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# *Why Coherence Is Not Truth Conducive*

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Tomoji Shogenji (1999) argues that beliefs that are more coherent need not thereby be more likely to be true. This would strongly suggest that coherence (in the sense of mutual support) is not truth conducive, i.e., that the traditional philosophical problem of whether coherence implies truth has been given a negative solution. But Shogenji resists this conclusion, maintaining that the notion of truth conduciveness is inadequately captured by the formula 'more coherence implies a higher likelihood of truth'. Further, he goes on to show that coherence *is* truth conducive on another, supposedly more adequate, account of the problematic concept. In this paper I shall argue that while Shogenji's observation of a lack of correlation between coherence and truth is correct, his reasons for not drawing the natural philosophical conclusion are not.

Shogenji has drawn attention to the following problem of coherence and specificity. He asks us to imagine 'an epistemically ultraconservative agent who only holds a few extremely unspecific beliefs - say, some rocks are heavier than others; some animals sleep sometimes; and someone is humming some tune somewhere' (1999: 342). In this case it is, Shogenji writes, 'very likely that her beliefs are all truth even though they do not hang together' (ibid.). Meanwhile 'a huge collection of highly specific beliefs - such as the entire body of medical science - almost certainly contains errors even though they tightly hang together' (ibid.). Hence, more coherence does not imply a higher joint likelihood of truth.

This informal argument can be made formally precise as follows. Following Shogenji we first define the degree of coherence of a pair, A and B, by

$$(1)\ C(A,B) = \frac{P(A \mid B)}{P(A)}.$$

The more B raises the probability of A, the higher is the C-coherence between A and B. The measure is hence well in accordance with the principle that 'the more coherent two beliefs are, the stronger is the positive impact of the truth of one on the truth of the other' (1999: 339).[1] We note, for future reference, that Shogenji also has proposed the following generalization of his measure:

[1] Note that C satisfies the important requirement of symmetry, i.e., C(A,B) = C(B,A). The C-measure is well-established in another philosophical context as a measure of confirmation. For details on this use, see Ch. 5 of Carnap 1950.

(2) $C(A_1,...,A_n) = \dfrac{P(A_1 \& \ldots \& A_n)}{P(A_1)\times\ldots\times P(A_n)}$.

It can now be shown that more C-coherence is not always associated with a higher likelihood. We let $T_1$ and $T_2$ be two tautologies, in which case $C(T_1,T_2) = 1$. We now compare this with the degree of coherence assigned by the C-measure to a pair of equivalent but more specific - i.e., less probable - sentences $E_1$ and $E_2$. For instance, if $P(E_1) = P(E_2) = 1/10$, then $C(E_1,E_2) = 10$. Hence, $\{E_1,E_2\}$ comes out as more coherent than $\{T_1,T_2\}$. But since $T_1$ and $T_2$ are tautologies, the joint probability of the former set is nonetheless lower than that of the latter.[2]

The formal argument just given relies on the C-measure, the adequacy of which has recently been called into question by Ken Akiba (2000). In formulating his most serious objection ('the problem of conjunction'), Akiba relies on the premiss that the degree of coherence of any set R should be no different from the degree of coherence of the set S which contains as its only element the conjunction of the elements of R. This premiss might seem reasonable since the logical contents of R and S are the same. Now the generalized measure assigns to all singletons a coherence value of 1. It follows that all sets are coherent to the same degree, and so the whole framework seems to collapse. A similar formal breakdown was noted in Hansson and Olsson 1999. However, there it was also noticed that the logician's view of coherence, which Akiba gives expression to, does not correspond to the epistemologist's conception. The latter, but not the former, makes (or should make) critical use of a distinction between derived and non-derived beliefs. The epistemologically relevant kind of coherence pertains to beliefs that are not merely derived but have an independent standing in the belief system. On pain of losing the relevant distinction we cannot therefore identify a belief system with its logical contents. In his reply to Akiba, Shogenji (2001) made a closely related point when he suggested that, for the purposes of coherence evaluation, beliefs should be individuated by their sources rather than by their contents.

Now Shogenji, surprisingly, does not want to infer from his specificity argument that coherence is not truth conducive. Following him let us by the 'total individual strength' of a set $\{A_1,...,A_n\}$ mean $P(A_1)\times...\times P(A_n)$. In his specificity argument the total individual strength is very different for the two sets under comparison, an observation from which he draws the following moral: '[t]he impact of the beliefs' total individual strength on their truth indicates that we cannot evaluate truth conduciveness of coherence simply by checking whether more coherent beliefs are more likely to be true together than less coherent beliefs' (1999: 342). Rather, 'we need to check whether more coherent beliefs are more likely to be true together than less coherent but *individually just as strong beliefs*' (ibid.). It follows immediately from (2), the definition of the general C-measure, that more coherence implies a higher joint probability among sets having the same total individual strength; that is, if $C(A_1,\ldots,A_n) > C(B_1,\ldots,B_m)$ and $P(A_1)\times\ldots\times P(A_n) =$

$P(B_1)\times\ldots\times P(B_m)$, then $P(A_1\&\ldots\&A_n) > P(B_1\&..\&B_m)$. Shogenji thinks that coherence for this reason *is* truth conducive after all. However, as I shall try to show next, there are in fact two reasons to be discontent with this attempt to save the truth conduciveness of coherence.

First, it was observed by Charles B. Cross (1999), in his criticism of Klein and Warfield 1994, that truth conduciveness, as Laurence Bonjour (1985) and others have construed this concept, must be understood in a conditional sense.[3] The relevant question is whether a more coherent set is more likely to be true *given (at least) that the elements are held as beliefs by a given subject*, not whether a more coherent set is more likely to be true in the absence of a believer. We let belA denote the proposition that A is believed to be true by some specific person (the references to whom will be suppressed in the following). Hence we are interested in the relation between the two conditional probabilities $P(A_1\&\ldots\&A_n|belA_1,\ldots,belA_n)$ and $P(B_1\&\ldots\&B_m|belB_1,\ldots,belB_m)$ and not in the relation between the corresponding unconditional probabilities.[4] Unfortunately, from Shogenji's argument we may only conclude that the unconditional probability of the more coherent system is higher than the unconditional probability of the less coherent system, provided that strength is held fixed. Nothing can be concluded from the same assumptions about the relation between the conditional probabilities.[5]

Second, we may ask why the weaker, filtered concept of truth conduciveness should be regarded to be more adequate than the stronger, unfiltered one. Shogenji's answer rests on the contention that '[w]e must filter out the effect of the beliefs' total individual strength in evaluating truth conduciveness of *any* epistemic property' (1999: 343). We are told that unless we keep the strength fixed no epistemic property whatsoever can be truth conducive. Unfortunately, no argument is offered for this general claim, but only the following 'illustration'. Suppose that we want to evaluate the truth conduciveness not of coherence but of experiential support, and suppose, further, that Bill has at first, at time $t_1$, no experiential support for his belief in 'Someone is humming some tune somewhere' which is believed just by hunch. Later, at time $t_2$, he acquires belief in 'Arnold is humming "Transfigured Night" in his study' on the basis of his auditory experience. Now compare the probability of the less specific belief at $t_1$ with that of the more specific one at $t_2$. It seems that the former might well be higher than the latter. For the less specific belief is very likely to be true even in the absence of evidence, whereas identifying Schoenberg's tune from humming is no easy task. This means that sometimes a belief that has experiential

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[2] Unlike Shogenji's original specificity argument this example only refers to sets of the same size.
[3] For a more detailed elaboration of this point, see Bovens and Olsson's forthcoming. The conditional notion is studied in the context of the theory of Bayesian networks in Bovens and Olsson 2000.
[4] I follow Klein and Warfield (1994), and many others who have discussed these issues, in interpreting probability objectively rather than subjectively. On a subjective rendering it hardly makes sense to condition on belief in this manner: my subjective probability of A, given that I believe A, is presumably always 1.
[5] Unlike Shogenji's attempt to save the truth conduciveness of coherence, the specificity argument which motivated this effort still goes through on the conditional rendering of likelihood. For consider again the formal counterexample. We noted, on the one hand, that $C(E_1,E_2)$ is greater than $C(T_1,T_2)$ and, on the other

support is less likely to be true than a belief with no experiential support. But, Shogenji contends, we would not conclude from such examples that experiential support is not truth conducive. Rather, we tend to think that the comparison was unfair to begin with and that it should be restricted to beliefs that have the same antecedent probability.

Convincing as it may be to hold the strength fixed in this particular case, a single example in which strength should be filtered out does not suffice to support the claim that strength should *always* be filtered out. As a matter of fact, it is not difficult to come up with counter examples to the general claim. Suppose, for instance, that the property we want to evaluate truth conduciveness of *is* the total individual strength. The strength of a set of beliefs is obviously an epistemic property, and yet it wouldn't make sense to filter out the effect of the beliefs' strength in assessing the truth conduciveness of that very property. Hence, it is not true that strength should be kept fixed in evaluating the truth conduciveness of *any* epistemic property. Purged on this assumption Shogenji's argument for keeping strength fixed in the case of coherence collapses.

Shogenji might retort by excluding strength itself from the class of properties for which it should be filtered out. Is it true, then, that strength should be kept fixed in evaluating the truth conduciveness of any epistemic property, save strength itself? I think not. The common sense position seems to be that we should require strength to be kept fixed in evaluating the truth conduciveness of epistemic properties that are strength-*in*dependent, i.e., properties that have nothing to do with strength and hence do not vary with it. Experiential support is plausibly a case in point. Such a requirement is not justifiable, however, in evaluating properties that are strength-*de*pendent. Unfortunately, Shogenji's own measure makes coherence heavily dependent on total individual strength. Indeed the denominator of the defining expression ((2) above) *is* the total individual strength.

Here is an analogy. Suppose that we wanted to investigate the effect of a certain drug against high blood pressure by giving the real drug to some patients and placebos to the others. Then, since blood pressure can be affected by the patient's diet, we should require of an appropriate test that the diet be kept fixed, i.e., that all patients be given more or less the same food. We note that the diet is not part of the drug. However, if we wanted to study instead the effect of a certain *life style* on the blood pressure, where 'life style' is taken in a broad sense to include a person's eating habits, there would be no reason why all subjects should be required to be on the same diet. On the contrary, such a requirement would amount to an unmotivated restriction and consequently to a serious limitation of the study. It is an equally serious limitation, philosophically, to evaluate the truth conduciveness of coherence while keeping the strength fixed.

More coherence, as we have seen, does not entail a higher likelihood of truth. I have argued that Shogenji's attempt to save the truth conduciveness of coherence in the light of this fact is

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hand, that $\{E_1,E_2\}$ cannot be more probable than $\{T_1,T_2\}$ since the latter set has probability 1, which is true whether or not $T_1$ and $T_2$ are assumed to be held as beliefs.

unsuccessful. I conclude, in the absence of valid reasons to do otherwise, that coherence is not truth conducive.[6]

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