**Coherence and Deontology**

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It's not easy to be rational.  But the obstacles to being rational are not like the obstacles to being knowledgeable:  the former requires only sustained, careful thinking, whereas the latter also requires the luck to avoid being the victim of systematically misleading evidence (e.g., a brain in a vat).  It's because of this difference that epistemological internalists are often more interested in rationality than in knowledge.  Rationality, such internalists plausibly suppose, is something we can achieve solely by dint of our own cognitive effort.  Knowledge, in contrast, requires the world to cooperate with our thoughts, and no amount of careful thought can insure such cooperation. We who have the power to think and reason can thus fail to know through no fault of our own, but we cannot fail to be rational through no fault of our own.  At least, so says one plausible and traditional internalist thought.

One way to criticize this thought is to target the alleged divide between knowledge and rationality:  if Williamson is right that one's evidence is all and only what one knows, and if rationality involves proportioning one's belief to one's evidence, then it follows that being rational requires proportioning one's belief to one's knowledge.  In so far as one can faultlessly fail to know something that one faultlessly takes oneself to know, it follows that one can faultlessly fail to be rational. Rationality, like knowledge, requires not merely cognitive effort, but also the cooperation of the world.

But this Williamsonian criticism of the internalist thought relies on a notion of rationality that involves proportioning one's beliefs to one's evidence.  And whether or not we agree that rationality involves responsiveness to evidence, we can still allow that there is a component of rationality -- call it "structural" rationality -- that does not involve such responsiveness, and that involves nothing more than bringing one's attitudes into coherence with each other.  Of course, bringing one's attitudes into coherence with each other is not easy.  Nonetheless, if you are lucky enough to be a creature that is capable of thinking and reasoning, then your failure to bring your attitudes into coherence with each other is like a normal child's normal failure to clean their own room:  it is a failure attributable not to their bad luck, but to their own fault.  Ignorance need not be one's fault.  Failing to comply with such substantive requirements of rationality as proportioning one's beliefs to one's knowledge need not be one's own fault.  But incoherence among one's own attitudes is, on this internalist picture, one's own fault.[[1]](#footnote-1)

Coherence thus seems to give the internalist what she wants: the internalist seeks a region of normativity in which failure is never faultless[[2]](#footnote-2), and she can plausibly claim to find such a region in the norms of coherence.

Or can she?

The present paper examines some challenges to this internalist claim.  These challenges argue that while failures of coherence, like failures to proportion one's beliefs to one's evidence, might normally be one's own fault, they can also sometimes be avoidable only by dint of good luck.  There are – these challenges argue – possible situations in which it is logically impossible to comply with all the requirements of coherence, and it is lucky for us actual agents if we are seldom in these possible situations.

My paper will survey several such challenges and conclude that they all fail. If you are sympathetic to these challenges, you may already be inclined to suspect that my argument against them will suffer from an insufficiently demanding conception of coherence.  I intend to make it as easy as possible to discover whether or not that suspicion is correct, by devoting much of this paper to spelling out my conception of rationality in general, my conception of coherence in particular, and how the latter provides us with a way of thinking about whether or not a particular norm is a norm of coherence.  If my account turns out to be insufficiently demanding, that should soon be clear.

But to allay the suspicion above more fully, let me say now that my account of coherence is in fact much more demanding than any other account I’ve seen. On my account, coherence requires probabilistic coherence among one’s credal states, logical consistency among one’s beliefs, and also various relations between one’s credences and one’s beliefs, and one’s holding the various credal and doxastic states that one holds for various reasons. What I intend to argue in this paper is that, even when coherence is conceived in the extremely demanding way in which I conceive it, it is still achievable by our own efforts, and without the cooperation of the world (over and above its endowing us with the capacity to make those efforts).

In section I, I distinguish the deontic notion of rationality from the graded notion of rationality, and I say something about why we need both and how they are related.  In section II, I distinguish the deontic notion of coherence from the graded notion of coherence, and I discuss how these two notions of coherence are related to our two notions of rationality.  In section III, I explain why coherence, so understood, seems to constitute a demand our failure to satisfy which must be our own fault, and I also use my conception of coherence to identify four distinct norms of coherence.  In section IV, I critically assess various arguments intended to show that there are circumstances under which it is logically impossible to satisfy all four of these coherence norms simultaneously.  I draw my conclusion in section V.

**Section I: What is a Norm of Rationality?**

What determines the content of the norms of rationality? What gives them their authority over us? Some philosophers defend a constitutivist answer to these questions.[[3]](#footnote-3) Others defend a consequentialist answer.[[4]](#footnote-4) Others defend a contractarian answer.[[5]](#footnote-5) And others defend a virtue-theoretic answer to these questions.[[6]](#footnote-6) These different kinds of answers are not jointly exhaustive, nor are they mutually exclusive. In this paper, I will try to remain neutral on these important metaphysical questions about the content and the authority of rational norms.

But I will need to stake out a few commitments about the norms of rationality in order to argue for the conception of coherence that I develop in section II of this paper. I hope that I can stake out these commitments without having to wade into those deeper issues.

I’ll begin with the observation that we talk and think about rationality in two very different ways. Sometimes, we talk and think about what is rationally required, or rationally permitted, or rationally impermissible: we talk and think about rationality *deontically*. Other times, we talk and think about some things between more rational than others: we talk and think about rationality as *graded*. An account of the norms of rationality – whether constitutivist, consequentialist, contractarian, virtue-theoretic, or otherwise -- should make room for both of these ways of talking and thinking, and say something about how they are related to each other, and why we use both.

Let’s begin by thinking about rationality deontically. What does rationality require of us? Of course, it requires of us that we not do those acts, or have those attitudes or feelings, that it forbids. (That follows simply from the fact that requirement is the dual of permissibility, just as necessity is the dual of possibility.) But which acts, attitudes or feelings does it forbid? Here is one principle that helps us to narrow down an answer to this question: If it is rationally permissible to regard a particular act, attitude, or feeling as rationally required, then that act, attitude or feeling is not rationally forbidden. Let’s given this principle a label:

(Permissibility Tranfer) If it is rationally permissible to regard an act, attitude, or feeling as *required*, then it is also rationally permissible to do that act, or to have that attitude or feeling.

If this principle were not true, then we could be in the situation of permissibly thinking that a particular act, attitude or feeling is rationally required, and yet also being rationally forbidden from performing that act, or having that attitude or feeling. But this is absurd: rationality cannot *forbid* you from doing or thinking what you permissibly take yourself to be *required* to do or think.

By *modus tollens* on Permissibility Tranfer, if it is not rationally permissible to do an act, or to have an attitude or feeling, then it must not be rationally permissible to regard that act, attitude, or feeling as required either. This means that, if we have false beliefs to the effect that particular sorts of acts, attitudes, or feelings are rationally required, those false beliefs are themselves rationally impermissible. Note that this does not imply that we must be omniscient about the requirements of rationality, nor does it imply infallibility concerning those requirements. But it does imply that a certain range of our beliefs concerning rational requirements cannot be both false and rationally permissible.

Although Permissibility Transfer enjoys considerable plausibility, there is an equally plausible objection to it. The objection involves appeal to another principle concerning rational permissibility, namely, that belief is rationally permissible only if it does not completely fly in the face of one’s evidence. This latter principle does not amount to a Cliffordian insistence that belief always be completely proportioned to one’s evidence, or that one ought not believe without evidence. It says only the following:

(Weak Evidentialism) If one’s total evidence provides compelling net support for some hypothesis h, then one is not rationally permitted to believe not-h.

Now, by appeal to Weak Evidentialism, it seems we can construct counter-examples to the conclusion that follows from Permissibility Transfer, viz., that if we have false beliefs that particular sorts of acts, attitudes, or feelings are rationally required, those false beliefs are themselves rationally impermissible. For consider: are there not circumstances in which our total evidence compellingly supports a false hypothesis about what is rationally permitted or required? For instance: suppose that someone known to you to be an eminent expert in the theory of rationality assures you that, for reasons much too complicated to go into right now, it is rationally required of you to hold attitude A. Despite the assurances of this eminent expert, however, attitude A is in fact rationally impermissible, but discovering its rational impermissibility requires a long and complicated demonstration, and you simply don’t have the time or cognitive energy to discover and follow such a demonstration right now. In fact, when you consider attitude A, it strikes you as rationally mandatory (its content, we may suppose, is easily mistaken for a tautology). Isn’t the most rational of all your current options simply to accept the testimony of the eminent expert, and therefore hold attitude A? Would you not be irrational, under such circumstances, simply to dismiss the expert’s testimony, given that she is known to you to be an eminent expert?[[7]](#footnote-7)

Notice that, in posing this objection, we have spoken of which option is “most rational” among your current options. But to speak of an option as “most rational” suggests that we are appealing here to a notion of rationality that is not deontic, but rather graded. And, by recognizing this fact, we can begin to see how the defender of Permissibility Transfer can address this objection. Sometimes, we confront a set of options none of which is consistent with rationally permissible cognitive behavior, but some of which more closely approximate to rational permissibility than others do. In such cases, we say that some of these options are “more rational” than others. If two options are both fully consistent with rational permissibility, then they are equally rational. And if two options depart equally from rational permissibility, then they are also equally rational.

To say that some cognitive options depart more or less from rational permissibility than others is not to imply that departures from rationally permissibility can be measured, any more than saying that some people are more scrupulous than others implies that scrupulousness can be measured. Comparisons of more or less can be truthfully made, even when such comparisons cannot be measured. (The comparative relation could, for instance, generate only a partial ordering among relata.)

If we think of the relation between the deontic and graded notions of rationality in this way, then here’s how we can understand the situation in which one receives false testimony concerning what is rationally permissible or mandatory, but one receives such testimony from someone whom one knows to be an eminent expert on the subject. What are one’s options in such a case? One could:

1. believe the expert in compliance with one’s evidence concerning her expertise, and consequently have false beliefs about what is rationally mandatory,
2. disbelieve the expert in violation of one’s evidence concerning her expertise, and not have false beliefs about what is rationally mandatory.

Following option (a) involves complying with the requirement entailed by Weak Evidentialism, but violating the requirement entailed by Permissibility Transfer. Following option (b) involves violating the requirement entailed by Weak Evidentialism, but complying with the requirement entailed by Permissibility Transfer. Each option involves violation of some requirement of rationality, and so neither is rationally permissible. But one option might be a *closer approximation* to rational permissibility than the other, at least in certain circumstances. For instance, the more compelling one’s evidence concerning the expertise of the testimonial source, the more rational will option (a) be. In contrast, the more obvious the falsehood of the testimony is, the more rational will option (b) be. When we think of the situation as one in which (a) is the more rational of the two options, we are, I claim, thinking of option (a) as a closer approximation to rational permissibility than option (b). But neither option is rationally permissible. In this unfortunate situation, one simply has to decide which of two rational requirements to violate: compliance with all the requirements of rationality is not an option under such circumstances.

In short, both Weak Evidentialism and Permissibility Transfer are true principles concerning what rationality requires: but the situation I’ve described is one in which it is impossible to satisfy the requirements of rationality, and we have to settle for the closest approximation to satisfying those requirements.

Notice that this conclusion is not inconsistent with all interpretations of the saying that “ought implies can”. It is inconsistent only with those interpretations that would treat “can” as involving not merely the agent’s possession of an ability to comply with the “ought”, but as also involving the agent’s being so situated as to exercise that ability. It’s not clear what reason we might have to accept such a strong version of “ought implies can”: our failure to comply with a norm is at least sometimes excusable if, though we have the ability to comply, we are not in a position to exercise that ability.

This last point helps us to understand why we have two different ways of talking and thinking about rationality. The deontic notion of rationality is fundamental. The graded notion of rationality is introduced in order to make room for more or less excusable departures from rational permissibility. We need both notions for the same reason that we need to think of each other both as subject to laws, but also as violating such laws more or less excusably on various occasions. Precisely what that reason is will depend upon which metaphysical story about the source of rational normativity is correct – an issue I have committed myself to leaving open here.

**Section II: What is a Norm of Coherence?**

Rationality requires coherence. But what is coherence? The word “coherence” simply means *fitting together*, and clearly, there can be forms of coherence that have nothing to do with rationality, e.g., the coherence of the parts of a complex machine. But the question to be addressed in this section is: what is the kind of coherence that is required for rationality?

The past two decades have witnessed the growth of a large literature in formal epistemology dedicated to answering one or another version of this question.[[8]](#footnote-8) Such accounts of coherence all attempt to explain coherence as a formal measure of some property of sets of propositions. But there are at least three problems with this approach:

1. Not all of the representational states that are assessable for coherence have propositional content. For instance, it’s not at all clear how to specify the propositional content of plans (one typically plans *to*…, one doesn’t plan *that* …) or preferences (one typically prefers one thing to another, one doesn’t prefer that …). And yet plans and preferences can be more or less coherent.
2. A particular set of propositions might be such that you can coherently distribute your confidence over all of them, but you cannot coherently believe all of them. For instance, consider this familiar sort of set:

{There will be precisely 1 winning ticket in the n-ticket lottery, ticket #1 will not win, ticket #2 will not win, ticket #3 will not win, ... (and so on for each of the other n tickets)}

One cannot coherently believe every element of this set of propositions, because they are jointly inconsistent. But one can coherently distribute one’s confidence across this set, for instance by assigning credence 1 to the first proposition and by assigning credence (n-1)/n to each proposition after the first. So is the set of propositions itself coherent or incoherent? I don’t see how this question can be answered, except by specifying a kind of relation that one is to bear to each proposition in the set. But that is to specify something that formal accounts of coherence do not specify.

1. As Moretti and Akiba 2007 prove, for all of the formal measures of coherence devised so far, the coherence of a particular set of propositions depends upon how the conjunction of those propositions is carved up into the elements of that set. But this is implausible: whether a composite representation is coherent cannot plausibly depend upon how we individuate the proper parts of that composite.

Consider Shogenji’s measure of coherence (as presented in Shogenji 1999), according to which the measure of the coherence of a set of propositions is the ratio of the probability of their conjunction to the product of their individual probabilities. Now consider two sets of propositions:

{A1, A2, A3, A4, A5} and {A1&A2&A3&A4&A5, A2}

Although each set contains the same information, the Shogenji coherence of set 2 will be higher than the Shogenji coherence of set 1, because the denominator of the coherence measure will be higher for the second set than for the first. This is implausible.

Again, consider Olson’s measure of coherence (as presented in Olson 2002), according to which the measure of coherence of a set of propositions is the ratio of the probability of their conjunction to the probability of their disjunction. Now consider these two sets of propositions:

{A1,A2,A3,A4,A5} and {A1&A2&A3&A4&A5, A1&A2&A3&A4&A5}

Again, although each set contains the same information, the Olson coherence of set 2 will be 1, no matter what the Olson coherence of set 1 is. That’s because the probability of the conjunction of the two elements in set 2 is equal to the probablility of their disjunction.

As Moretti and Akiba show, the very same point holds true also for the measures of coherence proposed in Fitelson 2003 and in Bovens and Hartmann 2003. (I omit those proofs here, since they are much more complicated.) In sum, then, if there is a formal measure of coherence that applies to a set of propositions and will generate the same result no matter how the total information in that set of propositions is carved up into elements of the set, it hasn’t been discovered yet.

There are other problems of detail with each of the measures that has been devised so far, but those problems have been successfully identified already in the literature (see, e.g., Schippers 2014 for a survey of those problems), and I won’t review them here. But, by way of summarizing my conclusion from those problems of detail, I will say this: If the post-Gettier literature provides the materials for a strong inductive argument against a reductive account of knowledge as JTB plus some fourth condition, then the literature of the last two decades provides the materials for a strong inductive argument against a formal measure of coherence that applies to sets of propositions.

So if the kind of coherence that is required for rationality is not to be understood as a measure of some property of sets of propositions, then how should we understand it?

Again, I begin with the observation that we talk and think about coherence in two different ways. Sometimes, we think about coherence – whether it be the coherence of a theory or a plan or a story – as an absolute matter: either it is coherent, or it is not. But we also sometimes think about coherence as a graded property: one theory, or plan, or story, may be more coherent than another. How are these two notions of coherence related to each other?

I propose to understand the relation between these two notions of coherence by appeal to the relation between the two notions of rationality discussed in the preceding section. And this in turns suggest a strategy for understanding the kind of coherence required for rationality: instead of understanding it by trying to reduce it to a measure of some quantity, understand it by trying to see how it fits into rationality more generally. That is the strategy I follow here.

Now I’ll state my proposed account of coherence, and then I’ll explain it:

Coherence (understood in absolute terms) is the *most inclusive non-derivatively wide-scope* rational requirement.

Coherence (understood in graded terms) is a comparison of the extent to which different representations approach absolute coherence.

Now I need to explain what this account means. In particular, I need to say something about what it is for a rational requirement to be “wide-scope”, about what it is for it to be “non-derivatively wide-scope”, and what it is for it to be “most inclusive”.

So first, what is it for a rational requirement to be “wide-scope”? Rational requirements are “wide-scope” when they forbid *combinations* of representations.[[9]](#footnote-9) They are “narrow-scope” otherwise. To illustrate the distinction, compare the following two constraints:

One ought not believe (p & not-p).

One ought not simultaneously believe p and believe not-p.

The first is narrow-scope, constraining us not to have a particular belief, while the second is wide-scope, constraining us not to have each of a particular combination of beliefs at the same time. (Which particular belief is prohibited by the first, and which particular combination is prohibited by the second, of course depends upon the value of the schematic variable p.)

Now, what is it for a constraint of rationality to be “non-derivatively” wide-scope? Consider the narrow-scope constraint:

(\*) For any proposition p, one ought not believe (p & not-p)

Since “S ought not F” implies “S ought not both F and G”, the constraint above implies the following:

(%) For any proposition p, one ought not believe (p & not-p) and also at the same time believe that tomorrow is Tuesday.

But notice that (%) is wide-scope: it prohibits a certain combination of representations. But what generates (%) is simply that it follows from (\*), which is narrow-scope. I will say that wide-scope constraints like (%), although wide-scope, are “derivatively” wide-scope: they can be derived from narrow-scope constraints in the same way that (%) can be derived a priori from (\*) (for instance, by means of the general theorem that, if S ought not F, then S ought not F&G).

So much for “non-derivatively wide-scope”. Now what is it for a constraint of rationality to be the “*most inclusive*, non-derivatively wide-scope” constraint? Consider various plausible candidates for non-derivatively wide-scope constraints of rationality. (I will not, in this section, attempt to argue that any of these are in fact non-derivatively wide-scope constraints of rationality – I am simply trying to give plausible examples of the category at issue):

One ought not simultaneously desire that p is the case and disbelieve that it would be good for p to be the case. (desire as belief)

One ought not simultaneously prefer A to B, prefer B to C, and prefer C to A. (preference transitivity)

For any set of propositions P, one ought to distribute one’s confidence over the elements of P in a way that satisfies the Kolmogorov axioms of the probability calculus. (probabilism)

For any set of propositions P, and any increment of evidence E, when one gains E, one ought to update one’s distribution of confidence over the elements of P by setting one’s new level of confidence in each element pi to one’s previous level of conditional confidence (pi|E). (conditionalization)

When I say that coherence is the most inclusive, non-derivatively wide-scope constraint of rationality, what I mean is that coherence includes *all* of the specific non-derivatively wide scope constraints of rationality – and if the principles listed above are indeed non-derivatively wide-scope constraints of rationality (as they appear to be), then coherence would include all of them. For a composite representation to be coherent in the deontic sense mentioned above is for it to comply with *all* of the non-derivatively wide-scope constraints of rationality that apply to the representations that are part of that composite. A composite representation is coherent in the graded sense mentioned above just to the extent that it complies with all such constraints.

This account of coherence is designed to apply, in the first instance, to those representational mental states that are assessable for rationality, viz., beliefs, preferences, credal states, etc. How does it apply to thinkers? And how does it apply to representational mental states that are not assessable for rationality, e.g., perceptual experiences? And how does it apply to representations that are distributed through groups, e.g., scientific theories, legends, etc.?

We call a thinker “coherent” to the extent that this thinker’s mental states are coherent, according to the account above (i.e., they comply with all the non-derivatively wide-scope norms of rationality). Then, we’ll say that perceptual experiences (or other non-rationality assessable mental states, like dreams or fantasies) are “coherent” just in so far as they are experiences that a fully rational thinker could have – experiences that a thinker’s substantively rational response to which would involve forming coherent beliefs, preferences, and states of confidence about the world in which and on which she must act.

Finally, we say that a distributed representation, like a theory or a legend, is coherent just in so far as it is coherently credible. Thus, stories about time travel, or a political economy the participants of which are all beasts of different species, are not coherent. But, since rationality does not constrain legends in the same sort of way that it constrains theories, to say that a legend is incoherent is not to say that it does not reward attention.

I’ve enumerated various plausible candidates for norms of coherence, but I haven’t yet argued that these plausible candidates for norms of coherence are in fact norms of coherence. In the next section, I discuss how one might go about arguing that they are norms of coherence.

**Section III: Identifying Some Norms of Coherence**

Rationality doesn’t guarantee success, nor does irrationality guarantee failure. But rationality is supposed to lead to success, and when it fails to do so that is a matter of the thinker’s bad luck. Similarly, irrationality can be expected to lead to failure, and when it doesn’t do so, that is a matter of the thinker’s good luck.

But the success to which rationality is supposed to lead, and the failure to which irrationality can be expected to lead, is not just any old success or failure, but more specifically a success or failure of our *commitments*. If rational people predictably suffer more headaches then irrational people, then there is a kind of neurological success than irrational people can be expected to enjoy more than rational people do. But while this kind of success might *result* from the commitments of irrational people, it is not a success *of those commitments*. An irrational person’s commitments are not themselves successful, even if they predictably result in some good consequences.

How do we distinguish the success of a commitment from the success that results from the commitment? We can distinguish the success of a person’s effort from the success that might result from that effort by identifying the target of that effort. For instance, I might be trying to win the race so that I can win the prize money so that I can pay off my loans. I end up losing the race, but my creditor, feeling sympathy for my second place finish, ends up forgiving my debt. In this case, my effort to win the race was not successful, even though it resulted in a kind of success, viz., forgivement of the debt. Similarly, we can distinguish the success of a commitment that is assessable for rationality or irrationality from the success that results from such a commitment by identifying the target, or aim, of the commitment in question. And we can identify the target of a commitment by considering under what circumstances that commitment is criticizable in virtue of being the kind of commitment it is.

Let me illustrate with the case of belief. To believe a proposition p is to be criticizable if p is false. But it is also to be criticizable if any consequence of p is false. Thus, if I believe that p, you can fairly criticize my belief by saying “if you believe that p, then you’re committed to q, but q is false!” So to believe that p involves, *inter alia*, being committed to the truth of p, and consequently, to the truth of whatever follows from p. I remain neutral on the issue of whether believing that p involves something over and above being so committed; all that matters for my purposes is that believing that p somehow or other involves being so committed. And since believing that p involves commitment to the truth of p, and this commitment succeeds only when p is true, it follows that belief that p is rational only when such belief is formed in such a way as can be *expected* to be true (whether or not it is in this case true). Perhaps forming your beliefs reliably *results* in more suffering, but such suffering is not a failure of your doxastic commitments. What would constitute a failure of your doxastic commitments would be their failure to meet their target of being true. And your doxastic commitments are rational if they are formed in such a way that they can be expected to be true, and irrational otherwise.

Thus, if we can show that a person way of forming beliefs are such that the beliefs so formed can be expected to be false, we have thereby shown that, whether or not the beliefs so formed are in fact false, they are irrational. And if we can show that particular combinations of beliefs can be expected to be false, we have thereby shown that, whether or not the beliefs in that combination are in fact false, they are irrational.

Of course, I am being deliberately vague about what it is for a belief, or a combination of beliefs, to be such as “can be expected” to be true, or false: the question of how to interpret the concept denoted by that phrase is a substantive, first-order question of epistemology, and I mean to be neutral on those first-order debates here. But however the phrase is interpreted, it is at least plausible that any combination of beliefs that is inconsistent is a combination that, in the present sense, can be expected to be false. (Indeed, it is a priori certain to be false!) So, given the present characterization of the kind of commitment involved in belief, rationality requires that an agent not hold mutually inconsistent beliefs. Since this requirement is a non-derivatively wide-scope constraint of rationality, it constitutes a requirement of coherence. Thus:

(Coherence Requires Consistency) Coherence requires that an agent’s beliefs at a moment be logically consistent.[[10]](#footnote-10)

The argument for (Coherence Requires Consistency), or henceforth CRC, assumed that believing that p involves being committed to the truth of p. What commitment is involved in having a particular level of confidence in p? To answer that question, let’s proceed as we did in the case of belief: if you have credence of a certain level x in proposition p, how is your credence criticizable? One way in which it is criticizable is if the only bets on the truth of p that are fair are bets at odds of other than x:1-x. If, for example, you have a credence of 50% in a particular coin’s landing heads, then your credence is criticizable if a 1:1 bet on the outcome of the coin toss is not a fair bet. If the only bets on the coin toss that are fair are bets at odds that differ from 1:1, then there is something wrong with your assignment of a 50% credence in the coin’s landing heads. So, whatever exactly is involved in having a credence of n in a particular proposition p, at least this much is involved: being committed to the fairness of a bet on p at odds of n:1-n.

But if credence are commitments to the fairness of bets at certain odds, then the Dutch Book argument shows that, if an agent’s total set of credences do not comply with the Kolmogorov axioms of the probability calculus, then the agent is committed to the fairness of a set of bets that guarantees her a loss come what may. But, just as we can be certain a priori that an agent who is committed to the truth of a set of inconsistent propositions is making a doxastic mistake somehwhere, so too we can be certain a priori that an agent who is committed to the fairness of such a set of bets is making a credal mistake somewhere: a set of bets cannot be fair if it guarantees a loss come what may, any more than a set of beliefs can be true if it is inconsistent. So an agent whose total set of credences does not comply with the Kolmogorov axioms of the probability calculus is irrational.

(Coherence Requires Probabilism) For any set of propositions P, one ought to distribute one’s confidence over the elements of P in a way that satisfies the Kolmogorov axioms of the probability calculus.

This last principle, which I will henceforth call “CRP”, is defensible on grounds analogous to our defense of CRC: we begin by identifying the commitment involved in having a credal state, and then we argue that certain kinds of combinations of credal states are such that we can be certain a priori that the commitment in question fails somewhere or other in those combinations.[[11]](#footnote-11)

Suppose that an agent invests maximal confidence in some proposition p but she withholds belief in p. Is such a combination of mental states criticizable? Yes. By investing maximal confidence in p, the agent is committed to the fairness of a bet in which you suffer an infinite loss if p is false but enjoy no gain if p is true. But by withholding belief in p, the agent avoids commitment to the truth of p. This combination of commitments is criticizable, for it is a necessary condition of the aforementioned bet’s being fair that p is true. If p is not true, then the bet could not possibly be fair, since it would render the bettor subject to the prospect of an infinite loss for no prospect of any gain. So when an agent invests maximal confidence in a proposition p, she is thereby committed to the truth of p. For all I have said so far, such commitment might not suffice for belief that p (even though it is, as I’ve said, necessary for belief that p).

Subjective Bayesians sometimes claim that CRP is the only rational constraint on credal states. I’ve argued elsewhere that this subjectivist view is false.[[12]](#footnote-12) I will not attempt to rehearse that argument here, but I do want to point out that it is at least plausible that there is another rational constraint on credal states. The constraint that I have in mind here operates on credal states that an agent forms on the basis of her evidence. To see what rationality might demand of such evidence-based credal states, let’s once again begin with the more fundamental question of what commitment is involved in having a particular credal state on the basis of a particular body of evidence. Suppose my evidence includes the following propositions: there are three identical-looking cell phones in front of me, my cell phone is one of those three, no one has any memory of which cell phone is whose. Now, suppose that, on the basis of this evidence and no other evidence that is relevant to the issue, I assign credence of 90% to the proposition that a particular one of those three cell phones (the one farthest to the left, say) is mine. This credal state is criticizable in the following way: my evidence does not support a credal state of 90% in that proposition. Since my credal state is criticizable in this way, that indicates that having a credal state of 90% in a particular proposition on the basis of my evidence involves being committed to that evidence supporting that proposition to a proportionate level. More generally, I conclude, to have a credal state of n in proposition p on the basis of evidence E is to be committed to: E supports p to degree n.

The previous statement sounds inconsistent with a version of permissivism according to which the degree of support that my evidence provides for a particular proposition is not point-valued, but rather has a range as its value.[[13]](#footnote-13) The point I’ve made so far is simply that my credence in p is rationally required to match my evidential support for p. But, if evidential support for a proposition can have a range as its value, then so too can my credence in that proposition. If my evidence supports a proposition to a very specific degree, then I am rationally constrained to invest that same proposition with credence to that same degree. If, on the other hand, my evidence supports a proposition only to some broad range of degrees, then I am rationally constrained to invest that same proposition with credence to that same broad range of degrees. Can I rationally invest that same proposition with credence to a very specific, point-valued degree *within* that range?[[14]](#footnote-14) Perhaps I can, but I remain neutral on this issue here.

Now, suppose that my total body of evidence E supports each of x propositions equally, and that this last fact is a priori certain. But suppose that I distribute confidence over those x propositions unequally: I assign credence of 50% to one of the x propositions, credence of 25% to a second of the x propositions, credence of 12.5% to a third of the x propositions, and so on. In such a case, it is a priori certain that the commitments involved in at least some of these credal states are wrong: not all of these credal states can be proportional to the evidence that supports them. So this totality of credal states is irrational.

The requirement of rationality that I’ve just identified may not be a requirement of coherence, because it may – at least for all I say here – derive from a narrow scope constraint that operates on particular credal states, and so operates on combinations of credal states only derivatively. I remain neutral on this issue here, since nothing in the argument of my next section turns on it.

We’ve so far identified coherence constraints on beliefs and on credences, and we’ve also mentioned a rational constraint of some kind on credences that are formed on the basis of one’s evidence. Now let’s turn to the question of what sorts of coherence constraints there are on the beliefs that one forms on the basis of one’s reasons, and we will begin, once again, by thinking about the commitment involved in forming a belief on the basis of one’s reasons. I leave it open that there may be non-evidential reasons for belief, and that one may form a belief on the basis of such reasons. Suppose my evidence includes the following propositions: I am one of three people in my community who have a life-threatening disease, these three people all fall into a particular demographic group, recovery rates from this disease within that demographic group are 1 out of 3, people who have this disease are vastly more likely to recover if they believe that they will recover, there is no factor I know of that distinguishes between the three of us that is relevant to the relative likelihood of our recovery from the disease. In such a case, even though my evidence makes it 1/3 likely that I will recover from the disease in question, I have very strong prudential reason to believe (or at the very least to get myself to believe) that I will recover from the disease, and this may – at least for all I say here – be a *reason for which* I believe that I will recover. But, whether or not this is the case, my belief is criticizable if it is not supported by the total body of reasons for which I hold it (whether those reasons are practical, or purely evidential). And this indicates that, to believe that p for reasons R is to be committed to R’s supporting the belief that p. When I believe a proposition for a reason, I am committed to that reason’s supporting the belief, and my belief is criticizable at least insofar as this commitment is incorrect. For analogous reasons, when I suspend belief concerning a proposition for a reason, I am committed to that reason’s supporting that suspension, and my suspension is criticizable at least insofar as this commitment is incorrect.

Again, notice that the points made above are consistent with (though they do not entail) a kind of permissivism about which doxastic attitudes are rationally required by my reasons. According to the version of permissivism I have in mind here, my reasons for believing that p may leave it open rationally open to me to believe that p or to suspend belief concerning p. The point I’ve made so far is simply this: when I adopt a particular doxastic response (belief or suspension) with respect to p, and I do so on the basis of my reasons for so responding, I am thereby committed to its being the case that my reasons support that response. It does not follow from this that I am committed to its being the case that my reasons support that response *uniquely*, or non-permissively. The narrow scope constraints that my reasons impose on individual beliefs or suspensions may, for all I say here, be very slack.

Now consider a set of propositions P (consisting of elements p1, p2, p3, …). And suppose that the reasons I have to believe p1 (whether or not I believe it) support that belief to just the same extent to which the reasons I have to believe p2 support that belief, and also to just the same extent to which the reasons I have to believe p3 support that belief, and so on. In general, for any two propositions in this set px and py, the reasons I have to believe px support belief that px to just the same extent to which the reasons I have to believe py support belief that py. Finally, suppose that I believe some of these propositions but suspend belief about others, even though I have no reason to do just that (i.e., no more reason to believe some than others, and also no reason to believe some but not to believe others, and no reason to suspend on some but not to suspend on others). If permissivism of the kind described in the preceding paragraph is false, then at least some of my doxastic attitudes violate some narrow scope constraint of rationality. But suppose permissivism of the kind described in the preceding paragraph is true, and that my reasons, for any particular element of P, leave it rationally open to me whether to believe or to suspend on that proposition. In that case, even if no particular belief or suspension of mine is criticizable, nonetheless my total doxastic set is criticizable if I believe some propositions for those reasons, and suspend belief on others for the very same reasons, *when I have no reason to treat them differently*. My total doxastic set is criticizable on grounds of giving different doxastic treatment to propositions that are supported equally by my reasons, when I have no reason to do so. Thus, my total doxastic set commits me to its being the case that I have reason to have different doxastic attitudes with respect to the elements of P. The reason could be that I would enjoy great benefit by believing only some, but not all, elements of P. The reason could be that I have reason to believe (falsely) that my reasons for different elements of P do not provide equal support. But if this commitment is incorrect – if, that is to say, I have no reason to have different doxastic attitudes with respect to the elements of P – then rationality requires me to have the same doxastic attitude with respect to those equally supported elements. Since this is a non-derivatively wide scope constraint of rationality, we can conclude:

(Coherence Requires a Reason for Differential Treatment) For any two propositions p, q, if one reasons for believing that p support belief in p to the same extent that one’s reasons for believing that q support belief in q, then one must not adopt different doxastic attitudes to p and to q, unless one has reason to do so.

We will henceforth call this principle CRRDT.

Notice that all three of the requirements that we’ve now identified – CRC, CRP, and CRRDT – like all other coherence requirements, constrain the relations among our various mental states, and do not constrain the relation between extra-mental reality and our mental states. This is why it seems so plausible that a careful, thoughtful agent should be able to satisfy these requirements by dint of her own efforts: presumably, such agents can control their own mental states much more fully than they can control the relations between those mental states and the extra-mental world around them. It seems plausible therefore, that coherence requirements like CRC, CRP, and CRRDT can be violated *only* on pain of guilt.

In the next section, we will critically assess various challenges to this plausible internalist claim. We will consider whether there are possible situations in which it is logically impossible to satisfy some combination of these three requirements.

**Section IV: Dilemmas for Coherence?**

If being coherent involves complying with all of the non-derivatively wide-scope constraints of rationality, and if CRC, CRP, and CRRDT are all non-derivatively wide-scope constraints of rationality, then are these possible situations in which it is logically impossible to be coherent?

Let’s consider some arguments that are adduced against one or more of the requirements of coherence that we’ve identified. Consider, for instance, the common argument from the Preface Paradox against CRC. Recall how the Preface Paradox works. You’ve just written a book asserting:

P1

P2

P3

…

Pn

And now you come to write your preface, and you naturally assert

Pn+1: at least one of the assertions in the book (other than this one) is false.

The parenthetical qualification is intended to insure that you haven’t made Pn+1 a priori certain to be true merely by asserting it. Now, suppose that you rationally believe each of P1… Pn. Doesn’t CRC imply, in that case, that you cannot also rationally believe Pn+1? And is that not a reductio ad absurdum of CRC, since it is quite plausible that you can rationally believe Pn+1? The answer to both of the preceding questions is “no.” What CRC implies is rather that, if you rationally believe P1, P2, P3, … Pn, Pn+1 you cannot also rationally believe

Pn+2: all the assertions in the book are P1, P2, … Pn

The first n+1 propositions in this series are not jointly inconsistent (except in the unusual case that some of the other elements besides Pn+1 are about other elements of the series). The inconsistency arises only when Pn+2 is added.[[15]](#footnote-15)

Still, can we formulate an argument against CRC by claiming that CRC implies that you cannot rationally believe P1, P2, … Pn, Pn+1, and Pn+2? Although CRC does imply this, it is not clear why this implication should be implausible. Consider: either the book that you’ve written is surveyably short, or else it is not. If the book is surveyably short (no more propositions than you can rationally endorse all at once, say), then you cannot rationally believe Pn+1. But if the book is unsurveyably long, then you cannot rationally believe Pn+2. Either way, you cannot rationally believe all the propositions in the book, and also rationally believe both Pn+1 and Pn+2. The fact that CRC implies that you cannot rationally believe all of these propositions is not an objection to CRC, but rather confirmation of it. So the Preface Paradox does not tell against CRC.[[16]](#footnote-16)

Now consider a common argument from the Lottery Paradox against the conjunction of CRC and CRRDT. Consider a particular ticket in a million ticket lottery; you know that there will be exactly one winning ticket, though you have no evidence that favors any one ticket over any other as the winner, and no more reason to believe of any one ticket that it will lose than you have to believe of any other ticket that it will lose. Furthermore, let’s add the stipulation that you have no reason to treat any ticket differently from any other (e.g., no one is holding a gun to your head and insisting that you believe of at least one ticket that it will win). By CRRDT, it follows that either you are rationally required to believe of each ticket that it will lose, or you are rationally required to believe of none of the tickets that they will lose. But, since you know that one of the tickets will win, CRC implies that you are rationally required not to believe of each ticket that it will lose. Thus, CRC and CRRDT jointly imply that you are rationally required to believe of no ticket that it will lose. Isn’t this a *reductio ad absurdum* of the conjunction of CRC and CRRDT?

Again, no. All that follows from the argument above is a conclusion that has been made plausible on completely independent grounds by Nelkin 2000 and Smith 2010, viz., that it is not rational to believe of a lottery ticket that it will lose, when one has no reason for this belief over and above the lottery statistics. It may seem that it is rational to believe of a lottery ticket that it will lose given the overwhelming evidence – but this is to confuse high confidence with belief. High confidence involves commitment to the fairness of bets at particular odds on the truth of a proposition, but it need not involve commitment to the truth of that proposition. Of course, as I pointed out above, maximal confidence in a proposition does involve commitment to the truth of that proposition. But commitment to the truth of a proposition is, as I mentioned above, a necessary condition for belief that p – it may not be sufficient for such belief.

What if commitment to the truth of p is sufficient for belief that p? And furthermore, what if we consider a fair lottery with exactly one guaranteed winner and infinitely many tickets? CRP implies that the sum of my credences in each ticket’s winning must sum to 1 (my credence that some ticket will win). In such a case, then, doesn’t my evidence constrain me to have a maximal credence in each ticket’s losing, and so to believe, of each ticket, that it will lose? And so don’t we here have a situation in which it is logically impossible to comply with all of CRC, CRP, and CRRDT?

Again, the answer to this last question is “no.” We can comply with CRC, CRP, and CRRDT simply by refusing to invest our credence in propositions concerning which tickets will win or lose. CRP doesn’t require us to invest credence in every proposition we can entertain, just as CRC doesn’t require us to believe, withhold, or deny every proposition we can entertain. We can comply with all the requirements of coherence in the infinite lottery situation simply by refusing to invest credence in the various lottery propositions.

In doing so, would we not then be violating another requirement of rationality, viz., to proportion our credence to the evidence? Even if the answer to this question is “yes”, notice that the rational requirement just mentioned is not a requirement of coherence, but rather a narrow scope requirement of rationality. But it’s not even clear that, in order to comply with this narrow scope requirement, we must invest some level of confidence in every proposition concerning the truth of which we have some relevant evidence. Rationality requires me to proportion my credence to the evidence, but it doesn’t follow that it requires me to invest credence on every issue concerning which there is evidence.

Even in the infinite lottery case, then, it is possible to comply with CRP, CRC, and CRRDT. If these requirements of coherence are ever in tension with each other, that remains to be shown.

**Section V: Coherence and our Cognitive Home**

Srinivasan has recently argued that the failure of our reasons to be luminous to us means that we are sometimes in a position in which we cannot be faulted for failing to comply with those requirements.[[17]](#footnote-17) In this paper, I’ve tried to identify a kind of rationality – coherence – our compliance with the requirements of which is not at all a matter of luck, and is always within the scope of our abilities. Some philosophers are concerned to see our compliance with the demands of rationality as protected from the vicissitudes of fortune. Coherence, I conclude, is just what such philosophers are looking for.[[18]](#footnote-18)

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1. Millgram and Thagard 2000 argue that, even if coherence is achievable, it is impossible to know whether we’ve achieved it. Even if true, this does not tell against the internalist’s appeal to coherence as a source of rational duty, achievable solely by dint of our own effort: whether we are obligated to comply with the requirements of coherence, capable of doing so, and at fault if we fail to do so, need not turn on our ability to know whether we’ve done so. [↑](#footnote-ref-1)
2. See Plantinga 1993, chapter 1, for this account of the motivation for internalism in epistemology. [↑](#footnote-ref-2)
3. Korsgaard 2008b [↑](#footnote-ref-3)
4. Wedgwood 2007. [↑](#footnote-ref-4)
5. Dogramaci 2014 [↑](#footnote-ref-5)
6. Sosa 2007. [↑](#footnote-ref-6)
7. An argument very similar to the argument of this paragraph is persuasively developed in Worsnip forthcoming a. [↑](#footnote-ref-7)
8. See, e.g., Shogenji 2001, Fitelson 2003, Bovens and Hartmann 2003, Douven and Wouter 2007, among many others. [↑](#footnote-ref-8)
9. The terminology of “wide scope” and “narrow scope” was introduced in discussion of conditional requirements (‘If A, then B’), to distinguish those requirements that had the whole conditional within their scope from those that had only the consequent within their scope: see Broome 1999. I take it that the philosophical interest of this distinction is primarily non-linguistic though, and so I use these terms to mark the distinction between requirements concerning combinations of states/acts and requirements concerning individual states/acts. [↑](#footnote-ref-9)
10. Of course, by this same argument, coherence requires not merely formal consistency; it requires that the combination of beliefs is such as cannot be “expected to be false”. Whether that requirement involves such substantive relations as explanatory fit or mutual probabilification, I leave open here. But, as I argued in the preceding section, I doubt that any purely formal account of coherence is possible. [↑](#footnote-ref-10)
11. The argument of Worsnip forthcoming b (appealing to the preface paradox) might be thought to tell against CRC. But I hope that I’ve just shown that the sort of argument that is widely thought to establish CRP is just the sort of argument that can be used to establish CRC. As should become clear in the next section, I think the preface paradox doesn’t tell against either CRP or CRC. [↑](#footnote-ref-11)
12. Neta 2014. [↑](#footnote-ref-12)
13. This very plausible version of permissivism is criticized by White 2010. Schoenfield 2014 offers a plausible reply on behalf of the permissivist. [↑](#footnote-ref-13)
14. White 2007 assumes (wrongly, I think) that, if the version of permissivism considered here is true, then the answer to this question is “yes”. [↑](#footnote-ref-14)
15. This point has been made by Evnine 1999 and Worsnip forthcoming b, among others. [↑](#footnote-ref-15)
16. It may be worth noting that whether or not the book is “surveyably short” may depend not just upon the number of assertions it contains, but also upon the degree of independence of the various claims in the book. If the book is simply a laundry list of claims that are probabilistically independent, then it will get unsurveyably long much more quickly than most ordinary books would. [↑](#footnote-ref-16)
17. Srinivasan 2015. Neta and Rohrbaugh 2004 challenges the safety principle on which her argument ultimately rests. [↑](#footnote-ref-17)
18. I am grateful to Paul Horwich, Doug Lavin, Errol Lord, Andrew McGonigal, James Pryor, and Alex Worsnip for helpful comments on an earlier draft of this paper. I am especially grateful to Alex Worsnip for providing me with the original impetus to think about this topic. [↑](#footnote-ref-18)