it more difficult for public buy-in on these contentious issues when science communicators are also making threatening incursions onto terrain where they cannot actually stand on solid empirical ground.

The Challenge and Opportunity of Motivated Cognition.

My hope is that thinking about this through the lens of motivated cognition helps to remove the judgment of some audiences as stubbornly irrational. Instead, we can direct our attention to the ways in which what may seem like a rational or irrational engagement with the facts is being shaped by various needs that we all have. If people perceive those facts—or the position those facts are being used to support—as threatening to their sense of self or their sense of belonging, then they are very

rationally going to prioritize those needs over their need for accuracy. This is true for *them*, but it is also true for *us* as scientists. Try as we might, none of us are neutral assessors of data.

As science communicators and educators, our aim is often to help people. Whether that is through sharing useful information or simply trying to share a sense of wonder and curiosity, I believe that one of our core goals is for our students or audience to have a slightly richer life after our meeting. All too often, however, we run into pitfalls. The atmosphere of wonder becomes a contentious arena of debate. One of the ways in which we can be the most helpful is to prioritize the person over the information. If we can humbly recognize the way our own sense of self and belonging is wrapped up within our research, then perhaps we can also begin to see how others are navigating their own needs as they engage with that same research.

In Gould's essay proposing NOMA, he recognizes that the reality differs from crisp separation of facts and values:

…this resolution might remain all neat and clean if the nonoverlapping magisteria (NOMA) of science and religion were separated by an extensive no man's land. But, in fact, the two magisteria bump right up against each other, interdigitating in wondrously complex ways along their joint border. Many of our deepest questions call upon aspects of both for different parts of a full answer. (p. 19)

Our deepest questions lie within that metaphysical terrain between the magisteria of religion and science. To suggest that either meaning-making system has sole claim to these questions is to provoke conflict and preclude any genuinely collaborative inquiry into what it means to be human. If, however, we can recognize that our journeys in this terrain are pulled by more than our need for accuracy, then perhaps we can humbly and compassionately explore this land together.

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