Realism about Laws and the Better Best System Account: a Contradiction

Lane DesAutels

1. Intro: No laws, Governing Laws and MRL

Scientists have long aimed to discover laws of nature. Such laws, many have thought, should play a crucial role in explaining the world. There has been tremendous disagreement among philosophers, however, as to whether there are such laws, and if so, how they should be characterized.

Philosophical approaches to laws of nature divide, roughly, into three camps. There are those who deny that there are any laws of nature, and consequently deny that explanation should be based on them; call this the *No Laws* approach (Cartwright 1983, van Fraassen 1989, Giere 1999). There are those who affirm that there are laws of nature, claiming that these laws both govern and produce all that occurs. On this view, laws provide the basis for all accurate explanations of the world; call this the *Governing Laws* approach (Hemple 1965, Dretske 1977, Armstrong 1983, Shoemaker 1998). Lastly, there are those who affirm that there are laws of nature, but who do not think that these laws should be thought to govern all events or ground our explanations of them.

This paper focuses on an approach to laws of the latter sort: a view according to which there are non-governing laws of nature, laws that need not feature in explanation. This approach, called the *Best System* account of laws, is associated with Mill, Ramsey and Lewis; call it *MRL*. According to MRL, laws are the true generalizations that best systematize our knowledge (Mill 1947, Goodman 1954, Ayer 1956, Lewis 1973, Ramsey 1978, Ward 2002). On an MRL view of laws, a system is a deductively closed set of sentences composed of axioms and theorems derivable from those axioms. Laws are the generalized theorems or axioms that figure into the best of these possible systemizations. What makes one system the best? On an MRL view, the best system is the one which achieves the most balance between the theoretical virtues of simplicity and strength—where the two are thought to tradeoff.

In what follows, I criticize a recent version of MRL offered by Jonathan Cohen and Craig Callender in their paper "A Better Best System Account of Lawhood" (Cohen & Callender 2009). According to Cohen and Callender, classical MRL should be modified in three ways in order to avoid serious problems: (i) it should drop its reliance on inter-system comparisons of

simplicity, strength and balance; (ii) it should make lawhood epistemically accessible, and (iii) it should allow for laws in the special sciences. They call this modified version of the MRL account the "Better Best System" (BBS) account of laws.

In this paper, I argue that the BBS account of laws is no better. Specifically, I contend that there is a deep tension between (1) BBS's relativized stipulationism about kinds and (2) its commitment to the actual practice of scientists' search for laws. In particular, I argue that (1) entails antirealism about laws, and (2) entails realism. Here is the plan: in section 2, I present classical MRL, briefly outline Cohen and Callender's arguments against it, and discuss the relevant desiderata for their BBS account. In section 3, I argue that BBS's relativized stipulationism about kinds entails antirealism about laws. In section 4, I argue that BBS's commitment to actual scientific practice entails realism about laws. This, I suggest, amounts to an unacceptable contradiction. I conclude, in section 5, that these considerations pose a deep theoretical problem for BBS, and as such, BBS should not be seen as a viable way of escaping the problems associated with classical MRL.

2. Classical MRL and BBS

In this section, I present classical MRL and Cohen and Callender's arguments for why it should be modified. To do this, I make explicit classical MRL's central theses, I define some of its central terms, and I suggest some of the ways it enjoys (prima facie) advantages over the No Laws and Governing Laws approaches.

2.1. Classical MRL

I take classical MRL to be committed to the following three theses: (1) theories (or systems) are deductively closed sets of sentences—individuated by their axioms and the theorems derivable from them; (2) A system's simplicity and strength tradeoff; increasing one results in a decrease of the other; (3) The laws of nature are the privileged, generalized theorems (or axioms) in the system with the most balance between simplicity and strength. These theses are implicit in the following quotation from David Lewis (1973),

> We can restate Ramsey's theory of lawhood as follows: a contingent generalization is a law of nature if and only if it appears as a theorem (or axiom) in each of the true deductive systems that achieves a best combination of simplicity and strength. (Lewis [1973] 73)

A few questions immediately arise: what precisely is meant by these notions of 'simplicity' and 'strength'? And why are these theoretical virtues thought to tradeoff?

Let us begin by briefly examining the virtue of strength as employed by classical MLR. Crudely, a system has more strength if it is more informative; it tells us more about the world. For example, a system with every truth in the encyclopedia as an axiom is quite strong; in such a system, there is not much left to know. Whereas a system containing only one fact from the encyclopedia as an axiom, say the fact 'all kangaroos are marsupials', is quite weak. It does not give us much information about the world at all. We can, hereby, define *strength* as follows: a system *S* is less strong than *T* if and only if *S* is a subset of *T*. The fact, 'all kangaroos are marsupials', is a subset of the entirety of facts listed in the encyclopedia. Therefore, the system containing only this taxonomical fact about kangaroos as an axiom is weaker than the system containing all encyclopedic facts as axioms.

How should we define simplicity with regard to classical MRL? At first pass, we can define *simplicity* as follows: a system *S* is simpler than a system *T* if and only if it can be formulated more concisely. A few questions arise here as well: what does it mean for a system to be more concisely formulated? Does it mean that the system contains fewer sentences? Are the sentences in the system, themselves, shorter? Do they contain fewer predicates? Let us put these questions aside for now and return to them in section 2.3. It suffices to say, for the moment, that the simplicity of a system somehow depends on how concisely it is formulated.

Before discussing its prima facie advantages, something should be said about the notions of 'tradeoff' and 'balance' employed by MRL. John Carroll aptly describes the idea of tradeoff as it pertains to classical MRL, "It is easy to make a system stronger by sacrificing simplicity: include all the truths as axioms. It is easy to make a system simple by sacrificing strength: have just the axiom that 2 + 2 = 4" (John Carroll 2006). As Carroll suggests, much of MRL turns on the notion that increasing a system's strength entails decreasing its simplicity and vice versa; otherwise there can be no hope of achieving balance between them. This is because the notion of balance, like the weighing device that takes its name, entails that tipping one side results in elevating the other.

2.2. Prima Facie Advantages of MRL

The MRL view of laws enjoys some prima facie advantages over both the No Laws and Governing Laws approaches. Unlike the No Laws approach, MRL seems to do justice to the actual practice of scientists—who have long sought to discover laws of nature. If the No Laws approach is true, it is hard to lend any credence to Mendel's explication of the laws of inheritance, or Newton's articulation of the laws of motion. MRL's explicit reliance on balance between simplicity and strength also affords it an apparent advantage over the No Laws approach. Without the idea of balancing simplicity and strength, it is hard to make sense of scientists' search for a small set of basic principles, both simple and informative: a practice ubiquitous in science.

Unlike the Governing Laws approach, furthermore, MRL accommodates what philosophers of science call the *Humean Supervenience Thesis*. This thesis states, "All there is to the world is a vast mosaic of local matters of particular fact; all else supervenes on that" (Lewis [1986] ix). According to classic Governing Laws approaches, however, laws are constituted by necessary relations between universals—relations that hold no matter the particular matters of fact. Armstrong, a defender of the Governing Laws view, writes,

> Suppose it to be a law that *F*s are *G*s. *F*-ness and *G*-ness are taken to be universals. A certain relation, a relation of non-logical or contingent necessitation, holds between *F*-ness and *G*-ness. This state of affairs may be symbolized as '*N*(*F*,*G*)'" (Armstrong 85).

On Armstrong's view, this non-logical, non-contingent (*N*) relation holds between universals *F* and *G* no matter what the particular matters of fact might be. In other words, this Governing Laws approach denies Humean Supervenience. The denial of Humean Supervenience, however, leads to the following problem: if laws do not supervene on local matters of fact, how is it that scientists observing particular occurrences in nature are licensed to draw any inferences about what the laws are supposed to be that govern them? If laws contain necessary relations between universals, and such laws hold no matter the local, particular matters of fact observable by scientists, then it is difficult to imagine how scientists can infer anything about what these laws are by observing particular occurrences in nature. MRL, by virtue of accommodating Humean Supervenience, need not encounter this problem. This appears to be an advantage for MRL.

MRL has a few other prima facie advantages over the Governing Laws approach. The Governing Laws approach must take laws to be prior to explanation—since laws are the basis for all explanation. This means that, on a Governing Laws account, the laws themselves are left

unexplained. This presents another problem for the Governing Laws view: it is difficult to accept an account of scientific explanation based entirely on laws which, themselves, cannot be explained. In MRL, on the other hand, laws merely serve as theorems (or axioms) in the best systematization of our knowledge, theorems (or axioms) that need not ground every correct explanation. Furthermore, and more obviously, MRL has the advantage of not appealing to heavy metaphysical concepts like *necessity* and *universality* commonly invoked by proponents of Governing Laws. Since the meaning and proper use of these heavy metaphysical concepts is widely contested, and MRL can account for laws without appeal to them, it seems this is yet another advantage of MRL.

2.3. BBS: Constraining Classical MRL

Despite these prima facie advantages, MRL faces some serious challenges from the outset. In this section I outline some of the problems that Cohen and Callender think face classical MRL and their proposed 'Better Best System' (BBS) account: an account meant to avoid these problems while retaining the advantages of classical MRL.

Cohen and Callender argue that classical MRL's reliance on inter-system comparisons of simplicity, strength, and balance is problematic. I take their argument to be this: (1) classical MRL's reliance on inter-system comparisons of simplicity, strength, and balance requires the ability to make *immanent* comparisons; (2) such immanent comparisons, by virtue of being language-dependent, are untenable; therefore (3) classical MRL must give up its reliance on inter-system comparisons of simplicity, strength, and balance.

In support of (1), Cohen and Callender follow Quine (1970) by distinguishing between something being an *immanent* versus a *transcendent*. As Cohen and Callender have it, something is an immanent if it is "defined relative to a system of basic kinds or basic predicates", and something is a transcendent if it is "defined independently of the system of basic kinds or basic predicates" (Callender & Cohen 5). The notions of 'simplicity', 'strength', and 'balance' invoked by classical MRL, Cohen and Callender argue, are immanents rather than transcendents. In other words, whether a system is deemed simpler, stronger, or more balanced depends on what the basic kinds or predicates are in the language of the individual doing the systematizing. Since we can imagine languages with radically different assignments of these basic kinds or predicates, there can be no comparisons across systems with the possibility of different assignments of kinds

or predicates. David Lewis anticipates this worry. He asks us to consider the predicate 'F'. Now imagine that we stipulate a language where 'F' satisfies all and only the things in the world where an arbitrary system *S* obtains. In this language, the single generalization '(x)Fx' would automatically be the best system—because it is both stronger and simpler than any other alternative systems (Lewis 1983, 42). Here is the problem: whether we deem a system to be simpler, stronger, or more balanced depends crucially on what the basic kinds or predicates are in the language of the systematizer. Cohen and Callender deem this the "problem of immanent comparisons" (Cohen & Callender 6).[1] As part of their response to this problem, Cohen and Callender's BBS account eliminates MRL's reliance on inter-system comparisons of simplicity, strength, and balance.

BBS further differentiates itself from classical MRL by constraining the properties that separate laws from other true generalizations to those that are *epistemically accessible*. Cohen and Callender argue that, without this epistemic accessibility constraint, MRL-style account of laws cease to enjoy any benefit over Governing Laws approaches. Recall that the disadvantage of Governing Laws is that there is no way of determining the laws of nature by observing local matters of fact. Cohen and Callender point out that, without an epistemic accessibility constraint, the same would be true of MRL: there would be no way of discerning between two worlds where the same generalizations hold as true, but where the laws differ. Because of this concern, BBS requires laws to pass (what Earman calls) the "empiricist loyalty test".

> 'It must be the case that for any two worlds W1 and W2, if W1 and W2 agree on all occurent facts, then W1 and W2 agree on the laws' (Earman 85)…The heart of the empiricist loyalty test is just that the properties that distinguish the world where a generalization counts as a law from one where it doesn't must be *epistemically accessible*.

By virtue of adopting Earman's empiricist loyalty test, BBS requires the properties that separate laws from other true generalizations to be epistemically accessible. It is by requiring this epistemic accessibility only that MRL can retain its advantage over Governing Laws approaches.

Furthermore, Cohen and Callender take this epistemic constraint to have a significant payoff: it accommodates the actual practice of science. When epistemic accessibility is taken as a constraint, it becomes possible for scientists to separate laws from other true generalizations by

[1] Lewis attempts to respond to this worry by requiring that the best system be formulated in a canonical language with predicates assigned to perfectly natural kinds. Cohen and Callender follow this solution by relativizing laws to a class of basic kinds/predicates—but only within one system—rather than between systems.

observing nature. Otherwise, they cannot. Cohen and Callender make this point explicit, "We take ourselves not to be alone in being attracted to MRL partly because it hold out the promise of a theory of laws that is not radically disconnected from science" (Cohen & Callender 10).

2.4. Fundamentalism vs. Stipulationism about Kinds

As we have seen, BBS attempts to evade the problem of immanent comparisons by avoiding classical MRL's reliance on intersystem comparisons of simplicity and strength. But we have also seen that BBS attempts to maintain its advantage over governing laws by imposing an epistemic accessibility constraint on law-making properties—allowing lawhood to be investigable by science. But these changes to the traditional best systems approach lead Cohen and Callender to another significant departure from classical MRL. Specifically, it leads them to reject a Lewis-style fundamentalism about kinds in favor of stipulationism.

Cohen and Callender arrive at a stipulationism about kinds by arguing as follows. The other way we could avoid the problem of immanent comparisons would be to follow Lewis by requiring the best system to be formulated in a canonical language in which all predicates correspond perfectly to natural kinds. Call this a *fundamentalism* about kinds. If our best system could be formulated as such, then no problem of immanent comparisons remains; the formulation of the best system would not be hopelessly tied to the arbitrary language of the systematizer, but rather, the language we use to formulate our best system would have all its predicates correspond to the perfectly natural, fundamental kinds. Furthermore, if we adopt a Lewisian fundamentalism about kinds, there would be no possibility of a special predicate 'F' where 'F' satisfies all and only the things in the world where an arbitrary system *S* obtains. Why?—because we can reasonably guess that 'F' does not correspond to any fundamental kind found in nature. If we limit the language in which we state our best system to predicates corresponding to the way nature is actually carved at the joints, then there can be no sneaky predicate 'F' which makes generalizations under consideration for lawhood both the simplest and strongest.

Cohen and Callender, however, cannot accept fundamentalism about kinds as a solution to the problem of immanent comparisons. Their reason is twofold: first, it is hard to give a plausible account of how perfect naturalness is epistemically accessible by scientific inquiry, a constraint we've seen that they deem necessary to retain any advantage of the Governing Laws

account. Science does plenty of systematizing, but how would a scientist know that their systematization does or does not match perfectly to the perfectly natural kinds? And second, fundamentalism about kinds precludes the possibility of supervenient kind laws; this would make postulating laws in the life sciences or special sciences impossible. If we assume that the fundamental kinds are those postulated by physics, then it looks unlikely that any generalizations appealing to macro-phenomenon (like life or entropy) will qualify as laws. Since Cohen and Callender want to include laws appealing to supervenient kinds, they reject fundamentalism.

As a result, BBS avows a stipulationism about kinds according to which we merely stipulate a distinguished set of kinds that is accessible to scientific inquiry and formulate our best system predicated on those kinds. Call this *stipulationism* about kinds. Cohen and Callender write, "This stipulative solution looks as if it is well-suited both to solve the problem of immanent comparisons and pass the empiricist loyalty test. Moreover, the stupulationist can rule out Lewis's trivializing predicate…" (15).

Cohen and Callender are careful, however, not to advocate a stipulationism according to which we make a single, once-and-for-all choice of kinds and only allow laws to fall within a system predicated on those kinds. Their reasons for rejecting 'once-and-for-all' stipulationism are that "a once-and-for-all-choice will always be to some extent arbitrary", it "runs contrary to MRLer's naturalist-friendly motivations", and "it won't help us recover lawlike generalizations in the special sciences" (17). Rather than once-and-for-all stipulationism, BBS advocates a *relativized stipulationism*:

> The idea is that even if there is no transcendently Best System (not fixed by nature, not stipulated once and for all by us), there is nothing stopping us from assessing the immanently strongest, simplest and best balanced axiomatizations relative to a specific choice of basic kinds K (21).

Thus, BBS advocates a relativized stipulationism about kinds according to which there is no one basic system of kinds (stipulated or otherwise), but rather we stipulate which kinds are distinguished based on whatever our projects or concerns happen to be.

3. Why BBS's Relativized Stipulationism about Kinds Entails Antirealism about Laws.

In this section, I make the case for why BBS entails an antirealist conception of laws. Before arguing for this, however, something needs to be said about what it means for a characterization of laws to be realist (and antirealist). Unfortunately, it is difficult to give a precise definition of

'realism' that satisfies everyone. 'Realism', a notoriously vague notion, is a term people use in many different ways to mean many different things. Having said that, I'll give a rough-and-ready characterization of realism and antirealism regarding laws to which I think most would agree.

I consider an account of laws to be *realist* if it characterizes laws as actual, existing, and mind-independent features of the world. The difference between laws and non-laws, on a realist view of laws, corresponds to some real, mind-external differences in nature. According to a realist, the law F=MA (assuming it is a law) is different from an accidentally true generalization like 'all coins in my right hand pants pocket are silver colored'; the former actually has whatever the relevant law-making properties are while the latter does not. It is important to note, however that realists describe these law-making features differently, and for my purpose I needn't commit to what those features are. It could be that F=MA is exceptionless, or that it is necessary (non-contingent), or perhaps that it supports counterfactuals, or that it is confirmed by its own instances. Regardless of what features the realist chooses, the relevant point here is that F=MA is an actual law, and the properties that make it such are real, existing, and mind-independent. I take an account of laws to be *antirealist*, on the other hand, if it admits laws that are not necessarily characterized as real, existing, and mind-independent. On an antirealist view of laws, the features that distinguish laws from non-laws are not necessarily conceived of as actual, existing, but might be, for example, mere human projections. When we postulate laws, on an antirealist view, we attribute something to the world that it does not actually contain.[2]

With this rough-and-ready understanding of realist versus antirealist accounts of laws in mind, I contend that BBS's relativized stipulationism about kinds entails an antirealist view of laws. My basic argument is this.

> A. According to BBS, our laws must be predicated on a stipulated set of distinguished kinds relative to the perspective and project of whoever is doing the systematizing.
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> B. Given (A), BBS must allow for the possibility of infinitely many sets of laws of nature based on the possibility of infinitely many possible projects and perspectives of potential systematizers—each with their own corresponding distinguished kinds.

[2] Some consider there to be a third position: *constructivism* with regard to laws. On a constructivist view, laws are real—albeit constructed by humans, and as such, still depend on the minds of the systematizers. My suspicion is that constructivism also fails to meet the realistic standards (see section 3.2) imposed on laws by actual science.

C. On a realist view of laws, however, there cannot be infinitely many sets of laws; there is only one set of laws of nature: the actual ones.

D. Given (A)-(C), BBS should be seen as antirealist about laws.

Premise (A) of the above argument follows directly from Cohen and Callender's argument for BBS. Premises (B)-(C) require some support.

Premise (B) follows from BBS's rejection of 'once-and-for-all' stipulationism. On the BBS view, the laws we end up with depends on which kinds are stipulated as distinguished by the particular individual doing the systematizing. If a theoretical physicist is attempting to come up with a best system, then 'entropy' will probably be stipulated as a distinguished kind; then the Past Hypothesis (Albert 2001) which states, 'the Boltzmann entropy of the universe was extremely low in the early universe' is potentially a law of nature. If a biologist stipulates 'life' and 'species' as distinguished kinds, then we can perhaps have Darwin's evolution by natural selection as a law. If a geneticist allows 'chromosomes' into our distinguished kinds, we might have Mendel's laws, and so on. Cohen and Callender explicitly allow for this when they define laws of nature as follows: "a true generalization is a law relative to (basic kinds) K (or basic predicates P_k) just in case it appears in all the immanently Best Systems relative to the basic kinds K (basic predicates P_k) (Cohen and Callender 21). Furthermore, and more importantly for my argument, Cohen and Callender allow for the possibility of infinitely many possible sets of stipulated kinds based on the infinitely many potential projects and perspectives of those systematizing our knowledge. They continue,

> …the world permits possibly infinitely many distinct carvings up into kinds, each equally good from the perspective of nature itself, but differentially congenial and significant to us given the kinds of creatures we are, perceptual apparatus we have, and (potentially variable) matters we care about (Cohen and Callender 22).

As we've seen, the BBS account says that the laws of nature are the privileged generalization in the potential system with the most balance between simplicity and strength relative to a stipulated set of distinguished kinds or predicates. But, as they say above, there are infinitely many possible ways to carve the world up into kinds. If there are infinitely many ways to carve the world into kinds, and what the laws are depends on which kinds we distinguish, then there must be infinitely many possible sets of laws. Therefore, premise (B) of my basic argument holds.

The forgoing conclusion, I contend, is unacceptable to the realist about laws. Recall that, for the realist, laws are considered to be real, mind-independent features of the world—features that hold no matter the personal projects, perspective, and cares of those seeking to systematize it. On a realist view, there is one set of laws: the actual ones. What the laws of nature are has nothing to do with the systematizer's personal point of view. For the realist, the laws of nature are what they are regardless of the projects, perspectives, and motivations of those seeking to understand the world.

If BBS is committed to a view of laws according to which there are infinitely many sets of laws of nature possible, and realism about laws is only committed to one set (the actual ones), then BBS cannot be realist about laws. Therefore, BBS must be considered antirealist about laws.

4. Why BBS's Commitment to the Actual Practice of Science Entails Realism about Laws

As indicated in section 2.2, one of the prima facie advantages of MRL-type views of laws over No Laws approaches is that it can do justice to the actual practice of science. Cohen and Callender explicitly take this as a desiderata for their BBS view. They write, "Contrary to the No Laws view, we believe that it is very hard to make sense of actual scientific practice and the history of science without invoking laws of nature" (Cohen and Callender 3). As such, BBS retains its advantage over No Laws because it *does* adhere to actual scientific practice of searching for laws.

I argue that BBS's adherence to the practice of actual science as a way of retaining an advantage over the No Laws approach entails a view of laws that is realist. My basic argument is this.

> I. In order to retain an advantage over No Laws, BBS is committed to following scientists' actual practice of searching for laws.
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> II. The laws for which scientists actually search and the purposes for which scientists use these laws require laws to be conceived of in a realist manner.
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> III. If BBS follows the actual practice of scientists, and actual scientists must conceive of laws realistically, then BBS must conceive of laws realistically.
>
> IV. BBS entails realism about laws.

Premise (I) follows directly from Callender and Cohen's defense of BBS. Premises (II)-(IV) require some motivation.

I contend that, among the reasons scientists postulate laws, two are particularly important: to give deductive-nomological explanations and to ground predictions. In support of premise (II) in my above argument, I argue that each of these purposes requires a realist conception of laws. If this is so, then the only way for BBS to retain its advantage over No Laws is to adhere to a realist conception of laws.

Scientists postulate laws, in large part, to accommodate a particular model of scientific explanation: a deductive-nomologial (DN) one. The DN model of scientific explanation, primarily due to the work of Carl Hemple (1942, 1965), divides explanation into two constituents: an explanandum and an explanans. The *explanandum* of an explanation is a sentence describing the phenomenon to be explained, and the *explanans* is the sentence, or class of sentences, which account for the phenomenon. For an explanation to go through, according to the DN model, the explanandum must follow deductively from the explanans, the explanans must be true, and the explanans must contain at least one law of nature. For example, suppose a scientist seeks to explain where Venus will appear in the night sky at some future time. On a DN model, the way to do it is to start with Newton's inverse square law of gravity—and add to it the initial conditions: the mass of the sun, the mass of Venus, and the present position and velocity of each. With Newton's law as the first premise, and the initial conditions as further premises, an explanation of Venus's future location deductively follows. The point I wish to make here is the following: unless laws are conceived of in a realist manner, DN explanation loses its appeal. If Newton's laws of motion are mere projections or mind-dependent ways of organizing our knowledge, it becomes much more difficult to rely on them to ground our explanations of the phenomena we observe. Why?—because, on an antirealist view, laws do not necessarily describe anything about the actual, existing world. If the laws that ground our explanations do not match up with anything real, our explanations cannot either. Since DN explanation is a primary payoff for the actual scientific pursuit of laws, and this payoff disappears on an antirealist account of laws, then the actual practice of science must be committed to a view of laws that is realist.

Besides enabling DN explanation, scientists count on laws to ground their predictions. I contend that an antirealist account of laws undermines this practice as well. An integral part of

the actual practice of science is making predictions and testing them. A straight-forward way to derive a prediction, for a practicing scientist, is to start with a law and work forward to an anticipated result. Suppose I am a scientist researching a particular gas and how it behaves under temperature changes. If I am going to guess what will happen when I heat this gas, the obvious way to do so would be to consult the gas laws. Upon doing so, I see it is a law that all gasses expand equally with the same change of temperature. Following this law, I can now predict that the gas I am testing will expand equally with the same change of temperature. Conceived of antirealistically, however, is there a good reason to expect this outcome? If laws, on my view, do not necessarily describe actual features of the world, then I have no secure reason to rely on them to anticipate any particular result. If the gas laws are mere projections onto the world, the result of an arbitrary choice of distinguished kinds, I argue that there is little reason to expect a given gas to behave in accordance with them

The upshot is this: unless laws describe real, actual, mind-independent features of the world, there is no justification for grounding deductive-nomological explanations on them, and there is no reason to expect any anticipated result in accordance with them. Since scientists depend on laws for these purposes, then they must hold a realist view of laws. If BBS hopes to retain its advantage over No Laws by adhering to the actual practice of scientists, then it must be also be committed to a realist view of laws

5. A Contradiction

In section 3, I argued that BBS's relativized stipulationism about kinds entails an *antirealist* view of laws. In section 4, I argued that BBS's adherence to actual practice of science entails a *realist* view of laws. If my arguments are sound, then BBS leads to a contradiction, and cannot be a viable way of escaping the problems of classical MRL.

6. Conclusion

There are good reasons for wanting there to be laws of nature. Some version of MRL may well be the best way of achieving this result. I have argued in this paper, however, that Callender and Cohen's BBS view of laws only escapes the problems of classical MRL at the cost of incurring others. Specifically, their relativized stipulationism about kinds and their commitment to the actual practice of science result in a deep tension—one that I have argued amounts to an

unacceptable contradiction. If this is so, then Cohen and Callender's 'Better Best System Account of Lawhood' is no better.

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