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Fragmented but Rational

Seth Yalcin

1. Introduction

Belief is the map by which we steer, said Ramsey (1929/1931). If belief is fragmented in the sense developed by Lewis (1982) and Stalnaker (1984), though—I assume some familiarity—we shouldn't speak of *the* map. We should update Ramsey's metaphor. A fragmented belief state is like a plurality of maps—an atlas. Steering at any given time always happens with the help of some particular map from the atlas, just not always the same one. The maps taken individually each paint a consistent way things could be. But the maps need not be stitchable into one giant ur-map. Further, there's no guarantee of cross-map consistency within any given agent's atlas.

Here's the question I want to ask: Is it some kind of failure of rationality to be atlas-like in one's belief state—to steer with more than one map in rotation? Is there rational pressure to eliminate fragmentation, to have a single unified conception of how things are?

I think it is often supposed that there is. Although an agent's beliefs are not always integrated into a single state, it is not unusual to think 'that they ought to be. A person's beliefs are defective if they do not fit together into a single coherent system' (Stalnaker 1984: 83). Fragmentation, on this understanding, represents a departure from the rational ideal.[1] Indeed, fragmentation often gets wheeled in exactly when complaints are raised about the idealizing assumptions of certain abstract models of belief, particularly possible worlds and probabilistic models. We fail to be logically perfect in the ways these models seem to suggest. The things we believe seem not to be generally closed under conjunction; we seem sometimes to believe incompatible things; and so on. Fragmentation is meant to help us make space for these points, but without completely vitiating the models. But it is thought that where there is fragmentation, rationality has been to some extent compromised.

[1] I am reading Stalnaker's 'ought' as the 'ought' of rationality. But to be fair, Stalnaker doesn't say 'irrational'—he just says 'defective.' Maybe he doesn't mean *defective because irrational*; maybe he has another sense of 'defective,' and another 'ought,' in mind. Anyway, I am just interested in the idea that fragmentation is irrational, an idea one might easily pull from this quote.

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I want to scrutinize this way of seeing fragmentation. I will use this chapter to tentatively explore the idea that fragmentation per se is not a failure of rationality—that it is possible to be fragmented and doing just fine, rationally speaking.

My main thesis sounds like that proposed by Egan (2008). He too argues for the compatibility of fragmentation with rationality. His main claim is that belief states of the fragmented variety would be 'better for us' than the non-fragmented sort if we are ever apt to be under the influence, at least some of the time, of unreliable belief-forming mechanisms. Roughly, the thought is that a fragmented belief state makes it at least possible for the deliverances of the unreliable mechanism to be quarantined from other beliefs and held up to defeating critical scrutiny. This would be 'better for us' (I take it) in that it would make us less prone to be guided by falsehoods, hence more prone to act in ways that actually tend to serve our preferences. I find Egan's arguments compelling, but I won't presuppose his conclusions. My project is complementary to his, though I come at the rationality question from a different angle. Mainly, I will be asking whether fragmentation per se somehow violates some or other stricture of rationality. My search will come up short, and I will claim to have shifted the burden (or to have shown where it already was). The ultimate view is that being fragmented per se isn't a failure of rationality, regardless of the reliability of one's belief-forming mechanisms.

I think it makes plenty of sense to see fragmentation models of belief as taking a step toward psychological reality. So it makes plenty of sense to motivate such models that way, as part of an empirically grounded formal epistemology. But that isn't where I am coming from in this chapter. Fragmentation, as far as I can make out, isn't less rationally permissible for gods with infinite deductive powers than it is for us.

2. Fragmentation as Tied to Inquiry

Before getting to the main business, I should say more about how I want to think about fragmentation. In this section, I summarize the conception of it I developed in Yalcin (2011) and (2018).

My aim in those places was to add to the possible worlds models of content and of fragmentation developed by Stalnaker and Lewis. On their sort of model, an unfragmented state of belief is represented by a set of possible worlds—intuitively, the way things are according to the agent. A fragmented state of belief—let's call it a *fragmented doxastic state*, to avoid confusing levels—can be modeled by a set of unfragmented states of belief; that is, with a set of sets of possible worlds. Each element of the set corresponds to a map in the atlas, as it were.[2]

[2] Just to make sure this metaphor doesn't get us entangled: Maps are representations. They are not items of content, but things with content. Like maps, belief states have content. On the operative metaphor, belief states are analogized to maps. The set of worlds that corresponds to a belief state is the

The adjustment I contemplated was to bring the grain of logical space into the picture in an explicit way. Granted that believing is locating actuality among a class of possibilities, the possibilities our states of belief discriminate are, I suggested, never maximally specific—they are only as specific as the subject matters, issues, and questions that frame our thinking.[3] When we talk about a belief state's locating actuality among a class of possibilities, our model should include, I proposed, a representation of the distinctions between possibilities that are operative. One familiar way to model a question or subject matter is as a partition of logical space (see Hamblin 1958; Lewis 1988b, 1988a; Yalcin 2018 provides a slower introduction); an answer to the question, or partial answer, can be modeled as a set of cells from that partition.[4] We could think of a partition of logical space as fixing a 'resolution' for the space: Given a partition, only those distinctions that cut along the cells of the partition are 'visible'—those are the distinctions that belong to the subject matter. My suggestion then was that we model belief as question-sensitive, or as sensitive to ways of resolving logical space with a set of distinctions. One believes answers to questions; belief is question-relativized. The modeling proposal was to view a doxastic state as a partial function from partitions of logical space to a set of coarse-grained possibilities (partition cells) selected from that partition. In bumper sticker form: A doxastic state is a function from questions to answers. But the question reflected by a resolution needn't be easy to express in language. And my tendency has been to understand the sorts of resolution that a normal agent's doxastic state is defined on as each capturing a family of topically related questions, a relatively rich subject matter, on which the agent takes some stance—as capturing a relatively detailed array of distinctions, a relatively detailed project of inquiry.

content of the state—the what-is-represented by the state. The content of a belief state is thus analogized not to a map but to the content of a map. However, sometimes when I say 'belief state,' I mean to be talking about the content of the state, as modeled with a set of worlds. Context will make it obvious what is intended.

[3] There is a comment in Ramsey (1929/1931: 146) that seems to be in a kindred spirit: 'A belief of the primary sort is a map of neighbouring space by which we steer. It remains such a map however much we complicate it or fill in details. But if we professedly extend it to infinity, it is no longer a map; we cannot take it in or steer by it. Our journey is over before we need its remoter parts.' In Stalnaker (1981: 135) we find the following: 'I doubt that it is plausible to believe that there is, independent of context, a well-defined domain of absolutely maximally specific possible states of the world . . . The alternative possibilities used to define propositions must be exclusive alternatives which are maximally specific, relative to the distinctions that might be made in the context at hand. But one can make sense of this requirement even if there is no ultimate set of possibilities relative to which any possible distinctions might be made. One might think of possible worlds as something like the elements of a partition of a space, rather than as the points of the space. The space might be partitioned differently in different contexts, and there might be no maximally fine partition.' See also Stalnaker (1986).

[4] There are of course other models of questions, which might in turn make for worthwhile variations on the sort of model I am sketching. See on the one hand Hamblin (1973) and Karttunen (1977) and on the other Ciardelli et al. (2018). Closely related themes are developed in Yablo (2014) and Pérez Carballo (2016).

My way of modeling what it is for a belief state to be sensitive to a question is for it to be defined on the associated partition of logical space. But I admitted (in Yalcin 2011) that it is hard to say more about how best to understand what it means, exactly, to be sensitive to a question. It doesn't require that you are apt to subvocalize the question to yourself, or that you have occurrent wonderings whose content is the question. It seems best thought of as a kind of receptivity to information that would speak to the question.

My doxastic functions are equivalent to sets of pairs, with each pair consisting of a resolution of logical space and a set of possibilities (partition cells) taken from that resolution. I will call a pair like this an *inquiry*. Formally, this model of belief shakes out to be pretty close in key respects to the classic Lewis–Stalnaker model of fragmented belief. It can make all the distinctions that model can make. Then it can make more. On both accounts, a doxastic state is a set of belief fragments. The accounts just differ in how they model fragments. The Lewis–Stalnaker account models a belief fragment as a set of worlds; I model it as an inquiry. The main difference is that the possibilities I traffic in are not generally maximally specific (and indexed to some particular way of cutting up logical space) and that the different belief states (maps) that make up a total doxastic state (atlas) are generally tuned into different resolutions of logical space. This provides room to see the maps—the fragments—as coming apart in subject matter and to see fragmentation as tied up with our tendency to discriminate possibilities only to the extent necessary for the question or subject matter at issue.

The possibilities left open by one of a given agent's inquiries are a set of partition cells of logical space. We could call that their *question-structured* belief content. The proposition that is the result of unioning those cells is the ordinary, unstructured belief content of the inquiry. For any given belief state (map) we can make a distinction between two sorts of proposition true throughout its associated ordinary belief content: those that are identical to some union of the cells of the corresponding resolution, and those that aren't. The latter, I speculated, could be a way to model the idea of implicit belief content, whereas the former are the accessible beliefs, the ones more directly tied to the guidance of action. This part of the story was inspired by the discussion of accessibility in Stalnaker (1991, 1999).

I suggested this model could help somewhat in dealing with certain failures of closure under entailment—with the problem of logical omniscience afflicting possible worlds models of content. An example I discussed, drawing on Stalnaker (1984): William III believed that England could avoid war with France. Did he therefore believe something that this entails, namely that England could avoid *nuclear* war with France? It'd be weird to say he believed this. I proposed this is because, although the proposition that England could avoid nuclear war with France was part of William III's implicit belief content, still, he didn't have a doxastic state defined on anything close to the subject of nuclear war: His state of mind was not such as to make distinctions between possibilities which

turn on their *nuclear* wars. But we'd convey otherwise in describing anything William III believed with the help of 'nuclear war.'

Shouldn't we just say that William III lacked the concept NUCLEAR WAR? We can say that, I agree. I proposed that lacking the concept just is failing to be able to distinguish possibilities according to how things are with whatever it is that answers to the concept. Concepts will normally determine some possible worlds intension, but like subject matters, they are associated with resolutions of logical space, with the distinctions that matter for grasping the concept. On this picture, concepts are not component parts of mental representations, or of the propositions that are their content; instead, concept possession is a matter of the logical space the propositions we believe are cut from. To have a concept, I speculated, is to be able to think and believe propositions cut from the appropriate resolution of logical space.

This way of formalizing a distinction between implicit and explicit (or accessible) belief differs from other ways one might get at such a distinction within a fragmentation model. Consider for instance Greco (2015). On Greco's way of theorizing the distinction, the idea is that one or more of an agent's belief fragments are of an explicit variety—these are relevant, especially, for what the agent is disposed to say in various situations—whereas other fragments are implicit: They control behavior in ways that often fly under the radar of the agent's articulated thinking. ('Roughly, one's explicit beliefs are what one is willing to assert and defend in argument, while one's implicit beliefs are what one treats as true when one is acting unreflectively and automatically'; Greco 2015: 659.) An example of Greco's: the 'implicit sexist' John, who vigorously defends the equal intelligence of the sexes whenever given the opportunity but who manifests, in his nonlinguistic behavior, the opinion that women are of lower intelligence (by paying attention to them less, by assigning their statements lower credence, etc.). An idea Greco considers, as I read him, is that John's explicit belief fragment is what is in control of his actions when he confronts questions like 'How should I talk about the intelligence of women?', whereas most of the rest of the time implicit fragments are steering the ship—for instance, when John is confronted with an issue like 'How seriously should I take what Betty is saying?' or 'How much should I pay attention to Betty?' (By 'confronting an issue,' I don't mean 'subvocalizing an interrogative'—confronting a question is something nonlinguistic creatures can do, I take it.)

For Greco, some belief fragments are implicit and others are explicit, whereas for me, an implicit/explicit distinction (or an implicit/accessible distinction) is a distinction drawn *for each individual belief fragment*. (And my distinction is not especially tied to speech.) I think we need the latter to deal with the basic point that even if one particular map in one's atlas is the 'live' one in a given context—the take on the world which is in some sense guiding the steering right now—still, the agent lacks a certain kind of access to each of the infinitude of logical

entailments of that take on the world. Anyway, Greco's thinking seems complementary to, and not incompatible with, the model I have sketched. I would agree, for instance, that for his implicit sexist, we should talk about (at least) two fragments. I would add that we could think of these fragments as each being associated with different questions/subject matters, reflective of the sorts of situation the fragment is apt to control action.

One assumption that I do not want to make is the idea that at any given moment there is *just one* particular fragment involved in the steering. This is a common way of glossing fragmentation, but I think it oversimplifies. We can imagine John mansplaining sexism to Betty, for instance. In doing so, *both* of the fragments Greco hypothesizes need to be called upon to explain John's behavior at once. So an agent's actions might be under the 'direct guidance' of several fragments simultaneously at a given time. Any action will normally fall under several descriptions. We might say: Fragments are explanatorily connected to actions-under-descriptions.

In assuming that a fragmented belief state is a *function* from partitions of logical space, the model already rules out the possibility of an agent's selecting two different sets of possibilities as the candidates for actuality from the very same partition. Given a body of distinctions, agents take at most one view about what actuality is like relative to it. (Of course, an agent can be very *uncertain* relative to a given inquiry, but that's just a matter of the range of possibilities they leave open relative to the associated partition of logical space.) So already we are ruling out a certain kind of atlas: We can't have a pair of maps in an atlas that make exactly the same distinctions but that locate reality in a different place relative to those distinctions. Let's also rule out the idea that we can have a pair of belief states such that one is defined on a strictly finer resolution of logical space than the other.

One motivation for removing these degrees of freedom is that it isn't clear what permitting such cases would mean. The picture is supposed to be that fragmentation owes to the failure of the questions framing an agent's various opinions and actions to all meet on one partition of logical space. It's that when an agent is faced with certain questions, she as it were pulls out the map she has that speaks to the distinctions that belong to the question and steers by that. Supposing that is the idea, what would it mean for an agent to potentially have various maps by which she steers relative to *exactly the same questions*? And what would it mean to have two maps in one's atlas, one of which is strictly more detailed than the other in terms of which questions it settles? What kinds of situations would call for this kind of representation of an agent's state of mind? No doubt we could say more and give sense to a model allowing these things. But I think we have enough going on for now.

A second reason for setting these cases aside is that it seems like some of them have at least the potential to shake out as actual failures of rationality. This matter

seems worth scrutinizing further—another time. Mainly I am interested in the question whether fragmentation and rationality are compatible, not whether all imaginable models of fragmentation render it always compatible with rationality. It would be enough for me here if, ignoring such cases, we found that the sort of fragmentation I have narrowed my attention to does not, on its own, entail any failure of rationality.

3. Rationality Requirements in a Fragmentation Setting

How do the demands of rationality interact with the fragmented mind? Let's begin with a distinction.[5] Say that a requirement of rationality is *fragmentary* just in case it applies at the level of individual belief fragments. An example of a requirement of this sort would be:

(FC) **Fragmentary coherence**.

It is rationally required that the belief fragments of a doxastic state (considered individually) be consistent.

In a setting where credences and probabilities were added to the mix, another example would be a requirement of *fragmentary probabilistic coherence*, which would demand that the distribution of probabilities over possibilities in any given fragment obey the probability axioms.

Fragmentary requirements contrast with *interfragmentary* requirements. An interfragmentary rationality requirement places a demand on the doxastic state at large. Constraints of this sort will generally rule out certain combinations of belief fragments and express some kind of irreducibly global constraint on doxastic states. A hypothetical example of this sort of constraint would be:

(PIC) **Pairwise interfragmentary coherence**.

It is rationally required that any pair of belief fragments of a doxastic state be consistent.

Another example:

(IC) **Interfragmentary coherence**.

It is rationally required that all of the belief fragments of a doxastic state be consistent.

[5] See also Borgoni (Chapter 5 in this volume), who makes some distinctions similar to the ones I make in this section.

Another:

(AF) **Anti-fragmentation**.
It is rationally required that a doxastic state not be fragmented.

One can imagine others. (And if we have probabilities on the scene, we can imagine still further principles—for instance, one that would prevent probability distributions from differing too much between fragments.) We can consider requirements of this kind, both within the traditional Lewis–Stalnaker model of fragmentation and within the modification of that model I sketched in the last section. The difference just comes down to how exactly one models belief fragments.

It is important to distinguish between (IC) and (AF). One might be fragmented and yet be in a doxastic state whose belief fragments are consistent. If so, one satisfies (IC) but not (AF). Specific cases of fragmentation discussed in the literature often involve agents who violate (IC). But to be fragmented is one thing, and to violate (IC) is a further thing. When Stalnaker writes that a person's beliefs are defective 'if they do not fit together into a single coherent system,' notice that there are two ideas there: coherence (which is what (IC) talks about) and unity (what (AF) talks about).

You will notice that the requirements stated above stand in various entailment relations. If you have interfragmentary coherence, you have pairwise interfragmentary coherence; if you have pairwise interfragmentary coherence, you have fragmentary coherence. Further, if you have fragmentary coherence together with anti-fragmentation, then you are in a coherent, non-fragmented state, and therefore you trivially satisfy (IC) and (PIC).

With the distinction between fragmentary and interfragmentary requirements in focus, we can now frame a basic question:

Are there *any* interfragmentary requirements of rationality?

Let's give a name to the negative answer:

Fragmentary rationality.
All requirements of rationality are fragmentary.

We could set up the opposing thesis as:

Unitary rationality.
Some requirements of rationality are interfragmentary.

The latter has it that the corporate body of fragments together forms a locus of rationality.

Now I can say a little more clearly what happens in this chapter. Most of my attention is on the question whether there is an interfragmentary coherence requirement (whether (IC) is true). This occupies Sections 4, 5, and 6. (In Section 6, I get into some issues at the interface of fragmentation and requirements of practical rationality.) For the most part what I do is consider, but ultimately reject, reasons to endorse (IC). In the last section of the chapter, I consider the question whether (AF) is true. Here too I fish around for a rationale but come up empty. The general trend of the chapter is thus friendly to the thesis of fragmentary rationality. But my discussion is hardly comprehensive, since I make no general attempt to show that no possible interfragmentary requirement could hold.

Throughout I assume (FC) without argument—not because it is unassailable, but just because I am interested in issues that arise beyond the individual fragment. I think it is worthwhile to assess principles like (IC) in abstraction from qualms rooted in (FC) specifically. Also, if you reject (FC), then you are probably *not* going to complain that fragmentation per se is irrational. But I am interested in whether there's reason to worry about the rationality of fragmentation per se.

One last caveat. I put all of the above in the language of 'rational requirements.' I might also have spoken of 'norms of rationality.' But I also could have framed these ideas as ideas about what it is to be a rational agent. For example, I could have expressed the idea of fragmentary coherence as the idea that the belief fragments of any rational agent are (each individually) consistent. Some might think that while there is no rational requirement of fragmentary coherence, all rational agents are nevertheless such that their belief fragments are consistent. If you are that sort of philosopher, I invite you to re-interpret the constraints above as ideas about what it is to be a rational agent, so that you can engage the chapter. I find it convenient to speak of rational requirements, but I doubt that framing is necessary to get at the questions I am interested in.

4. Interfragmentary Coherence?

Let's now look specifically at (IC) (repeated):

(IC) **Interfragmentary coherence**.
It is rationally required that all of the belief fragments of a doxastic state be consistent.

In the context of the model of fragmentation I have offered, this is the idea that it is rationally required that the belief contents of one's inquiries be consistent. Is there reason to believe (IC)?

To fix ideas, consider a well-known case described by Lewis—one that would seem to violate (IC):

> I used to think that Nassau Street ran roughly east–west; that the railroad nearby ran roughly north–south; and that the two were roughly parallel. (By 'roughly' I mean 'to within 20°.') So each sentence in an inconsistent triple was true according to my beliefs, but not everything was true according to my beliefs. Now, what about the blatantly inconsistent conjunction of the three sentences? I say that it was not true according to my beliefs. My system of beliefs was broken into (overlapping) fragments. Different fragments came into action in different situations, and the whole system of beliefs never manifested itself all at once. The first and second sentences in the inconsistent triple belonged to—were true according to—different fragments; the third belonged to both. The inconsistent conjunction of all three did not belong to, was in no way implied by, and was not true according to, any one fragment. That is why it was not true according to my system of beliefs taken as a whole. Once the fragmentation was healed, straightway my beliefs changed: now I think that Nassau Street and the railroad both run roughly northeast–southwest. (Lewis 1982: 436)

Talk of 'healing' hints at a problem needing fixing. Was there a problem? If there was, was it that (IC) was violated?

First, why would it be a problem to be in a fragmented state of mind wherein the belief contents of the various inquiries are inconsistent? One might say: 'This could be so only if one of these belief contents—one of the maps—excludes the actual world. But this means that at least some of the time—whenever that map is operative—the agent is guaranteed to be steering by a conception of the world that doesn't correspond to reality.'

Steering by falsehoods is to be avoided, let's agree. It is at least instrumentally bad. If you are driving in Oakland, it's better not to steer using a map of Omaha. You are unlikely to get where you want to go. Believing the false is also, let's agree without getting too deep about it, epistemically suboptimal. But the problem in question here is, so far, not obviously a failure of rationality per se.

Believing the false is bad, but that's a point orthogonal to the topic of fragmentation. And believing falsely is, anyway, no automatic failure of rationality. (At least not as I mean to use 'rationality.' If one has seriously misleading evidence, for instance, then it may be rational to believe what's false.) If believing falsely is not a failure of rationality per se, why think it's more of a failure of rationality to believe falsely once believing is taken to be fragment-relativized?

One might respond: 'Granted, the problem with inconsistent fragments is not a guarantee of believing, relative to some fragment, a falsehood per se. Rather, the problem is merely that Lewis believes—relative to one fragment—that the railroad

runs east–west and also—relative to another fragment—that it doesn't. Those contents are incompatible. So these attitudes are in conflict. This is an incoherent combination of attitudes.'

This begs the question. It is one thing to say that a pair of fragments represent the world incompatibly, that they fail to overlap in the possibilities they leave open. It is another thing to declare a doxastic state incorporating such fragments incoherent, where that is meant to signal a failure of rationality. But our question just is why we should view such a state of mind as incoherent. We are granting for the sake of argument that individual fragments ought (rationally) to be coherent. Why think an analogous requirement of coherence applies across fragments? It may seem obvious that some such requirement does apply. But why isn't this just confusedly projecting a constraint that applies to individual fragments onto the entire doxastic state?

Fragmentation is sometimes spun as the idea of representing an agent as a set of (unfragmented, ideal) agents. Consider two unfragmented agents whose belief contents fail to overlap. They disagree. One of them believes falsely, though maybe no one has failed to believe as they (epistemically subjectively) ought. Anyway, their disagreement isn't a kind of incoherence. To describe it that way would be a category mistake. The fact of their disagreement doesn't imply that a coherence requirement of some kind has been violated. Why describe the situation differently when the belief states in question are the fragments of a single agent? Such an agent, for any given decision, steers by a coherent conception of the world. It's just that there isn't a single conception of the world that guides every decision. (Not because the single conception changes over time, but because there exists variety in the conceptions that drive the agent.)

It can seem axiomatic that rationality and fragmentation are not friends. Maybe, as Kolodny puts it, it just 'seems uncontroversial that rationality is a kind of coherence or unity. So it is relatively clear how we might settle questions about what rationality requires; it is whatever is necessary for coherence' (Kolodny 2005: 511). Whatever else it is, fragmentation is disunity. But again, we do have coherence—the local coherence of the individual maps. Steering is *always* by some coherent map. Why, though, does the atlas have to be stitchable into one consistent ur-map, on pain of irrationality?

Can one derive this somehow from the very idea of belief? One could try to pull this out of Stalnaker's brief discussion, though he gives no full-throated defense of that thought, perhaps assuming (plausibly) that his audience will take it as obvious that fragmentation is a failure of rationality. He says:

> A person may be disposed, in one kind of context, or with respect to one kind of action, to behave in ways that are correctly explained by one belief state, and at the same time be disposed in another kind of context or with respect to another

> kind of action to behave in ways that would be explained by a different belief state. This need not be a matter of shifting from one state to another or vacillating between states; the agent might, at the same time, be in two stable belief states, be in two different dispositional states which are displayed in different kinds of situations. If what it means to say that an agent believes that *P* at a certain time is that some one of the belief states the agent is in at that time entails that *P*, then even if every set of propositions defined by a belief state conforms to [closure under conjunction], the total set of propositions believed by an agent might not conform to that condition.
>
> (Stalnaker 1984: 83)

Here, Stalnaker imagines a stable condition of mind an agent might be in (that of fragmented belief), connecting it to the explanation of the agent's actions and to our language of belief. Each of the agent's actions seems, thanks to this (fragmented) state, rationally explicable. How then does fragmentation introduce irrationality into the story? (Even less clear: How might this be distilled from the concept of belief, especially if the possibility of fragmentation is built into the very meaning of 'believes,' and in such a way that it is central to the role it plays in explaining behavior?) If anything, fragmentation seems to enable us to render more of what the agent does as rationally explicable, not less (cf. Egan 2008: 50).

There is, incidentally, a larger background issue here about whether, fragmentation quite aside, rationality is helpfully conceived of as an issuer of coherence requirements—requirements whose normative force is not really further explained. I've granted for the sake of argument that there is a rational requirement that the belief fragments—the individual maps—be consistent. But the connection between rationality and consistency may not be so unsubtle. Perhaps the pull of the idea that rationality issues formal coherence requirements can be explained by the kinds of reasons for belief it is ever possible to have (cf. Kolodny 2007). Perhaps: Only evidence can supply reasons for belief; a body of evidence could never supply sufficient reason to believe *p* and also sufficient reason to believe its negation; and so if one does believe *p* and its negation, the problem is ultimately one about believing in a fashion that is out of step with the reasons for belief one has (or could ever even possibly have). So this idea says: It's not that there's any basic rational requirement to be coherent. The appearance that there is such a requirement stems from the force of the idea that you should believe according to the reasons you have.

Maybe let's not try to finally settle the ultimate source of the (seeming?) normativity of rationality here. But this line of thought does prompt another idea about what might be wrong with a fragmented state of mind.

5. A Failure of Responsiveness to Evidence?

How about this: 'Lewis's problem of rationality was that he was not believing in a manner that fully accorded with his evidence, for his evidence couldn't have supported both belief in *p* and belief in its negation. But Lewis believed—relative to one fragment—that the railroad ran east–west and also—relative to another fragment—that it didn't run east–west. No body of evidence, and specifically not Lewis's, could have supported Lewis's state of mind.'

Granting one must conform one's beliefs to one's evidence, is it *rationality* that requires this? It could be debated. But suppose so, at least for this section. And let us consider the question: Is it true that Lewis's fragmented state of mind couldn't have been supported by his evidence?

The issue interacts with the metaphysics of evidence. I will consider two views here. Consider first the view that one's evidence is mostly made up of one's beliefs. If one's beliefs are fragmented, then one's evidence is fragmented. Talk of 'Lewis's evidence' is then missing an argument place: one for a fragment. Justificatory relations between beliefs—of the sort a rational agent is supposed to be responsive to—might obtain within a given fragment, but should such relations be understood to cross fragment boundaries? Was Lewis's belief, relative to a fragment, that Nassau runs roughly east–west justificatorily undermined by his belief, relative to another fragment, that Nassau is roughly parallel to north–south-running railroad tracks? Some temptation to give an affirmative answer may stem from the fact that, when this apparent tension is made explicit to Lewis, he will not abide, at least not if he is rational—some mental housekeeping, some defragmentation, will rightly occur. To that extent, the fragmentation takes on the appearance of something regrettable. Is this because Lewis is finally being responsive to justificatory relations which obtained all along between beliefs in different fragments, relations the overlooking of which cost him rationality points? Or is it just that, when the tension is pointed out to Lewis, the very pointing out of it puts him in a new state of mind, one finally combining contents and distinctions which, up until then, had been for him mentally quarantined?

When the tension is pointed out, Lewis gets a new fragment that replaces the other two, one where the relevant contents and distinctions now appear at once on the stage. Rather than describing Lewis as late in being responsive to cross-fragment justificatory relations between compartmentalized beliefs, relations it was a rational failure to be insensitive to, we can describe him as continually and unfailingly responsive to intra-fragment justificatory relations—and as dynamic in respect of what his fragments are. The appearance that Lewis was not doing rationally well, pre-epiphany, would then be a sort of illusion created by the fact that the later state of mind brings into one place information and distinctions that

were compartmentalized, so that they can exert rational pressure on each other in a way they could not otherwise. The felt tension between believing that Nassau runs roughly east–west and believing that Nassau is roughly parallel to north–south-running railroad tracks is, we could say, a feeling afforded by a state of mind (fragment) that makes these propositions all visible at once. If so, then that feeling doesn't discredit the rationality of the pre-epiphany fragmented state—it doesn't support the idea that there are cross-fragment relations of justification, responsiveness to which Lewis lacked, such that his rationality was compromised.

And on further reflection, it is hard to see how Lewis could even have manifested the imagined responsiveness. Surely the beliefs one has relative to one fragment cannot be *based* on the beliefs one has relative to another fragment. But if no basing relation is possible, what would it even mean for Lewis to be rationally responsive to cross-fragment justification relations?[6]

Stalnaker writes: 'A person's beliefs are defective if they do not fit together into a single coherent system. An agent who recognizes the consequences of the conjunction of separate beliefs must either accept the consequences or abandon one of the original beliefs' (Stalnaker 1984: 83). The second sentence seems right. But the first seems to go too far, at least if it is meant to slight fragmented belief. An agent who recognizes the consequences of the conjunction of separate beliefs is, I want to suggest, *a fortiori* believing relative to a fragment bringing all of the relevant contents and distinctions together; and we have granted that individual fragments ought to be coherent.

There are mental activities distinct from belief—occurrent thinking, supposing, imagining, reasoning—where propositions believed relative to distinct fragments might be entertained, and their logical interrelations explicitly grasped. That intellectual activity, it seems reasonable to hypothesize, plays a role in the destruction of old fragments and the creation of new ones. This mental plane is one where we can manifest responsiveness to logical tensions between contents from incompatible fragments of belief. My worry is about projecting these cognitive sensations of tension backwards, to the incompatible fragmented belief states, and declaring their combination incoherent. The feeling that we ought to be responsive to the tension between a proposition and its negation is one that appears to us given some single perspective in inquiry. It is not the feeling that two incompatible fragments are incoherent, where that means it would be defective for an agent to be in a doxastic state including both. It seems to me that there is no such feeling as the latter, for a fragment is like a perspective in inquiry, and you can only occurrently occupy one of those at a time; there is no standpoint from which to feel a tension between two belief fragments. The irrational thing would be to

[6] See, however, Borgoni (Chapter 5 in this volume) for one approach to answering this question.

embrace both a proposition and its negation in some one given inquiry, at some one fragment.

Next there is the view that one's evidence is mostly made up of what one knows (Williamson 2000). If we have this view together with the idea that rationality requires proportioning one's belief to one's evidence, then—absent something like the KK principle—one cannot always know what rationality requires. One has a certain kind of externalist conception of rationality. I don't object, but I'd like to avoid, if I can, arguments about what to mean by 'rational.' The point to keep in mind about this sort of view is that even agents who are in the relevant sense ideal—agents who are deductively and logically flawless, and doing only what seems perfectly reasonable given their subjective perspective—may yet fail to be doing what rationality requires on this conception of rationality. Even completely unfragmented agents will not be infallible in respect of apportioning belief to evidence. Thus even if we could show that a fragmented mind implies a failure to apportion one's belief to one's evidence, being subject to this kind of error per se wouldn't seem to distinguish the fragmented from the unfragmented agent. But our question was about wherein the distinctively epistemic badness of fragmented belief resides.

Second, this general view of evidence obviously raises the question whether knowledge is fragmented. If knowledge is never fragmented, then one might try to argue that the unitary body of known propositions supports some one unitary body of belief; it is therefore a defect to go in for a plurality of belief states, as in a fragmented mind. But it is hard to put the idea that knowledge is unified together with belief fragmentation. Given the latter, what would prevent the propositions one knows from being distributed among one's belief fragments? It would be arbitrary, and not a little odd, to suppose that some particular belief fragment operates as the home of knowledge. Insofar as we've given sense to the idea of fragmentation, false beliefs might in principle accrue to any fragment.

Another possibility would be to try to theorize knowledge as a state that isn't partially grounded in belief, so that while there may be necessary connections between knowledge and belief, knowledge that p is not metaphysically explicable as belief in p satisfying additional conditions. Then one could try saying that while knowing that p might always entail believing that p relative to some fragment or other, the former state is not (partially) grounded in the latter state. That leaves room to postulate a unified epistemic state that sits on its own, as it were. But this divorce of knowledge from belief seems to raise more questions than it answers, since it would remain to clarify both the evident connections between belief and knowledge and the distribution of labor between knowledge and fragmented belief in the explanation of behavior.

We should remind ourselves that perhaps the main motivation for fragmentation in the writings of Stalnaker and Lewis is the pains of logical omniscience. Fragmentation helps to contain some of the troubling closure properties brought

in by possible worlds models of belief. But the relevant troubles mostly seem to carry over from belief to knowledge. It is true that stock examples of fragmentation, like Lewis's, involve *incompatible* belief fragments, a situation that isn't going to have any purely epistemic parallel. If one's epistemic state is fragmented, it must be that all the epistemic fragments are compatible, since they all must include actuality. Still, if we were happy to say that there can be failures to put what one believes relative to one fragment together with what one believes relative to another fragment, it is hard to see why we wouldn't also say that there can be failures to put what one knows relative to one fragment together with what one knows relative to another fragment. That suggests that if you go in for belief fragmentation, it is natural to formalize knowledge along a similar pattern: An epistemic state would be modeled as a function from partitions of logical space to subpartitions and defined on the same resolutions of logical space as one's doxastic state. The things known, relative to an inquiry, would be a subset of the things believed relative to that inquiry.

Summing up: If evidence is knowledge but knowledge states are fragmented, then whether one's belief is apportioned to the evidence is itself a fragment-relativized affair, and there isn't space to deem fragmentation per se as entailing a rational failure of responsiveness to evidence.

6. Practically Self-Undermining?

Maybe some version of the following is a requirement of rationality: Don't choose to do things that are apt by your own lights to result in an outcome you'd disprefer. Versions of this idea animate decision theory. Would fragmentation get in the way of a demand of this kind? Suppose we granted the conditional: If fragmentation is apt to make agents more disposed to act in ways that would tend to undermine the securing of their preferred outcomes, then fragmentation undermines rationality. Very well; is the antecedent of this conditional true? Does fragmentation—or at least fragmentation of the sort that would violate (IC)—make an agent more prone to self-defeat?

One way to defend an affirmative answer to that question would be to try to show that fragmented agents are (apt to be) Dutch-bookable. You might think it ought to be easy to sucker a fragmented agent into a betting arrangement that is fair according to the fragmented belief state yet is such as to guarantee a net loss. But the challenge here is to make sense of what it would mean for a system of bets to be 'fair relative to a fragmented belief state.' Traditionally, the target of a Dutch book is the probabilistically incoherent agent. For such agents, we can make sense of the idea that an objectively unfair system of bets nevertheless *looks fair* to that agent. But a fragmented agent doesn't have anything but fragment-relative attitudes about the fairness of bets. Generally speaking, there is no unified *way things look* to a fragmented

agent. There is just the multitude of takes on things, each take corresponding to a fragment. Of course, if one of the takes is itself incoherent, then Dutch-bookability becomes possible; but that's not a problem about fragmentation per se.[7]

Does this say enough? Imagine Bill and Ted are trying to drive from *A* to *B*. They take turns at the wheel, each one using his own map. They don't talk (suppose there's some complicated reason why). When one drives, the other sleeps. Alas, their maps are incompatible. Bill's map says that *B* is west; Ted's says east. Whenever Bill takes the wheel, he invariably finds that Ted has driven them the wrong way. The first thing he does is make a U-turn. Of course, Ted does the same when it's his turn. This doesn't seem like a good situation. Bill and Ted are undermining each other's driving. From the outside, we just see a car going back and forth down the same road, never really getting anywhere. The townspeople will say: Something's not right with that car. But it can seem that in relevant respects, a fragmented agent—or some fragmented agents—might, in principle, behave in something like the way the car does in this example.

But of course, in this example, the locus of rationality isn't really the car but the driver, and the driver keeps changing. It is an unfortunate predicament that the two drivers have such perfectly opposed plans. It'd be nice if they could talk and work things out. Meanwhile, there's no irrationality in this story. We already said that the two drivers are guided by incompatible takes on where things are. Each drives in a way that makes sense. Since they take turns driving, there's no one map that makes sense of the car, that rationalizes the car's movements taken as a whole. The conclusion shouldn't be that the car, or some aggregate entity consisting of the car and its two drivers, is irrational. It is more natural to say that for such entities, the question doesn't really arise in an interesting way. Again, the locus of rationality is the individual driver.

Is there a reason to think of the fragmented mind in a deeply different way? So far, I haven't been able to find one. If there isn't a deep difference, fragmentary rationality—the thesis that all requirements of rationality are fragmented—starts to look plausible. In the absence of arguments for interfragmentary requirements, that thesis seems to have presumptive status.

The question whether there are any interfragmentary requirements of rationality can be analogized to the issue of whether there are any nontrivial diachronic requirements of rationality (such as: update by conditionalization). Fragmentary rationality is analogous to a thesis Brian Hedden calls *time-slice rationality* (Hedden 2015). According to time-slice rationality, all requirements of rationality are synchronic; the locus of rationality is not the temporally extended person but

[7] There is also the further question of whether the preference states of agents are fragmented, so that each belief fragment might potentially be equipped with its own preference order. That would present another obstacle to creating a Dutch book for a fragmented agent.

rather the time slice. Both time-slice rationality and fragmentary rationality involve a kind of narrowing or delimiting of the domain of rational requirements.

The two theses are also different in an interesting way. On Hedden's development, time-slice rationality is not just the claim that all requirements of rationality are synchronic. It also includes a specific claim about the sort of rational pressure one's attitudes about one's past or future states can exert on one now. Hedden calls it *impartiality*: 'In determining how you rationally ought to be at a time, your beliefs about what attitudes you have at other times play the same role as your beliefs about what attitudes other people have' (Hedden 2015: 9). This, Hedden shows, is a natural component of a time-slice-centric theory of rationality. But it is hard to see any analog of this requirement in the fragmentation setting. The difference is that while I, right now, have lots of attitudes about what I once believed and desired, and about what I will believe and desire, it is much less clear that the belief fragments composing my doxastic state represent each other at all. If I am fragmented, this fact does not seem to be transparent in anything like the way it is obvious to me that I have various attitudes at different times.

Hedden anticipates the thesis of fragmentary rationality, flagging it as worth investigating. He writes:

> It may be, then, that my move of seeing different time-slices of a temporally extended agent as akin to distinct agents, each individually subject to rational norms and interacting strategically with one another, is only the start. Perhaps we need to zoom in even closer and see even agents-at-times as akin to groups. This more radical shift in perspective would clash with standard models of rationality, which presuppose that agents-at-times have fairly unified minds.
>
> (Hedden 2015: 200)

Of course, this chapter is very much in the general spirit of Hedden's remarks here. It seems an open question, though, to what extent we can conceive of belief fragments as 'interacting strategically' with one another. Usually, to interact strategically with an agent, you first have to believe that they exist. You have to form opinions about what they think and want. But again, it's not at all obvious that we want to model belief fragments as 'having views about' the other fragments they share a doxastic state with. This would make little sense of the examples in the literature. Take fragmented Lewis. One of his fragments—call it F_1—has it that Nassau runs roughly east–west and is parallel to the railroad. Another—F_2—has it that the railroad runs roughly north–south and is parallel to Nassau. Question: What is F_2 like, according to F_1? That is, in the world as F_1 has it, what is going on with F_2? I hope the question sounds weird. Suppose F_1 does represent F_2 just as it is. Then when Lewis is steering by F_1, he is guided by a conception of the world according to which he, Lewis, has another fragment, or system of attitudes, which represents the layout of Princeton differently. But that would seem to make his own fragmentation transparent to him in a way

that, in the example, it simply isn't. Plausibly, F_2 is just not on the map of F_1; it doesn't represent F_2 as being any particular way. A similar kind of point applies to Greco's sexist John, who doesn't see his own hypocrisy. To use the other word for fragmentation: The fragments are *compartmentalized*. It seems that generally, the maps of our atlases don't represent each other.[8]

If this is right, it complicates the idea of analogizing the fragmented mind to a group. Normally, the members of a group know they are in a group, and each member of the group will have at least some attitudes about the views of some other members of the group. We don't have this in the fragmentation case.

* * *

I have not found success in discovering a compelling argument for (IC). Admittedly, my discussion has had a whack-a-mole quality: I have thought up possible reasons for favoring (IC) and whacked them. That's of course less satisfying than giving a direct, general argument against (IC)—than throwing a grenade that takes out the whole mole colony, as it were. Alas, you fight the moles with the army you have. If I could give some general argument, it seems it would consist in a counterexample—it would be a case of an agent's violating interfragmentary coherence in a way that is nonetheless rational. But it seems doubtful that any such putative case would be viewed as uncontroversial—and then I worry we would get hung up trading perhaps murky intuitions about how to apply 'rational' in a hypothetical case. Thus I have found it better to just whack at the most prominent-seeming moles. (And if I've cleared some brush for future grenade throwers, all the better.)

7. The Diversity of Inquiry

I want to turn now to the thesis of anti-fragmentation (repeated):

(AF) **Anti-fragmentation**.
It is rationally required that a doxastic state not be fragmented.

No doubt one of the main reasons—maybe *the* reason—that philosophers in the Lewis–Stalnaker tradition add fragmentation to their toolkit is in order to take advantage of the possibility of fragmentation without coherence between fragments. Still, fragmentation does not automatically entail such incoherence. You could have fragmentation but with coherence between all fragments. Indeed, on the finer-grained model of fragmentation I have sketched, two fragments

[8] Save maybe when we do the kind of philosophy we're doing in this chapter, where we try to map out the maps by which we steer. But this is a pretty attenuated sort of representation.

might even have exactly the same (ordinary, unstructured) belief content and differ only in how they are structured by subject matters. In the context of this model, the idea that fragmentation is somehow defective, or less than ideal, is partly the idea that it is best for one's believing to be framed by one—presumably very (maximally?) fine—resolution of logical space: one ur-inquiry to subsume all others.

Let's consider that idea. Is it right? The question is whether it is some kind of demand of rationality that one's belief state be so organized. I think this is not easy to fathom. The inquiries we confront are obviously myriad and heterogeneous.

> *Are we heading toward a recession? Can you sleep-train a four-month-old? Why aren't my tomatoes growing faster? Where can I get a taco at this hour? How much sunscreen to use? Is Pluto a planet? Is fragmentation rational? What's the deal with airplane food?*

I have pondered these questions separately. Maybe one day in the future I will reach some extraordinary fork in the road where questions about economies, four-month-olds, gardening, astronomical bodies, tacos, etc. swirl inextricably together in the problem I face, so that it would somehow do me some good to have a state of belief framed with the help of the diverse distinctions these subject matters incorporate. No doubt a tiresome philosopher could offer me a ticket in a lottery whose payoffs turn on some weird combination of facts about the effects of cabin pressurization on taste and the UV-blocking power of zinc. Meanwhile, the idea that there is rational pressure on me *now* to achieve such a state of mind, to bring together all my thinking in these directions into one super-rich logical space, seems bizarre on its face. If anything, it seems pathological to seek this kind of unity.[9]

Resolutions of logical space provide guises for actuality. In believing we seek not to exclude actuality relative to any given resolution. But it may be a nontrivial thing to identify one patch of logical space with another across resolutions. To size up where the possibilities we leave open relative to one partition of logical space are to be found relative to another way of chopping things up requires a state of mind that brings all of the distinctions together in one place. Sometimes it is fruitful to merge subject matters in that way—as when a reduction of some distinctions to others is possible. But often it is not fruitful. Often one will end up with a gruesome carving of logical space, for subject matters frequently cut across one another. It is hard to see how rationality could exert pressure on agents to merge their thinking on subject matters that don't naturally cohere. If one is seeking a taco at this hour, it is not generally better to steer by a map that settles

[9] Seeking this kind of unity seems akin to the project Chomsky has derided in various places as 'the study of everything' (see for instance the papers in Chomsky 2000).

whether Pluto is a dwarf planet, or which fixes the optimal soil conditions for tomato-growing. The ordinary bread-and-butter decision problems that one uses to motivate decision-theoretic modeling (of the sort one might find, for instance, in the first chapter of Jeffrey 1983) characteristically invoke only extremely coarse-grained partitions of logical space, dividing possibilities only in gross ways that relevantly matter to the outcomes of one's acts. Good deliberation is partly an exercise in understanding what distinctions between possibilities *don't* matter—that's a potentially nontrivial part of any good framing of a decision problem. Like maps, resolutions of logical space come at natural scales and natural levels of abstraction. I don't know if it's *more rational* to hew to relatively more natural ways of resolving logical space in one's believing, but it certainly doesn't seem *less rational* to steer clear of unnatural combinations of subject matter.[10] Anyway, isn't the burden on those who would claim otherwise?

To be clear, nothing I am saying here requires postulating a principle of 'clutter avoidance,' to the effect that one should not clutter one's mind with trivialities (Harman 1986). Of course, one *shouldn't* clutter one's mind with trivialities. But saying that is different from what I am saying here, which is that it is not generally rationally required that one be in a state of mind merging inquiries that involve objectively crosscutting distinctions.

typo corrected

Harman's discussion of clutter avoidance is animated by human psychological limitations about storage and retrieval. Fragmentation is often motivated from a similar direction—it is thought to be partly reflective of our finitude. (In Yalcin 2008 and 2018 I motivated the question-sensitive model of belief partly from that direction.) One could apply such thinking here. Thinking relative to extremely fine but gerrymandered resolutions of logical space plausibly does come with some kind of high cognitive-computational price, and surely those brain cycles could be better spent. There is a rationalization of fragmentation in this direction, one turning on our limitations. But again, the present point is not that one. I am focused on the simple point that there is no general rational requirement to think relative to gerrymandered distinctions, in the way one would have to if one tried to merge all the inquiries of one's fragmented state. This point doesn't have anything to do with our finitude.

A version of the idea that a rational agent might (correctly) have multiple conceptions of actuality appears in Nelson Goodman's writings. In Goodman (1975) (reprinted as the first chapter of Goodman 1978), he writes:

> . . . striking is the vast variety of versions [of the world] and visions in the several sciences, in the works of different painters and writers, and in our perceptions as informed by these, by circumstances, and by our own insights, interests, and past

[10] I talk more about 'natural questions' in Yalcin (2018).

> experiences. Even with all illusory or wrong or dubious versions dropped, the rest exhibit new dimensions of disparity. Here we have no neat set of frames of reference, no ready rules for transforming physics, biology, and psychology into one another, and no way at all of transforming any of these into Van Gogh's vision, or Van Gogh's into Canaletto's. (Goodman 1975: 58)

> . . . in what non-trivial sense are there, as Cassirer and like-minded pluralists insist, many worlds? Just this, I think: that many different world-versions are of independent interest and importance, without any requirement or presumption of reducibility to a single base. The pluralist, far from being anti-scientific, accepts the sciences at full value. His typical adversary is the monopolistic materialist or physicalist who maintains that one system, physics, is preeminent and all-inclusive, such that every other version must eventually be reduced to it or rejected as false or meaningless. If all right versions could somehow be reduced to one and only one, that one might with some semblance of plausibility be regarded as the only truth about the only world. But the evidence for such reducibility is negligible, and even the claim is nebulous since physics itself is fragmentary and unstable and the kind and consequences of reduction envisaged are vague. (How do you go about reducing Constable's or James Joyce's world-view to physics?) (Goodman 1975: 59–60)

typo corrected

Admittedly, Goodman ultimately wants to affirm not just multiple conceptions of actuality but (in some sense) multiple actualities. Goodman sees these thoughts as best accommodated within a potent sort of anti-realism. He thinks accepting them sits ill with the possible worlds modeling of his contemporaries ('especially those near Disneyland'). But we can accommodate the grain of truth in his musings within a less psychedelic metaphysics, and with the help of possible worlds tools. Our doxastic states carve logical space, and in diverse ways—but whether the carvings are simple, fruitful, and apt to facilitate the achievement of our aims depends at least partly on the extent to which the distinctions we are sensitive to are natural, and on that it is plausible to think reality has a say. This idea depends just on the thought that some distinctions are more natural, and less artificial, than others, independently of our theorizing—something most everyone outside the extreme nominalist should want to accept.

That's to say that reality carves logical space, too. Does reality favor some one ultimate partition? Is there a class of perfectly natural and fundamental properties, one whose subject matter corresponds to that ultimate partition? Or is it better to think that there are various dimensions of objective structure, each with their own packages of important distinctions, with no level being fundamental? Those are controversial questions of metaphysics. Anyway, it's hard to believe that the rationality of fragmentation could hang in the balance. Even if there is a metaphysically ultimate resolution of logical space, being in a state of mind that leaves

open the possibility that there isn't does not seem to be a failure of rationality. And on the other hand, if there isn't—if what reality fixes are just various crosscutting dimensions of objective structure—then surely it must be rationally okay to be fragmented. For a fragmented mind is what would be needed to think correctly about a fragmented reality.[11,12]

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[11] Objection: Suppose that the most fundamental properties are the *A*-properties and the *B*-properties, crosscutting systems of properties neither of which is more fundamental. Think of possibilities as simultaneously specifying a distribution of *A*-properties and *B*-properties, and think of a belief state as a set of such possibilities. Couldn't a belief state of this sort—completely coherent and unfragmented—be perfectly well suited to representing the world in this case? (Thanks to Adam Elga for raising this question.) This gets at the (large) issue of how to think about the relationship between the subject matters that frame belief and naturalness. Ted Sider has suggested that '[t]he goal of inquiry is not merely to believe truly (or to know). Achieving the goal of inquiry requires that one's belief state reflect the world, which in addition to lack of error requires one to think of the world in its terms, to carve the world at its joints' (Sider 2011: 610). Suppose that this is so, at least in connection with scientific inquiry. In Yalcin (2018) I suggested, discussing Sider's remarks, that one thing the subject matters that frame belief could be used for is to capture what it means to 'think of the world in its terms,' or more generally, to capture one's views about naturalness. An agent's inquiries might come with a naturalness ordering, a partial order reflecting the agent's attitudes about the relative naturalness of questions. If we approach thought about naturalness this way, then we can model agents who regard the *A*-properties and the *B*-properties as crosscutting in such a way that characterizing the world in terms of both is less natural than doing so with either alone. These agents will think it just as natural to think about the world with *A*-distinctions (only) as with *B*-distinctions (only), but less natural to think with both together. As far as I can tell, such agents might be getting things right. We would need fragmentation to describe such agents.

[12] For helpful comments on earlier drafts, many thanks to Cristina Borgoni, Adam Elga, and Dirk Kindermann. For helpful discussion of related issues over the years, many thanks to Andy Egan, Robert Stalnaker, and Stephen Yablo.

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