

# WHAT IS COHERENCE?

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**Abstract:** Believing sets of propositions that are more coherent than others is deemed more rational than believing less coherent sets of propositions. That assumes that we can make sense of coherence as a unique kind of epistemic magnitude underlying our comparative assessments. Yet there are conflicts between relations like evidential support and explanatoriness, with no unique way to settle them. Coherence, however, is most often conceived as having both evidential and explanatory aspects. That leaves us with equally legitimate – and conflicting – verdicts as to which sets of beliefs are more coherent than others. Switching to a mathematical (probabilistic) account of coherence doesn't get around this problem, because we still need to know what such a probabilistic measure *measures*. Nor does reliance on our impressions (of which beliefs better fit together and which don't) solve the problem, because coherence is supposed to be epistemic, and we need a separate argument for why impressions of fittingness should be taken at face value. I tentatively conclude that we currently lack a satisfactory account of coherence.

**Keywords:** coherence, intuition, probability, epistemic desiderata, explanation, context.

## 1. INTRODUCTION: 'COHERENCE', SAID IN MANY WAYS

Consider the coherence of a story, diagnostic, worldview, scientific theory or a sage's life choices: what, if anything, might these share, in point of what makes them coherent? *Persons* and *theories* are both often said to be coherent, each in their own ways. If you are asked to do more work than you can, and are also asked to work only in the allotted time, the *organization* you work for makes incoherent *demands*. If you can get yourself to believe both that you are a punctual person and that you are often late to the meetings you set, your *beliefs* seem jointly incoherent. What is said to be or not be coherent differs wildly.

In the next few pages, I follow 20<sup>th</sup> century tradition in regarding coherence, of varying degrees, to be a property of sets of propositions. I also make the simplifying assumption that two propositions are jointly incoherent if the set they form is not coherent. All this is just to fix terminology. (Maybe the terminology has a rationale. A person is coherent if its beliefs are coherent. An organization is

coherent if what its members believe it requires of them is coherent. Beliefs, in turn, are doxastic attitudes the objects of which are propositions. A theory is coherent if the propositions that make it up form a coherent set. This rationale is unpersuasive if you think sets don't exist, or propositions don't exist. If so, nothing crucial changes in what follows, only some translation will be needed from this jargon into your preferred vocabulary.)

Sets of propositions, too, come in many flavors. A body of beliefs, a scientific theory, an ideology, a theology, or other bodies of doctrine – all these are often praised for their coherence or blamed for their lack of coherence. Believing such sets of propositions is deemed more *rational*, the more coherent the sets of propositions are. Believing coherent sets of propositions is deemed rational for one of several reasons. Either coherence is a criterion of truth, and believing the truth is a mark of rationality. Or coherence is a criterion of justification, and believing is rational inasmuch as it is justified. Or coherence is a criterion of understanding, and understanding is a virtue of rational thought. Or coherence is a criterion of how our thoughts and deeds (in propositions that describe each) hang together, in the making of wisdom and a life well lived. Each of these seems to presuppose *some* account of what coherence is. I will argue such an account may not be forthcoming, for principled reasons.

## 2. TWO INTUITIVE EXAMPLES

Here are two presumptively intuitive cases to support the view that coherence matters.

First consider an undergraduate student in mathematics. They might presuppose, without giving it a moment's thought, Frege's view that any set is the extension of a concept. When confronted with Russell's paradox, they might choose to take one or another way out – in order to preserve the coherence of their views. They might think that not all concepts have sets as extensions, or that not all first-order conditions express concepts, or both. Whatever they choose, Russell's goal is achieved – for the initial intuitive appeal of the view is gone; solutions are now technical, require careful consideration, and no unique best candidate stands out. What had initially, pretheoretically, intuitively seemed coherent runs into a problem and preserving coherence calls for sacrificing intuitiveness. Notice how the example banks on our already knowing what coherence is, and knowing it well enough and in clear conscience so that we seem to have some firm grip on what it is to have initial intuitive coherence or to preserve theoretical coherence in the face of looming paradox.

Secondly, consider a religious person whose faith prevents them from killing anyone. This person, notwithstanding, is also a patriot, loving their country. And then war breaks out and they are sent to the frontline and ordered to shoot to kill. Their faith-inspired pacifism now needs reckoning with their duties as makeshift soldiers. Do they shoot to kill or not? Preserving the coherence of their views was easy in times of peace. War changes things. Preserving the coherence of their

overall views might now require giving up either on the command not to kill or on their allegiance to their motherland. Whatever they choose, the seemingly easy-to-gain coherence of their life credo is gone – and needs fixing to reemerge. Their choice is cast as a choice in what preserves coherence. Other options (paying lip service to one while sacrificing it at the expense of the other) seem incoherent, although they might be eventually chosen on pragmatic grounds. Note how here, again, we seem to have some pre-theoretical firm grip on what is, and what is not, coherent, at least *prima facie*.

I will challenge this, arguing we do not have a clear grasp of what coherence is, and will articulate principled reasons for my aporetic attitude with respect to what the word ‘coherence’ means, as used by many of us.

### 3. EPISTEMIC DESIDERATA

Relying on coherence to account for truth, justification, understanding or wisdom presupposes that we have *some* notion of what coherence is, a property that coherent sets of propositions have while incoherent sets of propositions lack. The intuitive examples given in the previous section also presuppose we have *some* notion of what coherence is. Presumably – on pain of incoherence – the same notion of coherence is at play in both previous sections. In what follows, however, I will tentatively argue that, as far as I know, no such convincing account of coherence has been provided, and for principled reasons.

A principled reason requires some background epistemology to keep it fixed. The preferred account I will use is Alston’s<sup>1</sup> account of epistemic desiderata. For Alston, talk of justification should be supplanted with talk of epistemic desiderata. Such desiderata include that beliefs (formerly characterized as apt objects of justification) be duly supported by evidence, backed by reasons, explained, work well in problem-solving or in deliberation, be accessible to reflective scrutiny and withstand that scrutiny, and many more.

Truth, evidently, is one of these desiderata. For Alston, it is also the unique ultimate desideratum that the others in some sense boil down to. That is, a belief would need to be supported by evidence because that increases our confidence that it is true. An explanation would need to be true. An inductive method for belief formation would need to be truth-conducive. And so on. I demur from attributing truth a fundamental role, let alone the unique fundamental role, among other epistemic desiderata. Rather, for the purpose of appreciating the various roles epistemic desiderata play, I will stay neutral on whether other desiderata are subservient to truth or not.

Such desiderata are, of course, not specified ultimately. Evidential support, for instance, presupposes skills like being able to identify materials and clues, being able to assess their relevance as putative evidence, being able to rank evidence according to its importance to building a case, being able to intersperse

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<sup>1</sup> W.P. Alston, “Epistemic desiderata”, in *Philosophy and Phenomenological Research* 53 (3), 1993, pp. 527–551.

descriptions of appropriate pieces of evidence into the explanations one provides, etc. The evidence in question could be, or could fail to be, accessible to the inquirer's interlocutors, to the judge and jury, to the general public – it might, or it might fail to, be mobilized so as to avoid judicial error. Given this plethora of skills (possession of which is customarily regarded as a distinct epistemic desideratum from our beliefs being backed by evidence), mere mention of evidence backing or our beliefs being formed or sustained by means of cognitive skills should not be taken to characterize or describe fully desiderata that are, on the contrary, merely referred or alluded to.

#### 4. CONFLICTS BETWEEN DESIDERATA

Coherence was included among these epistemic desiderata from day one<sup>2</sup>. Leave aside that coherence might be further conceived as coherence when appraised in reflection, or coherence when analyzed from a logical or probabilistic standpoint, or coherence as ascertained by consensus in dialogue between rational and informed interlocutors, etc. Ask, rather, what coherence *is*. What could be *further* conceived as appraised in reflection, from a logical standpoint, or in dialogue? What is that property or set of properties we collectively label 'coherence'? That is the problem I approach.

The problem differs from the related concern, made repeatedly in the past 30–40 years, that coherence might or might not be in conflict with other epistemic values or dimensions: with truth<sup>3</sup>, with evidence and our evidence-responsiveness<sup>4</sup>, virtue and our continuous strive to harmonize our character<sup>5</sup> or exercising and reinforcing our problem-solving abilities<sup>6</sup>.

For example, consider the coherence of the overall Aristotelian worldview (or however best you might use the word 'coherence' so as to make sense of the

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<sup>2</sup> I'm grateful to Dan Hutto for suggesting that, even if one were to agree with me concerning coherence as an epistemic desideratum or set of formal constraints, maybe the true lesson to be learnt is that genuine examples of coherence are found in nature. Structures like the spider's web would, then, be no mere analogies or metaphors for coherence, but the real thing: coherence would reside in nature. I am entirely open to that possibility, and only not if it differs significantly from the epistemological literature I target. For now, I would only ask in virtue of what features the spider's web or other structures get to count as coherent. It would, it seems to me, seem to invite back the host of questions that classical contributions in the epistemology of coherence have tackled, and which I think cannot be satisfactorily answered fully.

<sup>3</sup> T. Merricks, "On behalf of the coherentist", in *Analysis*, 55 (4), 1995, pp. 306–309.

<sup>4</sup> A. Worsnip, "The conflict of evidence and coherence", in *Philosophy and Phenomenological Research* 96 (1), 2015, pp. 3–44.

<sup>5</sup> J. Montmarquet, "Epistemic virtue", in *Mind* 96, 1987, pp. 482–497.

<sup>6</sup> B. van Fraassen, "How is scientific revolution/conversion possible?", in *Proceedings of the American Catholic Philosophical Association* 73, 1999, pp. 63–80. These references are much richer, and I cannot do them justice here. But they each deserve mention for the conflicts they sketch along different epistemic dimensions or (in a different jargon) between different epistemic values as they are realized within one and the same inquiry. Van Fraassen's text, especially, is deserving of a much more careful scrutiny and a wider philosophical conversation.

resulting phrase). It gradually gave in to competitors as evidence amassed against it: in cosmology, in explaining blood flow, in an explanation of conscious visual experience and sensory processing, in its account of categorization, development and ageing, etc. It stayed prevalent for so long, in the face of accruing evidence, precisely because it was deemed coherent. Or, at least, to see things this way would pit a desideratum we might have some antecedent idea of (coherence of a view) against another desideratum we might have some antecedent idea of (independent evidence in favor or against that view).

In order to ascertain how coherence assessments might harmonize or come into conflict with these other epistemic dimensions (backing by evidence, virtuous etiology, problem-solving prowess), we would first need to know *what* coherence is, to begin with. That, I argue, we do not yet know.

## 5. FROM AESTHETIC SEEMINGS TO RATIONALITY

Like most others, I too am tempted to recommend a theory or a body of beliefs on account of how well it makes things fit or hang together. (It seems pointless to define ‘coherent’ in terms of ‘systematic’, for parallel questions arise about what that might be.) What might the requisite fittingness be? If at issue are *aesthetic seemings* (what *seems* coherent, what *seems* systematic), these seem insufficient to ground the reflective, second-order belief that a coherent body of first-order beliefs should be lent more *credence* than a less coherent body. Our aesthetic experiences, absent further argument, don’t *settle* what is more rational or should be believed to a higher degree by an ideally rational agent (if any there be).

Such argument in favor of epistemic evaluation on the basis of our aesthetic seemings might well be forthcoming. I mention only two possibilities. First, epistemic conservativists<sup>7</sup> might wish to argue that preservation of our experiences of fittingness, hanging-together, systematicity, and the like might count as a *prima facie* justification, or even as a *pro tanto* reason, in favor of the beliefs thus appraised to form a coherent or systematic whole. Secondly, a foundationalist who appreciates the role of applied mathematics in the natural sciences might notwithstanding be struck by the reasons based on which set theorists choose their axioms, beauty, simplicity and overall coherence chief among them<sup>8</sup>. That would seem to ground alternative mathematical constructions, such as alternative axiomatizations of set theory, in the deliverances of our aesthetic experiences, of the form ‘this is beautiful’, ‘that is simple’, ‘this coheres better than that’.

There would, as far as I can see, be nothing objectionable in principle to either epistemic conservatism or an aesthetics of the set-theoretical foundations of mathematics (at least not advanced in this text). However, notice that to ground a core, common concept of coherence in such views would leave coherence playing a derivative and unclear epistemic role, since really it is our experiences (of beauty,

<sup>7</sup> M. Huemer, *Skepticism and the veil of perception*, Bloomsbury, 2001.

<sup>8</sup> M. Ivanova, “Aesthetic values in science”, in *Philosophy Compass*, 12 (10), 2017, e 12433.

simplicity, systematicity, etc.) that would be doing all the work, and which particular experiential contours would be at stake (whether beauty or systematicity, for instance) would only obscure the point that experience is epistemically fundamental rather than any relationship between propositions, beliefs or theories (which is what coherence was advertised to be to begin with).

At first blush, then, it seems unmotivated to move from how our aesthetic seemings strike us<sup>9</sup> (which theory better suits our sensibilities) to rationality (which theory better advances the bulk of our epistemic desiderata). In the next sections, I move to exploring rational criteria that have been offered as analyses of coherence, and find them failing. But this is not to say there is anything wrong with our aesthetic seemings. Perhaps the shortcomings of theoretical or criterial accounts of coherence should be best interpreted as bringing us back to the safe shore of impressions, feelings and experiences. I leave that option open, and in what follows address only theoretical renderings of coherence<sup>10</sup>.

## 6. LOGICAL CONSISTENCY

What might be required, then, isn't to indulge in the appearance of rational justification – but that we should actually *possess* such justification. (Or, alternative to justification, whichever mix of epistemic desiderata are relevant in context.) The beauty, simplicity, or overall fittingness of a theory or body of beliefs is, on this take, not enough to rationally recommend it – unless such marks of coherence are themselves recognized to induce justification. For these to be rationally validated as marks of coherence, we need to first possess a *concept* of what coherence *is*, so that its marks may rationally justify us in believing those sets of propositions which display them.

Much of early analytic philosophy<sup>11</sup> (notably, Quine) quartered coherence with logical consistency, or non-contradictoriness. Indeed, maintaining the logical consistency of our views is often a tall order. Familiarity with Newtonian mechanics might seep at the root of our commonsensical notions of heavy, falling, or at rest. Paying heed to the neuroscience of cognition might undermine our indulging in folk psychology. Awareness of what shifts voting behavior and propaganda techniques might stifle our credo in a fully deliberative democracy.

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<sup>9</sup> You might think that our conscious feelings of incoherence, puzzlement, experiences to the effect that something doesn't make sense (Cooper 1994) are more reliable than positive experiences of contemplating coherent wholes. Still, I would ask in virtue of which *epistemic* aspects of theirs these phenomenally conscious experiences might reveal coherence.

<sup>10</sup> I thank Sandra Brânzaru for considering, in correspondence, the possibility that coherence might distinguish genuine grasp or understanding of a systematic unity from mere semblances of grasp or understanding. Coherence, then, would be a cognitive mark typifying genuine grasp. But a point parallel to that made in the text would be to inquire what the epistemological significance of that cognitive distinction might be, i.e. in which *epistemic* aspects, rather than purely *cognitive* aspects, genuine or coherent grasp might differ from its semblances.

<sup>11</sup> W.V.O. Quine, *From a logical point of view: Nine logico-philosophical essays*, Harvard University Press, 1951.

Learning game theory might undermine our belief concerning the fundamental role rational action might be given by the social sciences.

Notice first that to characterize coherence in terms of logical consistency gives up on the hopes of coherence being any fundamental epistemic desideratum, for it is cashed out in terms ordinarily regarded as foreign to it. If, on the contrary, one wished to support logical axioms or axioms for set theory *based on* how they cohere with each other<sup>12</sup>, then one would require a separate conception of coherence, one which I think has not yet been provided<sup>13</sup>.

Notwithstanding, logical consistency or non-contradictoriness is a necessary condition for coherence but it falls far short of sufficiency, as Russell<sup>14</sup> had noted. Duly noting that Paris is the capital of France and Keynes' conception of liquidity, respectively, clearly don't contradict each other. Yet they are just as clearly mutually *irrelevant*, and so a set that included propositions pertaining to each could only be regarded as coherent if coherence is understood in a *lax* way.

## 7. PROBABILISTIC APPROACHES TO COHERENCE

In contrast to logical consistency construals of coherence, a summary review of everyday ideas about coherence seems to best fit the pattern of a probabilistic approach. As Hajek<sup>15</sup> puts it, 'An agent's set of credences are synchronically coherent just in case they conform to the probability calculus'.

A selection of possible reasons: Coherence is a matter of more or less. And, inasmuch as they are comparable in their subject-matters, sets of propositions are also comparable in point of how coherent each is. There don't seem to be any gaps in coherence, so increase or decrease in coherence looks to be dense. That is, in between any two values of coherence there is a third. Given all this, the best formal device to capture coherence seems to be a standard continuously-valued function between 0 and 1, that has the properties of additivity and complementarity. Measures of coherence satisfy Kolmogorov's axioms of probability theory.

One could debate whether coherence is additive, or complementary. That would parallel debates concerning non-classical theories of probability, which drop some of these axioms. So, once again, discussion of what coherence is would be best modeled by discussion of how to define probabilistic measures. Indeed, it is hard to see how any concept of coherence that is *not* probabilistic could rival the mathematical preciseness of the project of identifying coherence with probabilistic measures. (And, obviously, if any probabilistic conception of coherence were successful, that would subsume a logical consistency view of

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<sup>12</sup> P. Maddy, "Believing the axioms. I", in *The Journal of Symbolic Logic*, 53 (2), 1988, pp. 481–511.

<sup>13</sup> Penelope Maddy's discussion of mathematical depth and the difficulties in providing a general concept of it may be germane to the topic.

<sup>14</sup> B. Russell, *The problems of philosophy*, London, Williams & Norgate, 1912  
<https://archive.org/details/in.ernet.dli.2015.202549>.

<sup>15</sup> A. Hájek, "Is strict coherence coherent?", in *Dialectica*, 66 (3), 2012, pp. 411–424.

coherence in both what would be correct in it, and what would make it unduly coarse-grained.)

Notice at the outset two problems concerning probabilistic construals of coherence. First, the standard distinction between synchronic and diachronic coherence (as epistemic desiderata which may, or may not, impose the constraint that propositions are evaluated at the same moment in time). Given their differences, we might wish to ask what makes both equally count as coherence, rather than reserve the term ‘coherence’ for only one of them. This matters because any choice we make between them will leave partisans of the opposite choice intuitively dissatisfied. And since intuitions are all we have to go on when it comes to what counts as coherence (other than the general requirement that our updates be probabilistically *kosher*), losing intuitive support raises the question of what to make of the metaphysics of coherence.

Secondly, probability theory is a mathematical theory: fully general with respect to empirical matters and topic-insensitive. Whereas coherence was supposed to be a relation that obtains – if and when it does – between specific (bodies of) propositions. Can this problem be avoided? I return to it in the next section.

## 8. INTERPRETING PROBABILITIES

A probabilistic rendering of coherence shifts epistemological focus to applying the probability calculus to credences; coherence is supposed to somehow ‘flow’ from correct update. Douven and Meijs<sup>16</sup> make an excellent review of both the reasons for taking a probabilistic approach to coherence, and the non-trivial troubles faced by trying to find an optimal probabilistic coherence measure. The demand that  $p$  and  $q$  probabilify each other, such that  $p$  conditional on  $q$  be more probable than  $p$ ’s prior, *and* similar for  $q$ , turns out to be a stricter condition than one might prereflectively (‘intuitively’) assume. Even turning the ‘and’ into an inclusive ‘or’ may often be less easy than pre-reflectively suspected<sup>17</sup>. *If* this is the right way to read such results, we are not entitled to say that such formal constraints are *too* restrictive or *too* lax unless we have *some* non-mathematical conception of what it is that is being measured in measuring coherence – *whatever* that worldly magnitude might end by being.

Thus, I believe the problems Douven and Meijs chronicle have a principled source. A full characterization of probability needs to include, alongside the axiomatic definition of probability structures, also a model of what a probability measure *measures*. This is where different philosophical interpretations of probability come in: as relative frequency of an event-type among several, as the propensity of individual objects or experiments to behave in certain ways, as

<sup>16</sup> I. Douven, T. Meijs, “Measuring coherence”, in *Synthese* 156 (3), 2007, pp. 405–425.

<sup>17</sup> Nor is theirs the first critical notice of the sort, e.g. E.J. Olsson, “The impossibility of coherence”, in *Erkenntnis*, 63 (3), 2005, pp. 387–412.

probabilified logical consequence, as degrees of belief or as rational bets, etc. For example, if one chose a frequentist interpretation of probability measures for a given epistemic context, one would *also* need to supply an empirical model of event-types, the underlying ontology, and so on.

Similarly, we should ask what probabilistic *coherence* measures measure. If, following Suppes<sup>18</sup>, one advocates a preference for *uninterpreted* probability measures, or otherwise thinks the metaphysics of interpreting probabilities is murky or misguided, that view is open but then I am no longer clear on what ‘coherence’ might mean in such a setting. Unclarity about what *notion* of coherence is used (what I evince here) differs from eliminativism about coherence as a property of sets of propositions, but the former might suggest the latter – if our concept of coherence is yet unspecified beyond some reference to probabilistic correctness, we might do Bayesian epistemology directly and drop the coherentist middleman.

Trouble met when attempting to provide a probabilistic conception of coherence undermines attempts to characterize coherence in terms of *uncertainty* or *randomness*. For these are both, at root, probabilistic notions. If the probability measures used are not interpreted in any way, however one may choose to flesh out the connections between coherence and uncertainty or randomness will be insufficient for *any* answer at all to the metaphysical question of what coherence is.

It is not that we are provided with bad or erroneous metaphysical approaches to coherence. Rather, if the relevant probability measures are not interpreted, we are provided with *no* metaphysics at all. For coherence of a set of propositions sounds as though it *should* relate to the subject-matter of the propositions in question. We might, of course, give up on this, qualifying it as a merely aesthetic intuition, one that a careful conception of coherence should overcome. I would caution that, if pressed to renounce the idea that the coherence of a set of propositions partly depends on *what* those propositions are and what they are *about*, I, for one, lose all bearing on how the word ‘coherence’ and its cognates are used.

## 9. DIFFERENT CONTEXTS, DIFFERENT INTERPRETATIONS?

Even if we conceded characterizing coherence in probabilistic terms, the question of how to interpret probabilities carries over to how to interpret coherence, only with added urgency.

Presumably, frequentists may interpret the coherence of a medical diagnosis with the evidence available and the patient’s history. But frequentists may be unable to interpret a dogmatic theology that posits one unique necessary being (a divinity), for nothing is repeated in its posited existence.

Or suppose you are a subjective Bayesian, and hence can estimate the coherence of credences regarding a variety of subject-matters. But how will you

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<sup>18</sup> P. Suppes, “The nature of probability”, in *Philosophical Studies* 147 (1), 2010, pp. 89–102.

assess a dogmatic theology positing a unique necessarily existing divinity, other than with either certainty or impossibility?<sup>19</sup> To switch from theology to arithmetic, consider the many conjectures which mathematicians have had reasons to believe, throughout time, are either true or false, which gathered their support or made them hesitate – even if, on an ordinary conception, mathematical truths are necessary if true at all. How could we then explain – rationally – the coherence of views which believe in them more or less, with more or less confidence or hesitation?

Now suppose you are a historian of mechanics wishing to assess the coherence of Galileo's conclusions drawn from his free fall experiments in the tower of Pisa. Should you regard these conclusions as generalizations over singular propositions concerning different physical systems, and so a propensity interpretation of the relevant probabilities might be better? Or should you consider that Galileo was averaging over different trials and so a propensity interpretation of the relevant probabilities might in fact be ill suited?

These examples are intended to suggest that probabilistic accounts of coherence face a thorny dilemma. Either how to interpret the measure of probabilistic coherence is not specified, and then it is unclear what calling a theory, a body of beliefs or of propositions coherent consists in. Or, alternatively, specifying, relative to a context, an interpretation of the measure of probabilistic coherence is bound to only fit some rather than all cases, and hence does not warrant our calling it 'coherence' in the cases where it is inapplicable or, worse, misleadingly applicable.

Either way, the challenge of coming up with an global interpretation of what is measured by probabilistic *coherence* (unlike probability per se, which could drop talk of 'coherence' altogether), is left unaddressed, and is maybe unachievable, as the examples above suggest, for interpretations that fit some cases fail for other cases.

## 10. BACK TO EPISTEMIC DESIDERATA?

Instead of providing an interpretation for the probabilistic measure identified with what bestows coherence over the set of propositions assigned values between 0 and 1, one might think to get by with uninterpreted probabilities but provide some epistemic counterpart to them, characterizing coherence not in formal terms but in terms of knowledge and belief. Thus, BonJour<sup>20</sup> writes:

It is clear that coherence depends on the various sorts of inferential, evidential, and explanatory relations which exist among the members of a set of propositions, especially upon the more systematic of these. Thus various detailed investigations by philosophers and logicians of such topics as explanation, confirmation, etc., may be taken to provide some of the essential ingredients of a general account of coherence.

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<sup>19</sup> Pascal's wager aside, betting behavior, even idealized, might not be appropriate in this context.

<sup>20</sup> L. BonJour, "The coherence theory of empirical knowledge", in *Philosophical Studies* 30 (5), 1976, pp. 281–312, p. 288.

Despite Bonjour's early optimism that a satisfactory 'general account of coherence' could be found, the problem was already apparent. Coherence is, we are told, a mix of 'inferential, evidential, and explanatory relations'. So what do we do if measures of what is the best evidence for what, and measures of what explains what, diverge in the revisions they recommend for our beliefs? If we have to trade off explanatory power for evidential support, which balance is best? (I focus on how evidence and explanation relate, but clearly the problem is only made worse if we consider inferential relations too, or other epistemic desiderata<sup>21</sup>.)

One answer to this problem might be to try to reduce explanatory relations to evidential ones, or evidential relations to explanatory ones. Such reductionisms seem unpromising. Another answer might acknowledge that coherence is a *multi-dimensional* concept, comprising both explanatory and evidential dimensions. While this solution seems initially appealing, I think it isn't. In order for our judgments of coherence to be more than aesthetic appraisals and to have a quantitative (probabilistic) character, we would need to specify a *weighted sum* of how evidential and explanatory features of a set of propositions commensurate with one another. The initial problem of trading off explanatory power for evidential support comes back under the guise of asking how we should weigh explanatory and evidential measures to produce a *unified* coherence measure for a set of propositions.

Unless we can provide a *rationale* for why we assign the weights we do to the explanatory and evidential components of coherence, our epistemology of coherence will be little more than a mathematical exercise to retro-fit unexamined intuitions. However we assign such weights, a danger is always looming. We run the risk of comparing apples with oranges when we compare explanatory power with evidential support. So even if we could somehow make the numbers work, it would be unclear what significance (other than bare mathematical definability) a coherence measure would have – what *in the world* it would measure.

A caricature might make the problem stand out. Suppose we rank colors by how happy they make Jerry; and we also rank colors by how sad they make Tom. It would be futile to figure out a weighted measure of how happy-they-make-Jerry-and-sad-they-make-Tom unless we discerned, independently and in advance, which relations hold between Tom and Jerry. (E.g., that Tom can't stand Jerry, hence what makes Jerry happy adds to Tom's sadness.) Pessimism about coherence makes much the same point: unless we find a principled connection between evidential support and explanatory power, a weighted measure for both (branded 'coherence') wouldn't measure anything real. We come up short of such a principled relation by acknowledging that evidence doesn't reduce to explanation, nor explanation to evidence. So it is unclear what, if anything, coherence measures measure.

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<sup>21</sup> I'm grateful to Sandra Brânzaru for raising the possibility that coherence may be best appreciated relative to *systems*, the components of which interact at multiple levels, thereby *cohering* more with each other. Intuitively, this sounds quite plausible. Yet I would still ask what happens at each level such that these components cohere at multiple levels. If the issue concerns interfaces, perhaps distributed computations over such component system parts count as what undergirds coherence. If so, why not speak of those computations directly? What benefits us by applying the label 'coherence' over and above, or perhaps supplanting, partial descriptions of those computations?

Suppose coherence in context C1 different from coherence in context C2. For instance, suppose coherence of dogmatic Eastern theology for a Romanian country priest differed from the coherence of one's conceptions of the classical formulation of quantum mechanics for a Bulgarian high school physics teacher. Contexts differ wildly, granted. However, relativity to context is of no avail. For the problem reemerges relative to each context you choose to consider. *Which* specific combo of epistemic values constitutes coherence in C1, *which* other specific combo of epistemic values constitutes coherence in C2, *what* makes C1 and C2 constitute something that gets to count, even in as thin a sense as possible, *as* coherence? (Moreover, we should beware the sleight of hand of implicitly characterizing coherence by how we choose to individuate contexts, only to then find that what we antecedently expected to be coherent is so in precisely the way we set it up to be.) All such questions need separate answers, and their intricacies make a general metaphysics of coherence nearly insuperable.

Even if we did find *the right* combo of epistemic values to mix in a specific context to gauge whether the propositions assessed relative to that context form a coherent enough set, we will at best have found a *correlation* between coherence and a mix of other epistemic values. *If* one appeals to parsimony as a metaphysical principle, that principle needs to be explicit and may be controversial. Indeed, I have been arguing we have no clear conception of what coherence is. Being told that even on those occasions when we can correlate it with something else we still haven't identified what it *is* only supports my argument.

One might complain that searching for a workable metaphysics of coherence is confused because I haven't distinguished between what is coherent *enough* and what is maximally *coherent* and what is *outright* coherent (or coherent *tout court*) – or, contrariwise, what is *incoherent* in any of a number of different ways. To reply: choose your favorite notion of coherence and attempt to characterize that; I hypothesize that, irrespective of your choice, you will meet with analogous difficulties.

## 11. AN EARLY EXAMPLE

Providing concrete examples of authors advocating for epistemic (or doxastic) roles for coherence might illustrate my approach better. Consider, then, Gilbert Harman's *Change in view: principles of reasoning*. Harman avows: 'For present purposes, I do not need to be too specific as to exactly what coherence involves'<sup>22</sup>.

Lack of specificity is not removed later: 'The coherence in a view depends on relations of immediate coherence or intelligibility among elements in the view. Explanatory coherence is an important sort of coherence, perhaps the only sort.'<sup>23</sup> As far as I can tell, 'immediate coherence' is undefined. And we are left hanging

<sup>22</sup> G. Harman, *Change in view: principles of reasoning*, MIT Press, 1986, p. 33.

<sup>23</sup> *Ibidem*, p. 75.

on whether explanatory coherence is indeed the only sort of coherence or ‘perhaps’ there are others too. Especially since ‘[i]mplication and explanation are both coherence-giving’<sup>24</sup> and, presumably, we may infer even when our goal isn’t explanation.

Even though a specific statement is hard to pinpoint, somehow the view that emerges from Harman’s approach is that inference to the best explanation is what allows making most sense of evidence in light of the hypothesis that explains it (most coherently). The difficulties but also genuine promises that inferences to the best explanation hold are well explored<sup>25</sup> and I won’t rehearse them here. Rather, I would raise the question of what added benefit there might be in speaking of ‘coherence’ rather than of probabilistic inference and explanation directly<sup>26</sup>. If the word ‘coherence’ tracks something specific, different from the purchase of other epistemic desiderata, what might that be? Alternatively, if it boils down to them, why do we need it?

## 12. CONCLUSION: AN ARGUMENT

Weaving together the threads of previous sections, I propose the following argument:

- (1) If we accept that a coherent set of propositions is more rational to believe than a less coherent set, then we need to have a precise concept of what coherence is. [Sections 1,2,4,5]
- (2) Any precise concept of coherence has to be probabilistic in character. [Sections 6,7]

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<sup>24</sup> *Ibidem*, p. 72.

<sup>25</sup> P. Lipton, *Inference to the best explanation*, London, Routledge, 1991.

<sup>26</sup> A telling example is Lehrer, for whom ‘If the kind of coherence required for justification is explanatory, then it is the function of a belief in explanation that justifies it. ...To have explanatory coherence, one must both have something to explain and something to explain it.’ This, however, seems to *stipulate* that coherent beliefs are the ones that are caught in explanatory relations. What seems to be missing is an argument for *why* explanatory relations deliver coherence, or, alternatively, for why ‘coherence’ is a good label for explanatory relations. A valiant attempt to characterize coherence soon follows: ‘S is justified in accepting that p if and only if the belief of S that p is consistent with that system C of beliefs having a maximum of explanatory coherence among those systems of beliefs understood by S, and the belief that p either explains something relative to C that is not explained better by anything which contradicts p or the belief that p is explained by something relative to C and nothing which contradicts it is explained better relative to C’ (K. Lehrer, „The explanatory coherence theory”, in *Theory of knowledge*, Boulder, Westview, 2000, pp. 97–122, p. 100). This is, indeed, a remarkable proposal. Unfortunately, it seems to make most of our beliefs come out as unjustified, even if it was advertised as a theory of justification. When was the last time you believed an explanation because you deemed it to ‘explain better’ than *all* its relevant alternatives (for you)? Indeed, the distinction between belief and acceptance was aimed specifically to separate real cognition from its epistemic reconstruction. If the cost of finding a technical concept of coherence is giving up on anything *live* in how we reason and which epistemic desiderata *we* value and for which of *our* projects, the overall prospects seem rather dim.

- (3) Any probabilistic concept of coherence has to specify what it is that probabilistic coherence measures measure. [Section 8]
- (4) So, any precise concept of coherence has to specify what coherence measures measure. [Premises (2), (3) of the argument, by the transitivity of the conditional]
- (5) No existing precise concept of coherence specifies what coherence measures measure. [Sections 9, 10]
- (6) So, we cannot at present accept that a coherent set of propositions is more rational to believe (than a less coherent one). [Premises (1), (5) of the argument, by modus tollens].

The argument seems valid, and previous sections defended its premises. If endorsed, its conclusion is damaging to coherentist epistemology. For if coherence doesn't matter for rational appraisal, whatever we might mean by the word 'coherent' or however we might use it, it might just match some of the quirks of our cognitive lives, with no explicit rational evaluation of whether what we thought was good, correct, true, backed by reasons or evidence.

I have cursorily surveyed suggestions in support of the premises for the argument above. Each suggestion can, of course, be challenged. However, the deeper underlying worry needs to be addressed: Is there any unique epistemic 'magnitude' that we track when we judge a set of propositions to be coherent, or more coherent than another? Are our aesthetic appraisals ('intuitions') epistemologically *kosher*? I think answers to such questions are far from straightforward, and that calls into question the traditional roles – in finding truth, justification, or understanding – that whatever might pass under the name of 'coherence' has traditionally been thought to play.

### 13. CODA: DO VARIETIES OF COHERENCE SHARE ANYTHING?

It might help to consider a somewhat analogous conceptual move to what I sketch here. Reacting to the hefty literature on grounding, Jessica Wilson<sup>27</sup> identifies different uses of the word 'grounding', typically picking out justification, explanation (epistemic or metaphysical), *sui generis* metaphysical dependence, causation, parthood, constitution, set membership, property instantiation, being essential, etc. – and other presumptive metaphysical and epistemic relations that might be at stake. Wilson, as I understand her project, is clear that she is not nihilistic about these more familiar relations (or relation-concepts). Rather, her aim seems to be to ask what we might find fruitful, in metaphysics or epistemology, in subsuming these all under one umbrella-term, 'grounding'.

I argue for something similar about 'coherence'. Perhaps *narratives* cohere when we can identify different sequences of events and how they interweave, keeping discourse time and reference time distinct. Perhaps thoughts and deeds

<sup>27</sup> J.M. Wilson, "No work for a theory of grounding", in *Inquiry*, 57 (5–6), 2014, pp. 535–579.

cohere most in the lives of those who enjoy *wisdom*, where inner life and outer manifestation are in harmony. Perhaps scientific *theories* cohere when they are logically consistent both internally and externally, with evidence and other accepted theories. Perhaps our *beliefs or desires* cohere when modeled as credal and utility functions, abiding by a (standard or not) a subjective probability calculus. Perhaps one's *life* is coherent when one finds one's true self in the choices one makes<sup>28</sup>. Perhaps our *institutions* cohere best under a system of 'checks and balances'. Maybe we have even reached a point where the development of communication *technology* no longer coheres, because it is out of sync, with our cognitive abilities to use it responsibly. What do narratives, wisdom, scientific theories, lives, institutions, cognitive states, technological progress have in common? Very little. There may be 'no work for a general theory of coherence' to be done.

Neither would it help to say coherence is primitive. For, if it were primitive, our grasp of it might be intuitive, or perceptual, or aesthetic. But what is the underlying concept of coherence at stake? To say our coherence appraisals are primitive might be to give in: if I am right, we seem to have *no* general useful<sup>29</sup> concept, and need to simply take coherence ascriptions as brute facts – but then hopefully also agree on them, so that they avoid being *ad hoc* or true by *fiat*.

Nor, finally, would it help to consider coherence ascriptions purely honorific, e.g. saying in praise of someone 'Oh, your views are so coherent'<sup>30</sup>. For if such sayings are not of mere rhetorical or social value, we would wish to know what epistemic concept they express, or which epistemic desiderata will have been met to merit such praise<sup>31</sup>.

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<sup>28</sup> Thanks to Daniel Stancu for making this point.

<sup>29</sup> By a useful concept I mean one worth keeping, that doesn't boil down to simply meeting the standard of logical consistency or a probability calculus. Usefulness, of course, is relative and socially appraised. However, its distinctly *epistemic* dimensions may need to be made explicit. If the issue turns on pragmatic encroachment and whether we can neatly separate epistemic and pragmatic aspects (R. Rudner, "The scientist qua scientist makes value judgments", in *Philosophy of science*, 20 (1), 1953, pp. 1–6), that seems to be a broader conversation affecting all epistemic desiderata equally, rather than a specific solution to clarify why coherence matters.

<sup>30</sup> Many thanks to Lena Roşu for making this point.

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