

Claremont Colleges

## Scholarship @ Claremont

---

Scripps Senior Theses

Scripps Student Scholarship

---

2022

### Invisible Things: An Inquiry into the Laws of Nature

Abigail Tulenko

Follow this and additional works at: [https://scholarship.claremont.edu/scripps\\_theses](https://scholarship.claremont.edu/scripps_theses)



Part of the [Epistemology Commons](#), [Metaphysics Commons](#), and the [Philosophy of Science Commons](#)

---

#### Recommended Citation

Tulenko, Abigail, "Invisible Things: An Inquiry into the Laws of Nature" (2022). *Scripps Senior Theses*. 1879.

[https://scholarship.claremont.edu/scripps\\_theses/1879](https://scholarship.claremont.edu/scripps_theses/1879)

This Open Access Senior Thesis is brought to you for free and open access by the Scripps Student Scholarship at Scholarship @ Claremont. It has been accepted for inclusion in Scripps Senior Theses by an authorized administrator of Scholarship @ Claremont. For more information, please contact [scholarship@cuc.claremont.edu](mailto:scholarship@cuc.claremont.edu).

Scripps College

---

**Invisible Things:**  
*An Inquiry into the Laws of Nature*

---

SUBMITTED TO

Professor James Kreines

& Professor Yuval Avnur

BY

Abigail Tulenko

FOR

Senior Thesis

April 2022

## TABLE OF CONTENTS

---

<b>ABSTRACT</b>	<b>3</b>
<b>ACKNOWLEDGEMENTS</b>	<b>4</b>
<b>INTRODUCTION: TO READ GOD'S MIND</b>	<b>6</b>
<i>CHAPTER ONE: DEFLATIONISM AND THE BEST SYSTEM</i>	<i>9</i>
<i>CHAPTER TWO: EPISTEMOLOGICALLY-MOTIVATED DEFLATIONISM</i>	<i>13</i>
<i>CHAPTER THREE: NON-EPISTEMOLOGICALLY MOTIVATED DEFLATIONISM</i>	<i>19</i>
<i>CHAPTER FOUR: EXPLANATION</i>	<i>28</i>
<i>CHAPTER FIVE: THE PRINCIPLE OF SUFFICIENT REASON</i>	<i>35</i>
<i>CHAPTER SIX: PREDICTION AND CHANCE</i>	<i>42</i>
<b>CONCLUSION</b>	<b>50</b>
<b>AFTERWORD: ON HYDRAS AND CRAZINESS</b>	<b>51</b>
<b>REFERENCES</b>	<b>55</b>

## ABSTRACT

---

What are the laws of nature? Are they abstract entities that govern physical processes? Or are they merely useful summaries that describe patterns in nature? In this thesis, I explore offer arguments for the former view- what is known as inflationism regarding laws of nature. It is my hope that by excavating and evaluating the role epistemological concerns have played in this debate, we may find new avenues to break this long standing metaphysical stalemate.

## ACKNOWLEDGEMENTS

---

This thesis is dedicated to my brother who has spent hours sitting in the kitchen with me talking about possible worlds, and who gave helpful comments on an early draft of this paper. He used to help me study for physics tests while we skated around in heelys on our driveway. Those honey-lit afternoons talking about Newton's laws are the backbone of this thesis, and all of my philosophical work.

First and foremost, I want to thank Professor Kreines. Our countless discussions in and out of class have been my most formative intellectual experiences to date. I feel more certain about predicting Professor Kreines's continued awesomeness than I do predicting gravity's continued hold into the future. I also want to thank Professor Avnur and Professor Scott-Kakures for their insights, time, and continual support. I feel so fortunate to have had the privilege of working with Professors who are not only great philosophers, but also great human beings.

I credit my parents with making me a philosopher, whether they meant to or not. My mom taught me to "imagine" and I am constantly inspired by her boundless creativity. I have my Dad to thank for teaching me to ask questions with continual curiosity and laser precision. A big thank you to Anna— in a home video, my parents ask me what I'll teach my younger sister. That seems so silly now, knowing how much I learn from her everyday.

Finally, I'd like to thank my brilliant and patient friends for putting up with nearly constant questions about their intuitions on gravity. Sorry about all the rambling in seal court, at parties, on beaches, and all manner of places where the last thing people want to be thinking about is physics.

I am awestruck that whether by random chance or governing law, by sheer luck or determinism, my little arrangement of particles gets to exist alongside some of the best arrangements of particles I could imagine. I am forever grateful.

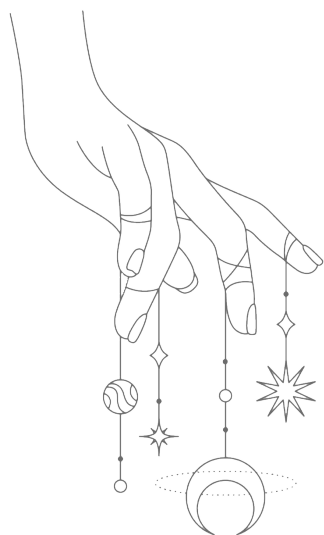
Invisible things are the only realities.

*(Edgar Allan Poe, "Loss of Breath")*



## INTRODUCTION TO READ GOD’S MIND

---



My fingers push down the keys of my keyboard, you move your pupils, tracking words on a page. All the while, gravity keeps us both from floating away. Do the laws of nature *govern* these physical processes or are the laws merely useful summaries? Here, I present arguments against the latter view-- which I will refer to as deflationism regarding laws of nature. I focus in particular on the Best-Systems Account (BSA), which I take to be the strongest form of such theories.

By “laws of nature,” I am referring to the laws pursued by the natural sciences, such as Newton’s Laws or the ideal gas laws. Arguably, the discovery of natural law is among the key goals, if not the key goal of scientific inquiry. Thus, the importance of ascertaining “the nature of a law of nature” is manifest.<sup>1</sup> It seems when scientists speak of laws of nature, they do so without unified consensus on what precisely this means. Certainly a physicist can point to examples of laws, but there remains the question of their essential nature. Even beyond the sphere of philosophy of science, the questions raised in this debate involving inference, explanation, intuition, and simplicity have far-reaching importance. Inference from observed phenomena to unobserved explanations is “central to

---

<sup>1</sup> Armstrong (1983), 4.

our whole life as human beings.”<sup>2</sup> The debate surrounding its reliability in this context concerns everyone who’s ever made an inference (that is to say, everyone).

In a cosmological sense, the questions raised resonate even wider. From Plato to Lewis, philosophers have long sought to “carve nature at its joints.” As early as 300 B.C., Euclid claimed the “laws of nature are but the mathematical thoughts of God.” If so, this thesis is my attempt to read God’s mind. Regardless of its theist underpinnings, the metaphor holds me in its grip. Whether what we glimpse are the thoughts of God or the whims of random chance, understanding the laws of nature is perhaps the key to understanding the structure of reality.

Traditionally, deflationism has often been defended in terms of empiricist epistemology. I will identify a significant tension within this epistemologically-motivated deflationism with regard to its treatment of abduction. Next, I will address more recent views that claim to move beyond this epistemological motivation, such as that presented by Jonathan Schaffer. I contend that these views ultimately rest on similar empirical assumptions, and therefore cannot escape the aforementioned tension. Furthermore, their assertion of greater ontological economy fails due to the exigency of a dependence relation to fulfill the explanatory role of laws.

In chapter one, I clarify the debate in more detail, focusing on the merits of the BSA in relation to other deflationist accounts and the role abduction plays in these issues. In chapter two, I argue against epistemologically-motivated deflationism, identifying an area of inconsistency with its use of inference to best explanation. Next, in chapter three, I defend against certain forms of non-epistemologically motivated deflationism, concluding that they may ultimately rely upon similar

---

<sup>2</sup> Ibid.

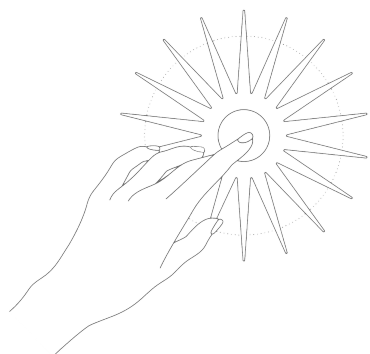


empiricist concerns. In chapter four, I argue for the explanatory advantages of inflationism and in five I defend against an objection relating to the Principle of Sufficient Reason. Finally, in chapter six, I explore deflationism's unintuitive and radical implications regarding our understandings of chance and prediction.

## CHAPTER ONE

### DEFLATIONISM AND THE BEST SYSTEM

---



The contending views on what a law of nature is, or more neutrally, what a law of nature *would* be should such laws exist, fall broadly into two categories: inflationism and deflationism.<sup>3</sup> Inflationist accounts argue that laws of nature *are* something over and above the mere regularities we observe in nature. They are that which governs, or otherwise gives rise to the regularities themselves.<sup>4</sup> In contrast, deflationism generally posits that laws are nothing over and above regularities observed in nature, upholding the Humean picture of reality as a mosaic of causally vacuous content. On this view, laws describe the patterns we observe in nature, but do not in any way give rise to them or serve any constraining function. Schaffer puts it vividly with an analogy to cinema: “...the laws of nature are nothing over and above the pattern of events, just like a movie is nothing over and above the sequence of frames.”<sup>5</sup> To avoid presumption, I will refer to the deflationary notion of laws as “D-laws” and inflationary notion as “I-laws,” but of course both parties believe they are referring to *the* only existent laws.

---

<sup>3</sup> Kreines (2017), 327. There are also anti-realist or eliminativist accounts of laws, which deny the existence of laws whatsoever. For the purposes of this paper, I will focus on realist accounts. I find these more attractive given their accordance with scientific practice, which broadly seems to assume the existence of laws. I concur with Cohen and Callender (2009) that “it is very hard to make sense of actual scientific practice and the history of science without invoking laws of nature” (3).

<sup>4</sup> Here, I mean “govern” in the sense presented by Beebe (2006) and Loewer (1996), among others.

<sup>5</sup> Schaffer (2008), 82.

Generally, the “best systems” account is taken to be the most sophisticated form of deflationism, so that is the form I will address in this paper.<sup>6</sup> BSA offers key advantages over other deflationist theories in its accounting for a distinction between true laws and merely “accidental regularities.” Early Humean accounts of laws, such as those Armstrong terms “naive regularity theories,” stated simply that laws are universal truths that exist in nature.<sup>7</sup> If that were the case, there would be a great many laws of nature-- in fact an infinite number. It seems obvious that there is a difference between the law of gravity and other regularities, such as “all people who read this paper are interested in philosophy.” Let’s assume the latter is true and holds universally. Still, it would seem absurd to conclude that it’s a law of nature. It seems at least intuitively important that there must be some way to distinguish between the regularities that are merely “accidental” and those that have the privileged status of lawhood.

In response, BSA posits that laws of nature are only those “universal truths” or regularities that have been “appropriately axiomized.”<sup>8</sup> According to Lewis, the appropriate axiomatization consists of admitting only the regularities that contribute most to the “collective simplicity and strength” of the system as a whole.<sup>9</sup> By “strength,” I follow Loewer’s interpretation in taking Lewis to mean something akin to “informativeness.”<sup>10</sup> So even if universally true, the regularity that “all people who read this paper are interested in philosophy” wouldn’t qualify for lawhood because it would not contribute to the collective simplicity and strength of the system as a whole.

---

<sup>6</sup> Armstrong (2016), 68.

<sup>7</sup> Ibid, 10.

<sup>8</sup> Dretske (1977), 253.

<sup>9</sup> Lewis (1983), 367.

<sup>10</sup> Loewer (2007), 106.

Deflationism contends that there are no additional ingredients to reality; our ontology is complete with the regularities themselves, and thus, laws are empirically accessible to science. Our movie harbors no further mystery than the order of frames on the reel. In contrast, if inflationism is true, this ostensibly implies a grim prognosis for scientific knowledge. If laws are something over and above the regularities themselves, and we can only observe the regularities, how can we have knowledge about said laws? Strict empiricism would suggest we can't. If so, this is a significant disadvantage of inflationist theories. Inflationism would suggest scientific inquiry cannot attain knowledge of laws. An account of the laws of nature that defines them as incompatible with scientific inquiry seems significantly less attractive.

However, the inflationist can seek recourse in abduction; the principle of inference to best explanation (IBE) offers a route to salvage knowledge of laws. IBE states that we have reason to believe the hypothesis that best explains a given body of evidence. Often, "best" is defined by certain explanatory virtues such as simplicity and informational strength. By employing IBE, scientists could attain knowledge about the laws despite their empirical inaccessibility. They would be able to observe the regularities in nature and infer hypotheses about the laws that would best explain them. So, in part, inflationism's strength as an account hinges on the acceptance of IBE. Inflationism requires IBE to defend the knowability of laws; it is the means by which science can attain knowledge about laws to which we cannot have direct epistemological access.

This leaves the theory vulnerable to strict empiricist concerns. If the deflationist rejects the use of IBE in this context, they can reject the possibility of knowledge of I-laws. Many deflationists take this route, arguing that inflationism is epistemologically disadvantageous because it would preclude

knowledge of laws. I will refer to this argument as the “nomic knowledge attack.” Helen Beebee, a proponent of the BSA, states that this concern with epistemological limits is foundational to deflationist thought: “regularity theories take as their starting point the thought that we should not take our causal talk to be talk about something.. too far removed from our experiential reach.”<sup>11</sup> Similarly, Cohen and Callender claim that “one of the main advantages” the BSA “has over its rivals is that it makes lawhood epistemologically accessible.”<sup>12</sup> Some, such as Van Fraassen, go as far as to reject abduction as a truth conducive principle entirely. He claims that IBE “never warrants belief when the potential explanation of the evidence stretches to the unobservable world.”<sup>13</sup> If this is true, inflationism would entail the unattractive notion that laws are not within the epistemological grasp of science.

---

<sup>11</sup> Beebee (2006), 516.

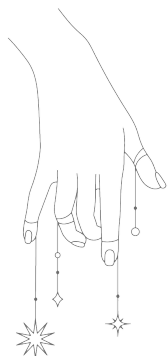
<sup>12</sup> Cohen and Callender (2009), 10.

<sup>13</sup> Psillos (1996), 34.

## CHAPTER TWO

### A CRITIQUE OF EPISTEMOLOGICALLY MOTIVATED DEFLATIONISM

---



I will now argue that the Best Systems Account also requires a similar abductive principle in its appeal to ontological economy. Therefore, even the BSA- the strongest version of deflationism- faces an internal tension with respect to its view on IBE. In order to resolve this tension, the epistemologically motivated deflationist is left with the undesirable choice either to surrender the attack on nomic knowledge or forfeit their claim to advantage via greater ontological economy.

One of the purported key advantages of the BSA itself is its greater overall ontological economy. Proponents claim that we have reason to prefer deflationism over inflationism because it invokes fewer metaphysical resources to explain the same observable phenomena. Deflationism need not posit a necessitation relation or other abstract entities over and above the regularities themselves, and is therefore more parsimonious than inflationism. In appealing to parsimony as a strength, the deflationist implies that, at least in this case, we have reason to prefer a theory that is more parsimonious. This implication is an IBE claim; we have reason to prefer the hypothesis that best explains a given body of evidence (here, the BSA), where “best” is constituted by the *most parsimonious theory for the same informational content*. In this manner, appeals to simplicity are by nature a form of IBE, where the best explanation is the simpler of two equally explanatory theories. Thus, one of the BSA’s foremost philosophical advantages hinges on the use of IBE. This leads to a significant tension.

Deflationists need to uphold IBE in order to defend the BSA's philosophical advantage with regard to parsimony, but must deny IBE in the case of inflationist laws to mount the nomic knowledge attack.

Perhaps the deflationist might protest that their own use of IBE is relevantly different from the inflationist's, so as to be acceptable. For the inflationist, IBE enters at a specific level— that is, in the inflationist's account of scientific knowledge of laws. There is at least one level upon which deflationists also appeal to IBE: the BSA's appeal to a simplicity advantage in metaphysical theory choice. Given its validity on any one level, I argue that the principle should- absent some special reason to the contrary- hold on the other. The basic notion is that if IBE is truth conducive in science, it is truth conducive in metaphysical theorizing as well.<sup>14</sup> As Laurie Paul argues in her paper "Metaphysics as modeling: the handmaiden's tale," this is a symmetric relation. Those desiderata that "lead us to the truth" generally do so in both domains. There is broad consensus that inference to the best explanation is a valid tool in the scientific realm, so it should be justified in the metaphysical realm as well. Likewise, the metaphysician who accepts IBE as truth conducive in philosophy ought to accept it as truth conducive in science.

Perhaps, the deflationist might produce a principled reason that justifies the use of abduction on the metaphysical level and not in the domain of science (where inflationism requires it). Paul largely addresses arguments that make the reverse claim. For example, she explores the argument that science's confirmability constitutes a relevant difference such that the validity of IBE holds in science but does not extend to metaphysics. She rejects this argument on the basis that while "the empirical, confirmable features of scientific theories have allowed us to confirm the value of theoretical desiderata for

---

<sup>14</sup> Paul (2012), 21.

theorizing,” this is a difference of mere confirmability and not truth conduciveness. Here, she concludes that “if such features are truth conducive in the case of science, they should be truth conducive more generally.”<sup>15</sup> Indeed, some deflationists explicitly defend the symmetry between metaphysical and scientific explanation. For example, in “A Better Best System Account of Lawhood,” Cohen and Callender argue that “recognizing in science the attempt to produce small sets of basic principles as a result of balancing simplicity and informativeness is the central and powerful insight that motivates” the BSA. Here, they suggest that the account itself is motivated by the principle that IBE in the scientific realm translates to its validity in the metaphysical realm.

I concur with Paul that if one upholds IBE in one domain, there is significant pressure to uphold it in both domains. However, even if a principled distinction could be found, it would still likely work in the inflationist’s favor. The deflationist who wishes to argue that IBE is valid in metaphysics but not science faces the uphill battle of countering the empirical data that supports abduction’s truth conduciveness in scientific practice. The reverse argument seems simpler to defend (namely on the basis of that very data). Regardless, I contend that a deflationist argument that accepts IBE on one of these levels but denies it on other level(s) without a principled reason for doing so is troublingly inconsistent.

In light of the described tension, the epistemologically motivated deflationist must either renounce IBE to retain the nomic knowledge attack, but forfeit the basis for one of their foremost advantages, or uphold IBE and forfeit the nomic knowledge attack. In any case, deflationists simply can’t have their IBE and eat it too.

---

<sup>15</sup> Ibid, 22.



Let's imagine a deflationist opts to do the former: renounce IBE, keep the attack on nomic knowledge, and surrender their advantage via ontological economy. In this manner, they attempt to avoid inconsistency, but bite a large bullet: the loss of one of their foremost advantages. I will now show that they purchase nothing with this large concession because this line of reasoning ultimately does not avoid implicit use of IBE. Even without the appeal to ontological economy, the deflationist remains under significant pressure to accept IBE because it underlies the BSA's internal axiomatization method. Lewis himself describes the BSA in words that ring of IBE. He explains that the regularities that "earn inclusion in the best system" are those that "have as much information content as it [they] can have without sacrificing too much simplicity."<sup>16</sup> As argued earlier, simplicity appeals involve the use of IBE. Appeals to fewer posits only apply where these posits explain the same body of facts. This internal simplicity criterion states that the regularities that merit lawhood are those that are simplest for equally explanatory content. If IBE posits that we have the reason to prefer the explanation that displays the most explanatory virtues, and we take simplicity and informativeness as explanatory virtues, internal to the BSA is a form of IBE. The BSA requires this principle to make determinations about which regularities merit axiomatization as laws.

Furthermore, even if this tension could be avoided, it is unclear that deflationism truly has an epistemic advantage. On an inflationist account, there is the issue of inferring from observations— i.e. instances of regularities— to truths about the relations between them, that is, the laws. Uncertainty arises in this gap between what we can observe and what we infer. In this manner, inflationism

---

<sup>16</sup> Lewis (1983), 367.

prompts us to worry that we might not infer correctly what the real relations are. Psychological facts about an epistemic agent might blend into their inferences and make them less than perfectly reliable.

Now compare with the deflationist account of lawhood. The epistemic barriers are perhaps even more insurmountable. Here, I defer to Kreines's worry about the impossibility of our finite inquiry providing the infinite empirical data needed to determine which laws fit into the best system.

He writes:

A best system account might guarantee that one would begin to approximate knowledge of laws as one approached the limit of inquiry. But perhaps the world is infinitely complex in the sense that our finite inquiry would never approach the end of all possible empirical observations, at every level of detail, resulting from all possible experiments...On the face of it, then, it is a contingent matter whether or not our inquiry began with intuitive beliefs that have so far sent inquiry only away from the ideal. So why should it be rational for us to follow guiding or unifying principles that might— no matter how long of a finite period we devote to empirical inquiry— still be leading us astray?<sup>17</sup>

On a deflationist account, laws are merely patterns of events appropriately axiomatized, and we come to know these patterns by empirical observation. Among the many accidental regularities that occur in nature across history, those which merit lawhood are those that best cohere into a system of maximal simplicity and informativeness. Knowledge of laws, then, is a process of systematic axiomatization of regularities observed across all of history. As Schaffer writes in a footnote, “point of clarification: as I use the notion, history includes past, present, and future. It is not limited to the past.”<sup>18</sup> However, once we apprehend the vast purview of history, it becomes apparent that deflationism has a different and perhaps more pervasive epistemic problem. Since we lack information about future events, our ability

---

<sup>17</sup> Kreines (2017).

<sup>18</sup> Schaffer (2008), 100.

to judge which regularities across all of history merit lawhood is limited. We lack access to this potentially infinite portion of what Schaffer deems history, and yet we would need to observe it to generate the most accurate axiomatization.

Imagine that until now gravity has held, but at some point in the far future, it will reverse. For the rest of history, stretching infinitely far into the future, empirical observation proves quite different than what we've seen until now. An objective observer axiomatizing the best system based upon the totality of history would identify a different, and more accurate, pattern than we are equipped to observe from our limited temporal perspective. Located on a small segment of the infinite graph of history, we are unable to see the large peaks and valleys that may follow.<sup>19</sup> On a deflationist account, even the most epistemically virtuous agent can only approximate the best system, lacking the infinite data required to deduce the patterns most accurately.

These considerations raise a large concerns for epistemologically motivated defenses of deflationism. The major epistemological arguments for the strongest form of deflationism-- the BSA-- are constrained by a tension with regard to abduction. The deflationist needs to deny IBE to mount an attack on knowledge of I-laws, and simultaneously uphold IBE to to maintain a simplicity advantage and to axiomatize regularities. And even if such a tension could be avoided, there remains the concern of the indeterminacy of finite inquiry. These worries undermine the tenability of epistemologically motivated deflationism and call for a different sort of deflationism that doesn't rest upon staunch empiricist commitments.

---

<sup>19</sup> This metaphor was helpfully presented to me by Professor Kreines.

## CHAPTER THREE

### A CRITIQUE OF NON-EPISTEMOLOGICALLY MOTIVATED DEFLATIONISM

---



Having concluded that epistemologically motivated deflationism faces an internal tension, I will move onto the second sort of deflationism-- what I will refer to as non-epistemologically motivated deflationism. This approach attempts to shed the strict empiricist trappings of more traditional deflationist arguments. In forfeiting the nomic knowledge attack and taking a more favorable stance toward abduction, the non-epistemologically motivated deflationist is able to maintain their advantage via simplicity without inconsistency. Many recent deflationist accounts, such as that of Schaffer, take this route. Schaffer, who describes his position as “broadly inspired by Hume and Lewis,” rejects the attack on nomic knowledge. He writes that the epistemological reasoning that undergirds it is “disastrously skeptical,” requiring an empiricism so strict it will “force one to solipsism.” He leaves open the possibility of knowledge via abduction, conceding that perhaps “we can find indirect theoretical warrant” for unobservable phenomena such as laws. That is, via IBE, it is compatible with an inflationist account that laws are knowable to science.<sup>20</sup> Indeed, by his lights, “it remains perfectly appropriate..for the inflationist to argue that we can directly observe certain sequences of events that provide evidence for theoretical claims about the laws.”<sup>21</sup> In place of appealing

---

<sup>20</sup> Schaffer (2008), 90.

<sup>21</sup> Ibid, 97.

to an empirical epistemological limit, Schaffer pivots toward methodological arguments that he claims skirt the inconsistencies at work in the nomic knowledge attack and its skeptical consequences.

Schaffer attacks inflationism on two counts: theoretical fathomability and ontological economy. Given that deflationism better meets these methodological desiderata, he argues that “laws reduce to history”-- that is to deflationist regularities-- “unless sufficiently countervailing considerations can be adduced.”<sup>22</sup> If these arguments for deflationism do not depend on the sort of epistemological limit that denies IBE, he avoids the tension I identify in the deflationist position. However, I will argue that Schaffer’s appeal to theoretical fathomability may also depend upon an epistemological limit, and therefore fails to resolve the tension I describe.

Schaffer argues that the inflationist presents “a completely unfathomable theory.”<sup>23</sup> I can identify two possible ways to interpret this argument. One interpretation would be that Schaffer thinks its lesser fathomability is simply apparent. On this reading, his claim borders on begging the question: “the argument from theoretical fathomability proceeds by pointing out that necessary connections have an air of the occult, implying inexplicable necessary connections between distinct existents.”<sup>24</sup> It is the task of the deflationist to argue precisely that there are not necessary connections between distinct existents. An argument against this theory ought to do more than merely point to the theory itself and scoff. To use Lewis’s own words, “I do not know how to refute an incredulous stare.”<sup>25</sup>

However, one substantive version of Schaffer’s argument via fathomability would require the very empiricist assumptions that he disputed. Schaffer assumes that unfathomability is a detriment to

---

<sup>22</sup> Ibid.

<sup>23</sup> Ibid, 98.

<sup>24</sup> Ibid, 91.

<sup>25</sup> Quoted in Bigelow and Pargetter (1987)

an account of laws. Inflationist laws are unfathomable because they posit abstract “connections,” which “have an air of the occult.” Why do necessary connections have an air of the occult? Presumably, it is because they are abstract, invisible, *unobserved*. He seems to suggest that the BSA is more fathomable because we have greater, or more direct, epistemological access to regularities. He hints at this interpretation, writing that the reason “irreducible laws seem far less fathomable” than other ontological entities “may be due to the more theoretical, less observable nature of lawhood.”<sup>26</sup> Here, Schaffer suggests that an account that is not based in something observable-- in empirical sense data--is less fathomable. The implicit premise here is that we are unable, or more modestly, less able to fathom that which has no basis in empirical sense data.

To motivate this distinction, Schaffer might require some form of content empiricism. Here, I follow Winkler in distinguishing between content empiricism and justification empiricism, the former “concerning the content of thought” and the latter “concerning the justification of belief.” Content empiricism entails that “experience is the ultimate source of all of our conceptions.”<sup>27</sup> This reasoning is at work in Schaffer’s implication that we cannot fathom, or are less able to fathom, that which is not rooted in experience. In contrast, the epistemological reasoning Schaffer condemns as “disastrous” earlier in the paper is an example of *justification* empiricism. Justification empiricism states that “experience is the only source of evidence for our beliefs.” Schaffer renounces the nomic knowledge argument for its strict application of this principle– its assertion that the only evidence we are justified in believing is that which is based in sensory experience. Since the sort of empiricism he condemns is

---

<sup>26</sup> Ibid, 98.

<sup>27</sup> Winkler (2009), 223.

justificatory and the one he requires is related to content, Schaffer might believe that the latter does not entail the same “disastrous” effects. However, I will now argue that Schaffer’s attack on fathomability, interpreted in this manner, has unattractive consequences for the deflationist.

The content empiricist denies that we can fathom any entity that is not accessible via sensory experience. I-laws are not accessible via sensory experience. Thus given content empiricism, I-laws are unfathomable. Schaffer raises worries that the justification empiricism underlying the nomic knowledge argument “will force one to solipsism.”<sup>28</sup> It entails that beliefs not based in sensory experience are unjustified. On the most extreme interpretation, since we only directly experience impressions in our own minds, it would follow that we are only justified in believing in the existence of our mind.

However, by parallel reasoning, content empiricism engenders similar concerns to those he identifies. It entails that concepts not based in sensory experience are unfathomable. Since we only directly experience impressions in our own mind, it would follow that we can only fathom that which exists in our own mind. Schaffer himself writes that “once we countenance an external reality (and who would reject that?) we are already dabbling in entities we cannot directly access.”<sup>29</sup> Surely, most deflationists would not want to suggest that we cannot fathom anything that exists beyond one’s own mind. Thus, though he claims to avoid the “disastrously skeptical” reasoning he sees in the nomic knowledge argument, Schaffer would need to employ similar reasoning if his claim of inflationism’s

---

<sup>28</sup> Schaffer (2008), 90.

<sup>29</sup> Ibid, 88.

unfathomability proceeds from content empiricism. And yet, without content empiricism, I fail to see how he can motivate his fathomability attack on inflationism beyond an “incredulous stare.”

Moreover, content empiricism undermines Schaffer’s own account of deflationism. Schaffer defines reduction as “an ontological relation, expressing dependence between entities.”<sup>30</sup> So, he requires at least one entity not derived from sensory experience to defend the BSA– that is some sort of dependence relation. Under the BSA, laws reduce to events; there is a relation of dependence between laws and events. This type of relation cannot be observed through sensory experience. Given content empiricism, therefore, reduction itself is an unfathomable concept. So without content empiricism, Schaffer’s argument via fathomability amounts to what Lewis himself called “an incredulous stare.” And yet, given content empiricism, the argument has unattractive skeptical implications and contradicts Schaffer’s appeal to reduction as a dependence relation.

For Schaffer, a further strike against the fathomability of inflationist laws is that the intuitions involved are “remnants of a dubious theology.”<sup>31</sup> He explains:

...the notion of lawhood in use is a direct descendant of the theological views of Descartes, Newton, and Leibniz, who viewed laws as divine decrees concerning the clockwork of the world...But if one rejects the view of laws as divine decrees, it is not clear why one should continue to hold onto the intuitions it engenders.<sup>32</sup>

This sort of worry seems to me largely a form of irrelevant guilt by association. It would be difficult to prove that inflationist intuitions directly resulted from a theological worldview, and in any case, that

---

<sup>30</sup> Ibid, 83.

<sup>31</sup> Ibid, 95.

<sup>32</sup> Ibid, 89.



seems no reason to reject them outright. However, if Schaffer wishes to mount this type of attack, it would equally invalidate his own use of ontological economy. In addition to theoretical fathomability, Schaffer's key remaining non-epistemological argument for deflationism is based upon ontological economy. However, Schaffer's appeal to deflationism's ontological economy is at odds with his condemnation of inflationary intuitions as "vestiges of a theological worldview," as ontological economy is itself tied to the theological views he finds suspect on the inflationist side.<sup>33</sup>

In fact, Ockham himself-- originator of the famed razor-- was a Franciscan friar, who also wrote extensively about Catholic theology. He built God into the principle itself, arguing that "no plurality should be assumed unless it can be proved (a) by reason, or (b) by experience, or (c) by some infallible authority."<sup>34</sup> In c, he notably allows for a "religious exclusion" admitting "the Bible, the Saints, and certain pronouncements of the Church" into his reasoning.<sup>35</sup> The origins of ontological economy as a principle are deeply entangled with theism, and some argue "largely an inheritance of 17th-century theology."<sup>36</sup> Key formulations of such a principle were offered by Aquinas, Descartes, and Leibniz<sup>37</sup>, who tethered the notion to God's perfection.<sup>38</sup> Indeed, many of Lewis's own philosophical commitments are "in this sense a direct descendent of Leibniz's methodology."<sup>39</sup> As stated above, I do not intend to imply that ontological economy's historical connection to Christian theology invalidates

---

<sup>33</sup> Ibid, 100.

<sup>34</sup> Quoted in Hoffman et al (1997).

<sup>35</sup> Hoffman (1997)

<sup>36</sup> Ibid.

<sup>37</sup> Some of which are the very same early modern theists with whom Schaffer criticizes inflationism for aligning.

<sup>38</sup> Sober (2015), 26. Additionally, Sober interprets Descartes as arguing that "God's immutability...tells us that we should postulate no more changes than we know about from observation and from sacred texts. This is a principle of parsimony" (25).

<sup>39</sup> Baker (2016). At the In Memoriam Service for David Lewis after his death in 2002, David Chalmers even joked: "What do you get when you cross David Hume with Gottfried Leibnitz? Not Gottfried Heim; David Lewitz." (<http://consc.net/lewis.html>)

it as a principle. However, I do contend that if Schaffer wishes to attack inflationists on this score, he also undermines his own position, which is guilty of the same charge.

Theist associations aside, Schaffer writes that inflationary accounts “attempt to convince us that more things exist than we may fathom or need.”<sup>40</sup> In this manner, he argues that inflationism is less parsimonious than deflationism, failing Ockham’s Razor constraints by multiplying entities beyond necessity. I will now argue that deflationism may not be more parsimonious than inflationism, and that even if a marginal advantage could be proven, it would be offset by the advantages in explanatory power that inflationism offers. The deflationist is hanging on by the thin and fraying rope of ontological economy, which may snap under the weight of explanatory power.

Firstly, I wish to note that deflationism may need to appeal to more metaphysical resources than initially supposed.<sup>15</sup> A deflationist might have argued that their account is more economic because it need not posit abstract entities, while inflationism does. However, in “New Work For a Theory of Universals,” Lewis identifies an area where the BSA does require abstract entities- namely a distinction between natural and non-natural properties. Regularities are only laws if they contribute to the collective simplicity and strength of the system as a whole. But, according to Lewis, “different ways to express the same content, using different vocabulary, will differ in simplicity.”<sup>41</sup> Here, he is referring to elegance or syntactic simplicity, rather than ontological economy. Lewis worries that the elegance of a given proposition is relative to the particular language used to express it. If so, under the BSA, the status of a law might change depending on the language it’s expressed in. This seems like a detriment to

---

<sup>40</sup> Schaffer (2008), 100.

<sup>41</sup> Lewis (1983), 367.

deflationism as a universal metaphysical theory. It shouldn't matter whether you're talking about gravity, la gravité, or 重力; a law is a law regardless of language. To account for this and standardize elegance across languages, Lewis argues that the laws should "refer only to perfectly natural properties."<sup>42</sup> He writes:

Formerly I had been persuaded by Goodman and others that all properties were equal: it was hopeless to try to distinguish "natural" properties from gruesomely gerrymandered, disjunctive properties. Eventually I was persuaded, largely by D. M. Armstrong, that the distinction I had rejected was so commonsensical and so serviceable—indeed, was so often indispensable—that it was foolish to try to get on without it.<sup>43</sup>

These properties, perhaps such as charge or mass, are essentially distinct from non-natural, arbitrary properties such as Goodman's famous "grue"—being observed as green before a fixed time *t*. The distinction is abstract, and Lewis takes it to be primitive,<sup>44</sup> irreducible to any concrete, particular entities. Thus, deflationism needs to posit at least one abstract metaphysical resource in addition to the regularities themselves—namely certain "natural properties to explain determinacy of interpretation."<sup>45</sup>

---

<sup>42</sup> Ibid, 368.

<sup>43</sup> quoted in Loewer (2017), 315.

<sup>44</sup> Lewis writes of this distinction: "we shall have no easy way to define it without circularity. That is no reason to reject the distinction. Rather, that is a reason to accept it—as primitive, if need be." This reasoning seems parallel to Armstrong's assertion that necessity must be primitive, which Lewis criticizes as circular. If he accepts this reasoning in the case of natural properties, why not necessity? This seems to me a worrisome inconsistency. On necessity, Lewis quipped "*N* deserves the name of 'necessitation' only if, somehow, it really can enter into the requisite necessary connections. It can't enter into them just by bearing a name, any more than one can have mighty biceps just by being called 'Armstrong'." If this is true, I would add that his natural properties can't enter into this privileged "natural" status just by bearing a name, anymore than his Best Systems account is made total BS by virtue of an unlucky acronym. (Though it may be for other reasons)

<sup>45</sup> Lewis (1983), 367.

Therefore, even if deflationism remains overall more economic than inflationism, the margin isn't so wide as it may ostensibly appear.

Furthermore, recall that Schaffer defines reduction as “an ontological relation, expressing dependence between entities,” and offers grounding as a theory of this relation.<sup>46</sup> Formulated thus, a tally of the entities posited by each account reveals a surprising symmetry. Both accounts require individual events, grouped generally into patterns or regularities. The inflationist account of laws requires an additional entity- namely some sort of abstract relation that gives laws their governing function. In this manner, inflationism offers one way to complete Dretske's formula “law=universal truth+ X,” where X is this relation. However, the deflationist account can be formulated much in similar terms. D-laws, on Schaffer's formulation of the BSA, are universal regularities imbued with a dependence relation. In this manner, the best systems theory is likewise an iteration of the formula Dretske labels “law = universal truth+X,” the X being “a relation of dependence,” namely reduction. Therefore, Schaffer's version of the BSA may posit no fewer entities than inflationism. If so, given reduction as a form of dependence, Schaffer forfeits his claim to deflationism's greater ontological economy. Moreover, once deflationism adduces this sort of abstract relation, it becomes less clear what its advantages over full blown inflationism would be. Thus, it seems, at least given this version of deflationism, we ought to put Ockham's Razor back in its sheath.

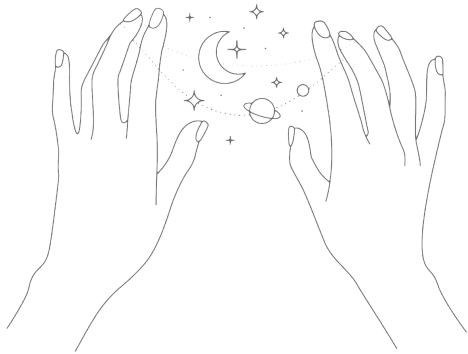
---

<sup>46</sup> Schaffer (2008), 83.

## CHAPTER FOUR

### EXPLANATION

---



Most agree that we expect laws, be they d-laws or I-laws, to serve some explanatory function. Loewer acknowledges that “it is generally believed that laws play a central role in explanations” and “if this is so, then..it counts against the reduction [of laws to events]” if they do not explain their

instances.<sup>47</sup> I will now argue that deflationist laws cannot explain their instances, and that the most promising attempt to address this concern requires an unprincipled distinction between scientific and metaphysical explanation.

But first, drawing upon a modified version of a thought experiment offered by Dretske, I will attempt to illustrate the intuitiveness of the inflationist model of explanation. Instead of a coin toss, I will explore a lottery, which I believe better captures the miniscule probabilities involved. Imagine you regularly buy lottery tickets. Each month a new winner is announced with a 5 digit number, purportedly selected via a random generator. The chance of your number being drawn should be around 1 in 302,575,350.<sup>8</sup> After many months, you see a consistent pattern. The same combination of numbers wins over and over again. What would you conclude about the lottery? Or, more specifically, what inferences could be rationally made to explain this regularity? I imagine most would suspect some sort of foul play or error. If the supposedly random generator consistently selects the same combination of numbers, one might infer that the generator isn’t really random at all. Most people

---

<sup>47</sup> Loewer (1996), 103.

would be suspicious that there's some reason explaining why this regularity has emerged. It seems to be a better explanation of the observed phenomenon to suppose that the generator has been somehow manipulated than to assume that it has truly randomly selected the same combination multiple times—which has a fraction of a 1 in 302,575,350 chance of occurring.

Now, take the case of laws. The chance of matter in freefall accelerating at exactly 9.8m/s<sup>2</sup> in every single observable case by mere chance-- without the law of gravity as a *governing* principle-- is infinitely lower than the chance of a random generator churning out the same five digit number multiple times in a row. IBE seems intuitively to dictate that the regularity is not random, that the existence of some governing or regulatory force such as an I-law better explains the observable data than random chance. This sort of intuition from observable regularity to inferred cause is ubiquitous in human inquiry, from everyday questions to scientific experimentation. This intuition is among the core motivations for inflationism. Nevertheless, this example only serves to illustrate a commonly held intuition. I will now argue that the core basis of deflationism's insufficiency is its circular explanation structure.

To most clearly observe the explanatory insufficiency of deflationism, I distinguish between three propositions:

1. **All Fs are Gs.**
2. **Fness  $\rightarrow$  Gness.**<sup>48</sup>
3. **This F is a G, that F is a G etc. (each individual F is a G)**

---

<sup>48</sup> Here the arrow signifies a dependence relation, meaning "Fness depends on Gness." For now, I mean to refer to dependence broadly, not specifying whether the relation in question is one of necessitation (as Armstrong and others might hypothesize).

I am using Armstrong's general construction for illustration. In a longer version of this paper, I would show why I believe the same applies to Bird's slightly different inflationist model based on inherent powers in natural kinds.

Inflationists and deflationists alike generally agree that proposition 3 explains proposition 1. This has great intuitive force. Imagine you randomly draw ten marbles out of a jar, and all ten turn out to be red. If asked to explain why all the marbles are red, it would be reasonable to reply that since each individual marble drawn was red, all the marbles drawn are. Setting aside the issue of whether there is a further causal explanation, most would agree that the fact that the individual marbles are red in some sense explains why they all are. Here, proposition 3— each individual marble drawn is red— accounts for proposition 1— all marbles drawn are red.

However, most deflationists also posit that proposition 1 explains 3.<sup>49</sup> “All Fs are Gs” is an example of a regularity. If d-laws are regularities, proposition 1 has the form of a d-law. If d-laws explain their instances, deflationism requires that 1 explains 3 (the instances of the regularity stated in 1). For example, if asked to explain why *each individual* marble drawn is red, the deflationist would explain it in terms of a regularity— because *all* marbles drawn are red.

Here arises a key problem for the deflationist. If proposition 1 explains proposition 3, and yet 3 also explains 1, deflationism depends on a circular form of explanation, wherein the explanandum and explanans are constituted by the same facts. Fred Dretske, Tim Maudlin, and others present arguments to this effect. Maudlin writes that D-laws cannot explain their instances because “if the laws are nothing but generic features of the Humean Mosaic, then there is a sense in which one cannot appeal

---

<sup>49</sup> It was kindly pointed out to me by Elizabeth Miller that many deflationists also posit an additional fact to explain 1. Namely, they posit a “that’s all” clause which states that in addition to the fact that each individual F is a G (3), there are no additional Fs that are not Gs. While, I recognize that this additional fact may be necessary to fully account for 1, I do not think this changes my argument. Even if this is true, 3 would still be a crucial component in explaining 1. I believe my argument regarding circularity still holds whether 3 is the sole fact that explains one or it partially explains 1. However, this may be an area for future exploration.

to those very laws to explain the particular features of the Mosaic itself.”<sup>50</sup> If the laws are nothing more than the instances taken together, the laws cannot explain the instances without in some sense invoking a form of self-explanation- wherein the instances help to explain themselves. Dretske doesn't mince words on the subject, writing that on a deflationist account, “the explanatory attempt is never even made.” Here, he implies that self-explanation is not an explanation at all. If d-laws can only explain their instances by self-explanation, they fail to explain in the requisite sense.

Inflationists, on the contrary, avoid this bind. On an inflationist account, proposition 3 does explain proposition 1, as is the broad consensus. The generalization regarding the marbles drawn holds in virtue of the facts about the individual marbles drawn. However, I-laws are not mere regularities, but rather a relation of the form in proposition 2:  $F_{\text{ness}} \rightarrow G_{\text{ness}}$ .<sup>51</sup> It is proposition 2 that explains proposition 3. Therefore, I-laws explain their instances without circularity. Inflationism can simultaneously hold that instances account for regularities and that laws explain their instances because on an inflationist account, mere regularities are not laws.

Here, I-laws fulfill Kim's proposal that one important criterion of explanation is to “track dependence relations.”<sup>52</sup> This tracking is necessary to capture the directionality that we intuitively expect of explanations, and that underlie suspicions regarding deflationary explanation. It is what, in Kim's terms, distinguishes “knowing *why*” from “knowing *that*” and provides “the mark of a theoretical science,” which “go[es] beyond “phenomenological descriptions” of observed regularities to provide an “understanding of why the fact obtains.”<sup>53</sup> Kreines (2017) calls this the simple intuition:

---

<sup>50</sup> Maudlin (2012), 172.

<sup>51</sup> I'm referring broadly to inflationist views such as DM Armstrong's and Alexander Bird's.

<sup>52</sup> Kim (1994), 68.

<sup>53</sup> Ibid, 52.



“an explanation must provide information about an underlying condition on which an explanandum really depends.” This dependence relation is what explanation captures, and what answers the “why” question Kim identifies, as opposed to merely the “that.” Kreines continues:

Consider the idea that a natural law is a regularity or a generalization stating a regularity. Can we explain why B’s regularly follow A’s by appeal to the regularity that B’s always follow A’s? Not if the simple intuition is correct.

D-laws fail to explain because they do not reflect the genuine dependence relation involved. I-laws explain because they capture these relations. Furthermore, by capturing the appropriate directionality of these relations, they avoid circuitous self-explanation.

A deflationist could perhaps deny that laws need explain their instances at all. However, like Loewer, Miller, and others, I find this unsatisfying; “the problem, though, is that we do expect laws to help explain their instances.”<sup>54</sup> Some deflationists argue that this expectation is founded in faulty, generally theistic, intuitions. I will not take up that issue here except to refer back to my argument that Schaffer’s condemnation of theological intuitions equally works against his own use of ontological economy.<sup>55</sup>

Loewer responds to the issue of self-explanation by distinguishing between metaphysical and scientific explanation, arguing that inflationist intuitions wrongfully conflate the two. Loewer

---

<sup>54</sup> Miller (2015), 1315.

<sup>55</sup> There are also arguments for supervenience, claiming it avoids this sort of self-explanation. While I won’t specifically argue against supervenience in this paper, I’ll note that supervenience raises a host of other potential issues, including some thoughtfully explored by Schaffer, Loewer, and others. Hall (2015) succinctly summarizes: I find supervenience too weak a notion, and unexplained talk of “non-modal” (sometimes: “non-nomic”) facts unhelpful. (For example, if facts about laws supervene on non-modal facts, doesn’t that mean that they are themselves non-modal facts? If so, the supervenience claim is trivial.)

Furthermore, Loewer (1996) argues that “HS is dead; at least as far as the actual world is concerned” due to its conflict with contemporary quantum physics (318).

contends that “it is apparent that they are different enterprises.”<sup>56</sup> In his terms, while metaphysical explanation “is one in which a type of fact...is shown to be grounded in or constituted by some other kind of fact,” scientific explanation “typically shows why the event occurred in terms of prior events and laws.”<sup>57</sup>

When inflationists accuse d-laws of self-explanation, Loewer claims, they confuse these two different answers to the question “why,” mistakenly expecting a parallelism between metaphysical explanations and scientific ones. Metaphysical explanation is of the form of proposition 3 explaining 1. D-laws are *metaphysically* explained by the facts about their instances. D-laws nevertheless scientifically explain their instances. That is, *scientifically*, proposition 1 explains proposition 3. Given that these two types of explanation are different, there is no circularity in these two statements and no troublesome implication of self-explanation.<sup>58</sup>

However, this view seems no more promising. One of the primary motivations of deflationism is its claimed accordance with scientific views of reality. Cohen and Callender succinctly summarize one of the appeals of BSA as follows: “The modesty of ... [its] extra-scientific apparatus has made the view seem attractive to thinkers who are inclined to defer to the best scientific descriptions of the world.” On Loewer’s view, deflationism has the unattractive consequence of requiring an extra-scientific notion of explanation that applies only to metaphysical explanandum. It is unclear why

---

<sup>56</sup> Loewer (1996), 321.

<sup>57</sup> Ibid, 321.

<sup>58</sup> Lange (2013) offers a different argument against Loewer’s distinction, arguing that a transitivity principle demonstrates that even given this distinction, deflationists do not escape self-explanation. In response, Miller (2015) offers three potential strategies for the deflationist to counter this objection. While taking a side on this issue is beyond the scope of my project here, this related debate prompts interesting questions regarding the relationship between Loewer’s proposed types of explanation.

metaphysical explanations should differ from scientific ones, aside from the mere desire to maintain a deflationist view of laws. As argued in part 1 with regard to Paul's account of IBE, barring some special reason to the contrary, methodological principles in science ought to hold in metaphysics.

“Metaphysics has a distinctive subject matter, not a distinctive methodology,” and thus if our explanations are considered satisfactory in one realm, they should do so in both.<sup>59</sup> If laws explain their instances in science, I fail to see why the explanatory goal post should shift in the case of metaphysics without a principled distinction. If we hold, as Schaffer and Loewer cede, that scientific explanation requires a notion of directional dependence, we ought conclude that metaphysical explanation does too.

Both deflationists and inflationists largely agree that laws should explain their instances in science. Since D-laws are regularities, if d-laws are *the* laws, then regularities should explain their instances in science. If regularities explain their instances in science, then they should explain their instances in metaphysics as well unless some principled distinction can be drawn. However, as argued above, regularities cannot explain their instances in metaphysics without circularity. So, regularities do not explain their instances in science. Therefore, d-laws, which are regularities, do not explain their instances in science either. If this is the case, deflationism has the unintuitive consequence of rendering instances of regularities inexplicable by laws.

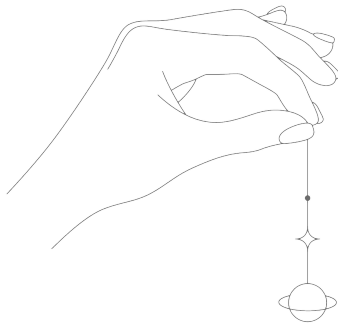
---

<sup>59</sup> Paul (2012), 3.

## CHAPTER FIVE

### THE PRINCIPLE OF SUFFICIENT REASON<sup>60</sup>

---



If one motivation for belief in I-Laws is that they better explain regularities than d-laws, a question arises: why stop the explanatory quest at the laws? By the very logic employed in requiring an explanation beyond the regularities, are you not compelled to explain the existence of the laws themselves? If so, this is troubling. It may seem

that the inflationist, in demanding an explanation beyond mere regularities, has opened the floodgates to an infinite regress. It seems arbitrary to stop at the laws. If we are compelled to explain the regularities, why are we not equally compelled to explain the laws themselves?

This worry can be teased apart into two related concerns:

1. An explanation isn't truly explanatory unless it is complete.
2. Inflationism commits us to the full-blown Principle of Sufficient Reason.

I'll begin with number one, which I see as the least worrying. Inflationism may explain the regularities, complains the deflationist, but it stops short of explaining the existence of the laws. It merely passes the explanatory buck back one step, so to speak. Since it leaves this and many other questions unanswered, one might argue that it does no better than deflationism, which simply stops one step earlier, at the observable regularities. To this first concern, I'd respond that explanatoriness can come in degrees. Explanation does not fail completely just because it is incomplete. Imagine that while

---

<sup>60</sup> A special thank you to members of a student working group who discussed this topic with me: Jackson Anderson, Daniel Bashir, Thummim Mekuria, and Abraham Saikley. And an additional thank you to Professor Kreines for organizing and including me in this group.

I was typing this paragraph, my window shattered (thankfully leaving my laptop unharmed). I would naturally want an explanation. I notice a baseball on the ground, and conclude that it was the baseball that caused the shattering. Then, I later learn that my brother threw the baseball that hit the window, resulting in the shattering. Knowing that my brother had thrown it provides additional explanatory depth. However, the explanatory chain could go even further. Suppose I find out that my brother threw the baseball because he was angry. Why was he angry? A friend had been rude to him at school. Why was the friend rude? He had just had a difficult conversation with his father. Why was the conversation difficult? His father is deeply emotionally unavailable. Why is his father emotionally unavailable? He had had a difficult childhood. And so on...

The explanatory regress seems to go back infinitely. And yet, it would seem unreasonable to say that in order to explain why my window shattered today, I would need to appeal to my brother's friend's father's childhood struggles. The first explanation: "my brother threw a baseball into the window"-- is not insufficient because it fails to include these other portions of the causal chain, which stretch back perhaps to the big bang (or further still). And yet, the answer that my brother threw the baseball is a better explanation than merely stating that "a baseball hit my window." It provides a greater level of explanatory depth, even though it perhaps does not provide the maximal explanatory depth possible. Explanation exists on a long, if not infinite, chain of dependence relations. What it is to explain is to map out the chain of these relations, insofar as they are relevant to the explanandum. Our inability to track the entire chain of explicability shouldn't negate the fact that positing some steps along the chain might be more explanatory than surrendering from the start. Inflationism, in positing

laws to explain regularities, may not succeed in explaining *all* that there is, but nevertheless may provide greater explanatory depth than deflationism.

Underlying this critique, however, is a looming concern. Does inflationism commit us to the Principle of Sufficient Reason? The PSR states that for any “thing (object, state of affairs, or whatever) that exists or obtains, there is an explanation of its existence, there is a reason that it exists.”<sup>61</sup> If we assume there must be an explanation for the regularities, why not assume there must be an explanation for the laws? Beebee raises this concern, calling it “inductive vertigo.”<sup>62</sup> Even Armstrong cedes that this is a potential worry for the inflationist:

To appeal to the Principle of Sufficient Reason is to insist that there must be an explanation why things are so rather than another way. The appeal must therefore enlist the sympathy of anyone who, like myself, looks to an account of laws which treats them as explanations of regularities. Should we not go further and explain the laws themselves?<sup>63</sup>

I take this concern seriously—seriously enough that I will not attempt to counter it directly. Here, I will merely sketch a way that the deflationist faces exactly the same problem. Therefore, if this is correct, it is no particular argument against inflationism.

Firstly, it will help to identify what precisely it is about inflationism that seems to suggest the PSR. Why should the suggestion that these patterns in natural phenomena require explanation entail that all things require an explanation? It seems that what may link inflationism to the PSR is its implementation of IBE paired with a principle regarding theoretical consistency. By the latter, I mean

---

<sup>61</sup> Della Rocca (2010), 1.

<sup>62</sup> Beebee, 532. Her diagnosis of the situation is that it is better to accept the dizzying regress of inexplicability than to accept the PSR. She continues, “If it is an ailment at all, it is better to suffer it than to accept the cure.”

<sup>63</sup>

something such as Della Rocca's suggestion that we "ought feel bad about rejecting" arguments that are structurally identical to others we accept barring a "principled difference."<sup>64</sup>

If it is reasonable to infer from observed phenomena to an underlying explanation, one assumes that for this given observation there must be an explanation. If one makes this assumption in one case, they may be obligated to make the assumption in all cases, barring a principled distinction. So IBE provides support for the full-blown PSR (though I wouldn't argue that it necessarily commits one to it). The deflationist who wishes to cast aspersions on inflationism by linking it to the PSR does so with IBE as a bridge. To draw the explanatory line where the inflationist does, they have some obligation to provide a principled difference that makes it reasonable to posit unexplained (or perhaps even unexplainable) laws, but not unexplained regularities.

I have previously argued that Ockham's Razor is a form of inference to the best explanation, dictating belief in the explanation that minimizes posits for the same explanatory scope. As developed in previous chapters, ontological economy is among the primary purported virtues of deflationism. Given the close relationship between IBE and Ockham's Razor, I contend that Ockham's Razor shares a close connection with the PSR. Thus, if one supposes that IBE implies the PSR, the deflationist who employs Ockham's Razor—itsself a form of IBE— is likewise tethered to the PSR. Of course, there remains the choice to argue that IBE does not imply a commitment to the PSR, but to do so is to equally exculpate the inflationist's employment as well.

---

<sup>64</sup> Della Rocca (2010), 6. I suppose one could reject the need for theoretical consistency altogether, but I would think that would be a rather unsavory if not untenable view.

Ockham's Razor entreats us not to multiply entities beyond necessity when seeking an explanation of some phenomena. The inverse implied is that when seeking an explanation, we ought multiply entities *only* when necessary. For instance, if you wanted to explain how this thesis came to be, you might posit that there exists (or existed, yikes) a student that wrote it. You infer an explanation of this document's existence from the information provided to you. Most would agree that it would be very unreasonable for you to posit the existence of magical fairies that aided me in writing my thesis. Why? Because the thesis was already explained by positing a student and so, you had *no reason* to posit these fairies. To do so would be to posit the existence of more entities than are needed to explain the phenomenon in question (i.e. this thesis). Here, the PSR once again rears its head. If one accepts Ockham's Razor, one accepts an explicability argument; one ought not multiply entities when there is no sufficient reason to do so. Given a principle about theoretical consistency, accepting Ockham's Razor seems to provide at least some pressure to accept the PSR more generally. Willard pursues this line in her paper "Against Simplicity" with great lucidity:

Why should we hold that entities are not to be multiplied beyond necessity? To put it plainly, to add more entities than necessary would be to add entities *without a sufficient reason for doing so*...A commitment to ontological parsimony sneaks in a commitment to the principle of sufficient reason.

Perhaps one can find a way to stop short of accepting the PSR while maintaining Ockham's Razor.

Willard is doubtful: "it is not at all clear that the proponent of grounding would be able to draw a



principled line between the entities that need to be explained and the entities that do not.”<sup>65</sup> But if they can in the case of Ockham’s Razor, they should be able to draw a similar line for IBE, thus blocking the explanatory regress attack on inflationism as well.

Now, one might worry that my treatment here has entangled epistemic and metaphysical concerns too much, the PSR being a primarily metaphysical principle and Ockham’s razor being epistemic.<sup>66</sup> I am agnostic on the question, though I do believe there is a strong link between IBE, the PSR, and Ockham’s Razor that potentially blurs epistemic and metaphysical lines. However, in case this objection worries you, I will raise another, more clearly metaphysical, way in which deflationists might rely on the PSR.

Though they do not require an explanation of the regularities themselves, deflationists still invoke the assumption that there ought be an explanation of which regularities merit lawhood and which do not. Why couldn’t the regularity that “all people reading this thesis are interested in philosophy” merit lawhood in the best system? Lewis’s answer is that it fails to contribute to the collective simplicity and strength of the system as a whole. Does this not amount to the response that there must be *sufficient reason* for its inclusion in the system? Deflationists require there to be a reason for a regularity’s inclusion in the best system. If they hold this principle on this level, it seems they are under similar pressure to embrace the full-blown PSR, unless they can draw a principled line to justify ending explanation here. By this path, they again arrive at a similar dilemma to the inflationist.

---

<sup>65</sup> Della Rocca’s “Principle of Sufficient Reason” provides more thorough arguments to the effect that if one accepts explicability arguments in certain cases, they are pressured to accept the PSR generally.

<sup>66</sup> Thank you to Professor Kreines for raising this concern.

Armstrong seems to agree that both views share this problem, and furthermore it is a problem for “every philosophy”:

..If explanation has to stop short of the Absolute, then we have to accept brute fact, that is, contingency, at some point. At what point should we do this? That is a question of the utmost delicacy for every philosophy. In my judgment, the regularity theory of laws gives up much too soon.

It’s a herculean task to determine where the line should be. I can see the appeal of drawing the explanatory line at the empirical; we should not posit entities beyond the observable. However, as explored earlier, the deflationist does not draw the line here. The BSA posits abstract distinctions between non-natural and natural properties to account for the indeterminacy of language. So even the deflationist cannot draw a line neatly at the empirical.<sup>67</sup>

Put simply, the issue of the Principle of Sufficient Reason plagues both inflationists and deflationists. Thus, while I won’t attempt to rebuff the deflationist’s concerns, I simply reply that for those frightened off by the PSR, it seems deflationism is no escape.

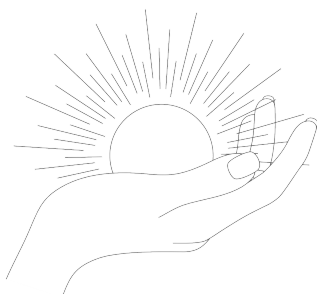
---

<sup>67</sup> I’ll propose just one possible way of drawing the line: everything that we can observe demands an explanation. On this view, since we can observe the regularities, we must explain them. I-laws, as I’ve argued, do so more effectively than d-laws because they avoid circularity. However, since we can’t directly observe the laws themselves, they do not demand an explanation. Here, we could have a principled way of justifying inflationism. It explains the observable, but no explanation is required beyond this point.

## CHAPTER SIX

### PREDICTION AND CHANCE

---



I take it that one of the goals of scientific inquiry, in addition to discovering basic laws, is to predict future events. When a physicist uncovers the behavior of subatomic particles, they often do so in the hopes of predicting physical processes. A meteorologist studies the weather in order to predict future weather events. A cardiologist might study the function of the heart in the hopes of finding ways to predict impending heart attacks. Climate scientists study past data in order to predict and prevent climate disaster. As developed in the previous chapter, most agree that scientific laws should explain their instances. Scientific laws are also, for the most part, taken to be predictive— to hold reliably such that their instantiation is predictable.<sup>68</sup>

There is a basic symmetry between explanation and prediction in this case, wherein the dependence links that comprise the explanation provide the basis for prediction. Kim explains the symmetry thus:

Suppose that the event to be explained is to occur at time  $t$ . Then, to say that a given explanation of the event has predictive power is to say that if the initial conditions of the explanation are ascertained before  $t$  and the laws used in the explanation are also

---

<sup>68</sup> There are however exceptions. In “Inference, Explanation, and Prediction,” Kim highlights how some explanations lack predictive power, thus severing this symmetry: “Philosophers have noted the existence of explanations that lack “predictive power,” such as explanations of the occurrence of earthquakes and evolutionary explanations of the emergence of a new biological species. It is hardly possible, at the present state of scientific knowledge, to predict these events with any significant reliability” (366). It is often not possible to ascertain the initial conditions preceding an event before the event occurs, and therefore, one may be able to devise a perfectly good retrospective explanation without having been able to predict the event itself. It seems however, that this schism can only go in one direction. That which explains may not predict. But that which predicts must also explain. Though beyond the scope of this project, there is much to be said on the topic of explanation as a possible prerequisite for prediction.

known before  $t$ , then an argument-token which is of the same type as the explanation could have functioned as a predictive argument to predict the occurrence of the event.

In this manner, the content and structure of a prediction mirrors its corresponding explanation. They both involve certain initial conditions plus laws that dictate or otherwise affect final conditions. So if deflationism fails to capture the appropriate directionality of dependence relations required for explanation, it is not surprising that it likewise fails in terms of prediction. Thus, given the exploration of explanation developed in the previous chapter, we have good reason to suspect that deflationism will suffer in terms of the predictive power of laws as well. If laws fail to explain, we have good reason to think they will fail to predict.

In this chapter I will argue that d-laws are fundamentally deficient, or at the very least extremely revisionary, in terms of our typical understandings of prediction. In contrast, inflationism offers a model of scientific laws in which prediction as we ordinarily understand it is possible. This is a great advantage for inflationism given its implications in the scientific realm. A theory of laws that cannot account for their predictive role—arguably their primary purpose in scientific inquiry and application—is in my view, a very unattractive one.

Prediction depends on the rationality of inductive reasoning. If we have no basis to infer facts about the future from facts about the present, we have no basis to predict. Armstrong (1983) makes this argument, highlighting the connection between explanation and prediction. Bhogal (2021) summarizes the bones of the argument in a few succinct premises:

- [1] If we think that there is no explanation of an observed pattern then we shouldn't believe that this pattern will continue to further, unobserved, cases.
- [2] For the Humean there is no explanation of the observed regularities.

So, [3] The Humean shouldn't think that the observed regularities will continue to further cases.<sup>69</sup>

We can understand Armstrong's critique of Humeanism about laws by deferring to Hume himself. Hume's fork famously carves truth into two categories: relations of ideas and matters of fact. All truths are either a relation of ideas or a matter of fact. Relations of ideas are a priori deducible. For example, there are no square circles. Matters of fact are only knowable through empirical observation. Hume argues that we cannot have knowledge of unobserved matters of fact, including future matters of fact. Armstrong suggests that on an inflationist account of lawhood, laws are more like relations of ideas. There's a necessary connection linking one isolated spatio-temporal slice of reality to another in such a way as to constrain their behavior. By Hume's own reasoning, it is possible on an inflationist account to predict truths about unobserved matters of fact by a priori reasoning about these relations paired with the initial conditions.

However, on a deflationist account of lawhood, laws are mere matters of fact. There is no governing relation between isolated points in space-time, but merely a pattern of what has happened in the past. What is a law is settled not by a governing relation, but by history. As such, on Hume's account, d-laws cannot tell us anything about unobserved matters of fact. One might invoke a uniformity principle to the effect that the patterns of the past will hold into the future. However, Hume himself showed that this is circular. Why should we believe past patterns will hold in the future? Presumably, the only justification is that they have done so in the past. This justification itself assumes the uniformity principle. Thus, no such principle can save predictions about unobserved matters of

---

<sup>69</sup> Bhogal (2021), 7.

fact. And so, Hume's own fork, in its cold, steely logic, rules out scientific prediction on a Humean account of laws. Chew on that, deflationists, says Armstrong.

Admittedly, this concern is chiefly addressed to the most extreme, and perhaps least plausible, version of deflationism. The contemporary deflationist is generally less staunchly empiricist (though perhaps less honest than Hume himself was about the radically revisionary implications of his work). And yet, in my reading, I've yet to find a real knock-down deflationist response to even this bare-bones version of Armstrong's worries about inductive skepticism. Beebee's response, as Bhogal notes, is uncharacteristic and unsatisfying. She writes that "we take ourselves to know (fallibly, of course) that the universe is, in fact, an incredibly ordered place."<sup>70</sup> This belief is what "allows the Humean to continue to infer from the past to the future."<sup>71</sup> What "know" could mean here leaves me puzzled. For someone whose work seems otherwise motivated by empirical precision, it's surprising she chooses to take on prediction almost as a matter of faith. Is this an opening for a Kierkegaardian deflationism that recognizes the lack of rational basis for induction, and yet encourages us to take a leap? I can't imagine Beebee would have intended this, but it seems to me a viable position worth developing elsewhere. I am mystified how else to interpret this "knowledge."

One of the great strengths of Armstrong's critique is the way it turns Humeanism's own reasoning back against itself. A potential weakness is its blindness to the glint of the fork that reflects back on his own view. It seems that inductive skepticism is a problem for even the inflationist. As Bhogal asks, "But aren't there still concerns for the anti-humean here?" (12). This seems right. For

---

<sup>70</sup> Quoted in Bhogal (2021), 12.

<sup>71</sup> Bhogal (2021), 12.

instance, how can the inflationist be certain that the laws won't change? Or furthermore, it is possible the laws are sufficiently complex as to make us incapable of grasping their precise nature:

If we are worried that the laws will change in the future then perhaps we can't be confident that the next F we see will be a G. And how does the anti-Humean know that the laws are not extremely complicated? If the laws can be so complicated then maybe don't have reason to think that all observed Fs are Gs is explained by a law that all Fs are Gs. Perhaps it is explained by some much more complicated law and this more complicated law implies that at some point in the future Fs will no longer be Gs. (14-15)<sup>72</sup>

So, I concede that both sides of the debate have much to worry about when it comes to inductive skepticism.<sup>73</sup> No matter how far we run, it seems we can't hide from Hume. Nevertheless, being precise about the implications for scientific prediction in each account may help us outpace him. I will now argue that the two accounts have different implications when it comes to chance, which forms the basis of prediction. Deflationist accounts leave science with a large bullet to bite on this score.

Prediction generally involves assessing chances. In a talk at Rutgers in 2019, Ned Hall argues that deflationism has significant revisionist implications in terms of the way that scientists understand chance.<sup>74</sup> He begins the talk rather lightly with the invocation that Humeans “stop trying to be something they're not.” Though his tone is slightly facetious, the sentiment rings true. The challenge to the deflationist— or as he called them, “honest humeans” -- is to own up to the revisionary

---

<sup>72</sup> This worry seems to point to the merits of a view such as Kant's restrictive inflationism, developed in Kreines (2017). On this view, laws do govern, but our best inferences will only ever produce approximations of their true nature due to these inherent epistemic barriers.

<sup>73</sup> Bhogal (2021) continues to argue that deflationism faces a greater internal problem with induction: “skepticism about important inductive inferences naturally flows from their position in a way that it doesn't for those who accept necessary connections.” There is much to be said on this score, though I'm not sure I found his line of reasoning ultimately convincing. His argument takes on board the suggestion that larger, more global regularities can explain smaller regularities subsumed within them. I fundamentally disagree that this is a form of explanation in the requisite sense, and so disagree that his appeal to “the most general regularities in the world” is particularly useful or needed.

<sup>74</sup> He later was kind enough to explain some of the key points to me over hot chocolate in Cambridge. Any misrepresentation of his view is likely due to hot-chocolate induced distraction.

implications of their account, and perhaps to justify the cost to common sense notions of scientific practice.

In the talk, Hall explored a series of thought experiments intended to bring out the striking implications of deflationist accounts regarding chance. I have devised a different example in this general vein that I believe makes the counterintuitive consequences of the deflationist account especially apparent. I share Hall's view that "to the extent that we share a pre-theoretical, intuitive understanding of chance, that understanding is...best captured by an anti-Humean conception." Of course it remains possible that our intuitive understanding of chance is just wrong. Nevertheless, deflationism's implications in terms of chance may be one more area where the view proves to be unattractive.

My example is derived from set theory.<sup>75</sup> Imagine there is a universe with a single particle floating in space. At some time  $t$ , it will be projected into a field of an infinite set of points at which it could land. There are no additional forces or laws that dictate *which* of the points it is likely to land on, just that it will land on *one* of them. The possibility of the particle landing at any one individual point is  $1/\text{infinity}$ — that is zero. So mathematically speaking, the objective probability of the particle landing on, say, point 3000 is 0%. However, the particle must land on some point. The probability of it landing on one of the points is 100%, yet on any one point it's 0%.

Let's say we run the interaction and the particle lands on point 3000. This is not surprising necessarily because though the probability of landing on any one point is 0, it must land on one of the points. We run it ten more times, and it happens to land on point 3000 two times out of ten. Statistically, a regularity seems to emerge. There is a statistical frequency of the particle landing at point

---

<sup>75</sup> Thank you to Julia Didziulis for helpful conversations about set theory.



3000 in 20% of cases. Here, the statistics diverge significantly from the objective chances— there’s an objective probability of zero for this outcome each time the interaction is run, and yet a statistical frequency of 20%. For the inflationist, the frequency is inexplicable. The dynamics and initial conditions permit a range of outcomes. There is no further explanation than non-deterministic dynamics. There is no explanation because the statistical frequency is not connected to the objective chances by a relation of dependence.

Now, a deflationist must say something quite different— and I believe something quite revisionary. Given the BSA, when enough data has been accumulated, any statistical regularity merits lawhood. The constraints of the Best System require that we admit any regularity whose admission would maximize the simplicity and explanatory strength of the system as a whole. What it is to be a law on a deflationist account is nothing more than a statistical regularity that can be stated simply and convey great informational content. Thus, in this case, the deflationist will be pushed by the demands of “bestness” to posit a probabilistic law describing the particle’s behavior despite the fact that the particle’s interactions are by stipulation and by mathematical definition, *not probabilistic*. It doesn’t matter how many times we run the interaction (short of infinity). The particle will have to land on at least one point each time. For at least one point, the statistical frequency will be greater than 0% even though we know the objective chance to be 0%. We can see mathematically that the statistics will not match the objective chances. And yet, the deflationist will be pushed to posit a probabilistic law based on the statistics that is in direct contradiction to the genuine objective chances.

In summary, I contend that we generally assume that if there were to be a probabilistic law governing the interaction, it would reflect the genuine objective chances. We know the objective chance

to be zero for any one point. And yet, on a deflationist account, we would posit a probabilistic law that deems the chance to be above zero for at least one point. Thus, this example shows that on a deflationist account, the probabilistic laws do not necessarily reflect the genuine objective chances involved. This gives us a dramatically different sense of how laws serve to explain. We seem to generate an explanation in the best system where ordinary intuitions would tell us there is none. As Hall said, “on a normal view of chance, there will be all the difference in the world between phenomena governed by probabilistic law and phenomena governed by merely non deterministic dynamics.”<sup>76</sup> Inflationism better captures this “normal view.” As such, the stakes seem high for the deflationist to show how their view is worth the cost to intuitive views of probability.

---

<sup>76</sup> Hall, N (2019, October 24). *Humean Revisionism about Chance* [presentation video recording]. *Youtube*.

## CONCLUSION

---

In this paper, I distinguished broadly between epistemologically-motivated and non-epistemologically motivated deflationism. Arguing that the most important epistemologically-motivated historical arguments for deflationism both require and reject IBE, I concluded that this account faces a significant tension. If deflationists wish to mount an epistemologically-motivated attack on nomic knowledge under inflationism, they may need to reject the use of IBE. However, they also require some similar abductive principle to support why their claim to parsimony is a relevant desideratum and to uphold the Best Systems Account's internal axiomatization method.

At first glance, Schaffer's argument for deflationism is an improvement because it sets out to avoid this sort of staunch empiricism, distancing itself from these flawed epistemological motivations. And yet, Schaffer's argument via fathomability may ultimately rest upon content empiricism. If so, his argument has similar skeptical implications to epistemologically-motivated deflationism and undermines his own appeal to unobservable relations of dependence. Next, I argue that the deflationist's advantage on ontological economy is either non-existent or marginal, in which case it is outweighed by the superiority of inflationist explanation, prediction, and intuitive views of chance. It is my hope that by excavating and evaluating the role epistemological concerns have played in this debate, we may find new avenues to break this long standing metaphysical stalemate.



## AFTERWORD

### ON HYDRAS AND CRAZINESS

---

*Most philosophers, upon many points of philosophy, are still very unphilosophical...  
I would have the judicious reader pause before accusing such asseverations of an undue quantum  
of absurdity. Anaxagoras, it will be remembered, maintained that snow is black, and this I have  
since found to be the case.  
(Edgar Allan Poe, "Loss of Breath")*

In the conclusion, I summarize what I attempted to do in this thesis. Now, I'll briefly talk about what I have *not* been able to do in this thesis. I've found this process rather like battling a hydra; just when I cut off one head, three more grow. Each hard-won solution produces a multiplicity of new questions.

Here, I have sought to make a case for a view of existence where invisible things hold reality together, and have had the audacity to argue that this view is the most intuitive one. Naturally, questions surrounding the methodology of intuition in philosophy spring to mind. To what extent should our philosophical views be shaped by intuition? What is intuition, and where does it come from? In future, I hope to zoom out to some of these bigger picture questions about the contours of the debate.

Metaphysical questions surrounding laws seem impervious to empirical data; I am of the opinion that whether laws govern or summarize will not be settled by science, but by some process of metaphysical inquiry. What exactly that inquiry should look like is a meta consideration I've largely left

untouched. Should we seek an account of laws that best conforms to our existing folk intuitions about what they are? In other words, is common sense a desiderata of the account we're interested in? Or should our inquiry be guided by something else? Do we have reason to believe our common sense views of laws have some relationship to reality, or are they irrelevant to our search for metaphysical truth?

Common sense is a hot commodity in philosophy; the right to claim it as an ally is bitterly contested. For a group of people prone to arguing that tables don't exist and "zombies" could,<sup>77</sup> we seem surprisingly concerned with whether our views are commonsensical, whatever we take that to mean. Lewis himself, was deeply concerned with this criterion. He writes:

One comes to philosophy already endowed with a stock of opinions. It is not the business of philosophy either to undermine or justify these pre-existing opinions to any great extent, but only to try to discover ways of expanding them into an orderly system.<sup>78</sup>

At face value, being commonsensical seems like a theoretical virtue. Why is this? Well, this itself seems like common sense. I would be lying if I didn't acknowledge that one of the initial factors that drew me to inflationism was an intuition that it better accorded with common sense notions of what lawhood is. However, I am increasingly swayed by the potentially troubling conclusion that common sense is no guide to the metaphysical truth of laws. My view has been shaped heavily by the work of Eric Schwitzgebel in his paper "The Crazyist Metaphysics of Mind". In this paper, Schwitzgebel argues

---

<sup>77</sup> Conceivably, at least, but not necessarily possibly.

<sup>78</sup> Lewis (1973), 88.

that something “crazy” must be among the core truths about the metaphysics of mind. Here, crazy refers to something that is contrary to common sense and not decisively supported by empirical evidence. I am beginning to suspect that any true account of the laws of nature will similarly run counter to common sense. More specifically, at least one of the central truths about laws of nature must be something it would be crazy to believe.

This view rests on the notion that our folk views regarding laws of nature, that is those views that would be considered commonsensical, contain contradictions. To give one example, we often speak of governing laws in common speech, and yet it seems contrary to common sense to believe that abstract entities exist. Presumably, the true theory of laws will be internally consistent. Therefore, if all commonsensical views are internally inconsistent, a true theory of lawhood will defy common sense in some way. Thus, at least one of the central truths about laws will be “crazy” in the way Schwitzgebel describes. Since the available contenders are all “crazy” in this sense, Schwitzgebel concludes that we are not epistemically compelled to believe any one of them in particular. Therefore, we are not epistemically obliged to believe the correct metaphysical theory.

It is at this latter point that I diverge from Schwitzgebel. In future, I hope to develop a means of salvaging our epistemic obligation to believe the truth about laws, regardless of “craziness.” I am interested in seeking a criterion of “uncommon sense” upon which to base our epistemic obligations. This principle would not be rooted in empirical evidence or folk intuitions about common sense, but rather systematic considerations, perhaps undergirded by the principle of sufficient reason. This idea is in its incipient stages but I hope that pursuing this line will help us adjudicate between equally “crazy”

theories and preserve our epistemic obligation to believe the truth, no matter how “crazy” it may turn out to be. Down the rabbit hole we go.

## REFERENCES

- Abbott, H. Porter. (2021). *The Cambridge Introduction to Narrative*. Third ed, Cambridge University Press.
- Armstrong, D. M. (1983). *What is a Law of Nature?*. Cambridge University Press.
- Baker, Alan. (2016 ed). "Simplicity," *The Stanford Encyclopedia of Philosophy*.
- Beebe, H. (2006). Does anything hold the universe together?. *Synthese*, 149(3), 509-533.
- Bhagal, H. (2021). Induction and the Glue of the World. *Australasian Journal of Philosophy*, 99(2), 319-333.
- Cohen, J., & Callender, C. (2009). A better best system account of lawhood. *Philosophical Studies*, 145(1), 1-34.
- Della Rocca, M. (2010). *Psr*. Ann Arbor, MI: Michigan Publishing, University of Michigan Library.
- Dretske, F. I. (1977). Laws of nature. *Philosophy of science*, 44(2), 248-268.
- Hall, N. (2015). Humean reductionism about laws of nature. *A companion to David Lewis*, 262-277.
- Hall, N (2019, October 24). *Humean Revisionism about Chance* [presentation video recording]. *Youtube*.
- Kreines, J. (2017). Kant on the laws of nature: restrictive inflationism and its philosophical advantages. *The Monist*, 100(3), 326-341.
- Kim, Jaegwon (1994). Explanatory knowledge and metaphysical dependence. *Philosophical Issues* 5:51-69.
- Lange, M. (2013). Laws of nature. In *The Routledge Companion to Philosophy of Science* (pp. 267-276). Routledge.



- Lewis, D. (1983). New work for a theory of universals. *Australasian journal of philosophy*, 61(4), 343-377.
- Loewer, B. (1996). Humean supervenience. *Philosophical Topics*, 24(1), 101-127.
- Loewer, B. (2007). Laws and natural properties. *Philosophical Topics*, 35(1/2), 313-328.
- Maudlin, T. (2012). *Philosophy of physics*. Princeton University Press.
- Miller, E. (2015). Humean scientific explanation. *Philosophical Studies*, 172(5), 1311-1332.
- Paul, L. A. (2012). Metaphysics as modeling: the handmaiden's tale. *Philosophical studies*, 160(1), 1-29.
- Psillos, S. (1996). On Van Fraassen's Critique of Abductive Reasoning. *The Philosophical Quarterly* (1950-), 46(182), 31-47. <https://doi.org/10.2307/2956303>
- Schaffer, J. (2008). Causation and laws of nature: Reductionism. *Contemporary debates in metaphysics*, 82-107.
- Schwitzgebel, E. (2014). The crazyist metaphysics of mind. *Australasian Journal of Philosophy*, 92(4), 665-682.
- Sober, E. (2015). *Ockham's razors*. Cambridge University Press.
- Winkler, K. (2009). "Empiricism." A companion to metaphysics. Edited by Kim, Jaekwon, Ernest Sosa, and Gary S. Rosenkrantz, Vol. 70. John Wiley & Sons.
- Willard, M. B. (2014). Against simplicity. *Philosophical Studies*, 167(1), 165-181.