Non-Piecemeal Pluralism

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Abstract: I argue that Schaffer fails to provide a non-question-begging argument for priority monism. Despite his suggestion to the contrary, Humean pluralists need not, and plausibly do not, endorse his tiling constraint on metaphysically basic objects. Moreover, the distinction between supervenience—of the sort at issue in Humean doctrine—and metaphysical necessitation—of the sort at issue in Schaffer's tiling constraint—points toward an alternative treatment of the phenomena initially inspiring Schafferian monism. There is an important possibility, one that Humeans can or should embrace, that Schaffer overlooks when drawing his monistic conclusion.

For Jonathan Schaffer, the really interesting debate is between not monists and pluralists about "existence" but monists and pluralists about "fundamental mereology" (Schaffer 2010a, 33). Most of us can agree that there *are* lots of concrete objects.[1] Many also agree that these objects stand related as parts and wholes. We even can distinguish a maximal whole, the cosmos, subsuming all actual concrete objects as parts. Still, this leaves room for disagreement about "the mereological order of whole and part"—and so, for Schaffer, about relations of metaphysical dependence among our sundry existents. Which if any of the many concrete things that exist are crucially "independent" of the others? This is the "central question" of fundamental mereology.

For Schaffer, answering this question involves limning our world's more complete metaphysical*,* not merely mereological, structure. Among all concrete objects, the mereologically fundamental ones are those that play a starring role in the ultimate metaphysical explanations of our cosmic contents. According to *priority pluralists*, multiple objects share this role, collectively grounding the actual decoration of space-time. As a result, priority pluralists

[1] Importantly, though, not everyone does: for a recent defense of existence monism, see Della Rocca 2020.

embrace pluralism about fundamental mereology: they take physical reality to comprise multiple separate, independent constituents. Schaffer, in contrast, is a monist about fundamental mereology. On his view, there is one fundamental object, the cosmos, which subsumes all other concrete things as interdependent parts. *Priority monists* take such cosmic fundamentality to reflect the top-down order of worldly metaphysical explanation. The global whole has a unique explanatory role: it is "the ultimate grounds on which all else depends" (Schaffer 2010b, 346).

Central to Schaffer's argument for monism is his "tiling" constraint, which imposes some necessary conditions on his base: metaphysically basic objects are "complete" but "minimal" (Schaffer 2010a, 40). According to Schaffer, our actual world does, or at least could, include some distinctive "emergent" or "internally related" contents (2010a, 2010b). Attempting to divide such contents over multiple tiles leads to incompleteness or redundancy (non-minimality). Given the tiling constraint, then, there cannot be multiple metaphysically basic objects: instead, our cosmic whole is uniquely prior to everything else.

However, Schaffer's opponents need not, and plausibly do not, accept his tiling constraint to begin with. As a result, Schaffer does not offer pluralists, specifically Humean pluralists, any non-question-begging argument for his monistic conclusion.[2] Moreover, the Humean distinction between global supervenience and metaphysical sufficiency points us towards an alternative treatment of the—internally related and emergent—worldly phenomena that inspire Schafferian

[2] I characterize such pluralists as "Humean" to associate them with the Lewisian doctrine of "Humean supervenience"—but not (necessarily) with any commitments of the historical David Hume (cf. Lewis 1986, ix-x). See Strawson 2015 for a discussion of the (arguably tenuous) link between contemporary "Humeanism" and Hume's own philosophical outlook.

monism to begin with. There is an important possibility, one that Humeans can or should embrace, that Schaffer overlooks when drawing his monistic conclusion.

1. Mereological structure and the tiling constraint

Suppose we set out to detail the contents of my office: Ava the dog, the rug beneath her, one wet nose, a furry tail, and so on. But we want to avoid double—or triple, or *worse*—counting. There is exactly one tail in this room, and if Ava is on our list, we already have it covered.[3] One option is to start by cataloguing everything we can think of—dogs, rugs, noses, tails—in as much detail as we can, and then add information about mereological relations among items in our catalogue. Both Ava the dog and some tail exist, but the latter is a proper part of the former. So despite being two—in *some* sense—separable concrete entities, Ava and her tail are not distinct objects. One telltale sign of their metaphysical connection is the modal coordination between their features: necessarily, Ava's nose has the intrinsic property of being adorably freckled just in case Ava has the intrinsic property of having an adorably freckled nose.

A different strategy lists only some limited inventory of special concrete ingredients and then lets general metaphysical principles fill out the rest of our story. Start with that nose, this tail, and these four paws. Given the principles of mereology and property inheritance at work in our world, even this sparse selection takes us a long way. Specify the intrinsic properties of each object, along with any fundamental relations between them, and we metaphysically suffice for a further—though not entirely distinct—concrete entity: their mereological sum. Given the

[3] For the purposes of this discussion, I am assuming that Ava the dog is a material object: roughly, the mereological sum of the cells currently occupying this small region near my feet. For the record, Ava is skeptical.

principles of property inheritance at work in this world, that whole has the intrinsic property of having more paws than noses as parts. And our initial selection comes with metaphysical ramifications in the other direction too. By explicitly including Ava's nose, we implicitly bring along various smaller parts of an adorable nosey fusion: two small freckles, many tiny cells, and even more even tinier atoms.

When it comes to characterizing our entire cosmos, Schaffer favors a version of the second strategy: we start with some sparse inventory of basic ingredients and let the laws of metaphysics fill in the rest. With which ingredients do we start? Schaffer takes his tiling constraint to place lower bounds on our initial selection: basic objects are complete yet minimal. Motivating this constraint is his vision of the base as a "blueprint for reality" (Schaffer 2010a, 39). Basic objects are complete*,* collectively "covering" all concrete contents of space-time: with the laws of metaphysics in the background, "duplicating all these [basic] entities, while preserving their fundamental relations, metaphysically suffices to duplicate the cosmos and its contents" (Schaffer 2010a, 39).

The blueprint is not redundant, however: basic objects are minimal. Consider again the contents of my office, roughly all and only the concrete objects in some region R of space-time. To cover these, we do not need to include both Ava *and* her nose: once we have Ava, we already have anything her nose might possibly contribute. Schaffer traces his prohibition on mereological overlap to a background conception of basic objects as "independent units of being (building blocks, as it were)" (Schaffer 2010a, 40). Overlapping objects exhibit modal coordination among their features, while distinct building blocks do not. Minimality demands enough modal independence between basic objects that each is strictly essential for completeness: each member of the base helps to cover some cosmic contents for which others,

by themselves, do not suffice. Schaffer emphasizes that we are guaranteed such independence among freely recombinable objects. With such a selection, "any combination of ways that each entity can be individually is a way that the plurality can be collectively" (Schaffer 2010a, 40).

2. Basic tessellation and metaphysical explanation

For Schaffer, completeness and minimality are only necessary, not sufficient, conditions on the base. That is, let a *tessellation* of some contents be any selection of concrete objects, or tiles, from among them that satisfies Schaffer's tiling constraint. In principle, some candidate contents can have multiple tessellations. According to Schaffer, though, only one will pick out the genuine metaphysical basis of such contents. We can understand Schaffer as offering us guidance about how to select the relevantly privileged basis from other candidate tessellations. The basic tessellation is complete, minimal, *and* treats the *right* concrete objects as mereologically fundamental.

Schaffer expects to find at least one complete yet minimal tessellation for any candidate contents. Let C_R be the mereological fusion of all concrete objects in R. Then, trivially, any selection that counts C_R as a tile is complete: fix the intrinsic character of this maximal concrete object and we fix all the contents of R. If C_R is our *only* tile, there is no threat of redundancy. The result is a (indeed, *the*) monistic, or single-tile, tessellation of my office contents. More generally, since any candidate contents come with some uniquely maximal fusion, each should bring along one monistic tessellation.

This monistic tessellation need not be the *only* tessellation on offer, though. In the case of my office, candidate pluralistic tessellations swap maximal tile C_R for multiple localized parts. Suppose Ava's intrinsic properties are freely recombinable with those of, say, the rug and my desk. Then we cannot cover all the contents of my office with Ava as our only tile: fixing Ava's

intrinsic properties goes no way at all towards pinning down, say, this decorative weaving beneath her. For a complete covering, our pluralistic proposal needs some additional ingredient(s). Nevertheless, any addition should be minimal. To avoid redundancy, we might try pairing Ava with just one other tile, her mereological complement $C_{R\backslash A}$. Intuitively, $C_{R\backslash A}$ is the biggest concrete entity "left" when we "subtract" Ava from C_R: it is a proper part of C_R that subsumes the rug, my desk, and various other objects as proper parts of its own. If even whole $C_{R\backslash A}$'s intrinsic properties are freely recombinable with Ava's, then these two tiles together will count as minimal in Schaffer's sense.

Even if they do, though, the office may well have other pluralistic tessellations. Other candidates attempt to decompose $C_{R\backslash A}$, and maybe even Ava herself, into further collectively complete, mutually independent parts of their own. As far as the tiling constraint is concerned, all complete yet minimal decompositions are on a par. Schaffer deems them incompatible in this sense: we cannot include *all* of their tiles. Rival candidates treat different concrete objects as mereologically fundamental: some start from smaller tiles and build up to complex wholes, others start from larger tiles and factor out smaller parts, and doing both would be redundant. Likewise, if there are multiple candidate tessellations for our cosmos, they will disagree not about which concrete objects exist, nor about their divisions into parts and wholes, but about which of these objects are the mereologically fundamental tiles for our cosmos.

For Schaffer, the relevantly privileged tessellation not only limns but metaphysically explains actual mereological structure, tracing the worldly relations of dependence between wholes and parts. If there are multiple tessellations of my office contents, they all agree about the patterns of or modal coordination between various wholes and parts in R. Across the space of metaphysical possibilities, we find a whole just like C_R if and only if we find proper parts just

like Ava and her complement $C_{R\backslash A}$—and the own smaller parts to boot. Still, Schaffer thinks, we can ask a further question: Does C_R have this decoration *because* of the prior configuration of its constituent parts? Or, alternatively, are Ava and other localized parts mere derivative aspects of whole, C_R, whose prior character ultimately explains their various local features? Answering amounts to selecting a uniquely basic tessellation for my office.

Similarly, uncovering the genuine metaphysical basis for our cosmos means distinguishing the tessellation that (best) reflects the actual order of metaphysical explanation among all actual concrete existents. This basic tessellation selects as mereologically fundamental tiles all and only those objects that are, in fact, the "ultimate grounds on which all else depends" (Schaffer 2010b, 346). Which tessellation of cosmic contents reveals the actual metaphysical basis for physical reality? Shaffer distinguishes what he takes to be two exclusive, exhaustive theses about worldly metaphysical structure. According to priority pluralism, the basic tessellation selects multiple mutually independent tiles from among all cosmic contents. Together, these localized concrete objects collectively ground the complete decoration of space-time. According to Schaffer's own priority monism, in contrast, the basic tessellation is monistic: it selects our cosmos C as the unique mereologically fundamental object. C's own global intrinsic state not only necessitates but grounds the concrete decorations of smaller space-time regions.

3. Schaffer's case for priority monism

Each of priority pluralism and priority monism is compatible with the claim that our cosmos has multiple tessellations; the theses disagree about *which* tessellation is *also* relevantly privileged. But while completeness and minimality are merely necessary, not sufficient conditions on Schaffer's base, these end up doing a good deal of work in his case for priority

monism. Specifically, Schaffer relies on this consequence of the tiling constraint: if our cosmic contents are without *any* pluralistic tessellation (at all), then we certainly cannot hope to find any pluralistic tessellation that is *also* privileged in the further way priority pluralists expect. That is, if a monistic tessellation is the *only* complete but minimal selection on offer, then pluralism about fundamental ontology is not an option.

As a result, Schaffer devotes much of his attention to showing that our cosmos does, or at least might, defy pluralistic tessellation. His central argument moves from this purported defiance to priority monism. In brief: some (actual or metaphysically possible) cosmic contents are such that, on pain of incompleteness, we must include their maximal mereological sum among our covering tiles. But then, on pain of redundancy, we cannot include any other tiles besides. For these contents, the only tessellation on offer is the monistic one.

More exactly, Schaffer (2010a) offers two versions of this argument. The first starts from a bolder premise about the actual character of our cosmos:

(1) The only complete but minimal selection (from all actual cosmic contents) is monistic: it comprises exactly one, maximal concrete object.

The tiling constraint adds a modest commitment of pluralism:

(2) If priority pluralism is true, then at least one selection (from actual cosmic contents) is complete, minimal, and comprises multiple concrete objects.

From (1) and (2), we get:

(3) Therefore, priority pluralism is not true.

For Schaffer, priority pluralism and priority monism are the only options, and he expects his interlocutors to agree:

(4) Either priority pluralism is true, or priority monism is.

Whatever their differences, all sides in his debate expect some privileged basis to ground everything else; the relevant disagreement is over which concrete object(s) to include. Combined, (3) and (4) yield:

(5) Priority monism is true.

Schaffer's second version starts from a more modest claim about actual cosmic character. For the sake of argument, Schaffer is willing to grant that our actual cosmic contents do have some pluralistic tessellation. Even so, he takes reflection on even actual subcosmic contents to show that our entire cosmos at least *could* defy pluralistic tessellation. That is:

(1′) For some metaphysically possible cosmic contents, the only complete but minimal selection from among these contents is monistic.

Now, strictly speaking, priority pluralism and priority monism are competing theses about *actual* worldly structure. Still, according to Schaffer, either thesis is true only if it is *necessarily* so. And so he combines (1′) with a modalized variant of (2):

(2′) If priority pluralism is true, then, for any possible cosmic contents, at least one selection from among these contents is complete, minimal, and comprises multiple concrete objects.

Then the argument unfolds as before.

Schaffer devotes most of his attention to defending (1) and (1′). Specifically, he offers sub-arguments from internal relatedness and emergence to show that some (actual or possible) cosmic contents defy decomposition into any complete and minimal plurality. I will return to some aspects of his sub-arguments in due course. For now, though, there is a more pressing issue to consider: Schaffer's overarching argument rests on an internally inconsistent characterization of priority pluralism.

Schaffer points to contemporary Humeanism as a paradigmatic example of priority pluralism. He even uses the doctrine of Humean supervenience to help motivate the tiling constraint as a necessary condition on metaphysically basic objects. On his reading, this doctrine describes a "Democritean" plurality: mutually independent elemental tiles, arrayed in space-time, and collectively covering all cosmic contents (Schaffer 2010a, 53n; Schaffer 2010b 350). *Prima facie*, then, he accepts something along the lines of this conditional:

(6) Humean supervenience is true only if priority pluralism is.

Now, strictly speaking, (6) is stronger than we need. The doctrine of Humean supervenience is, as its name suggests, a supervenience thesis: for Humeans, "all else" supervenes on some spatiotemporal "mosaic" of concrete "elements" (Lewis 1986, ix). Humeans endorsing this thesis expect all cosmic contents to reduce—in *some* minimal sense—to a plurality of elements. Still, it does not follow that these elements are the ultimate grounds of all else in the sense Schaffer has in mind: Humeans need not accept his hyper-intensional, priority-based conception of metaphysical explanation to begin with (cf. Miller 2015).

Those who do not, already reject premise (4): nothing at all is basic in Schaffer's sense. From Schaffer's perspective, then, they are not even engaged in his same metaphysical project. Note, though, that these Humeans still can distinguish some objectively privileged plurality: from among all concrete objects, their elements are minimal bearers of elite "perfectly natural" states (Lewis 1986, ix). They might even distinguish their elements as mereologically fundamental in *some* entirely respectable sense—just *not* in any sense that requires mereologically fundamental objects to ground the rest.

According to Schaffer, though, at least some Humean pluralists do seek to ground cosmic contents in some plurality of prior elements. And for the sake of argument, we can grant this—in

fact, we can grant even (6) itself, without qualification. Our deeper concern is orthogonal to any qualms about Schaffer's additions to the tiling constraint. At its root is not (6) but a weaker consequence, given (2):

(6*) If Humean supervenience is true, then some selection of multiple concrete objects is complete and minimal.[4]

Schaffer expects all endorsing Humean supervenience—no matter what they say about his sort of metaphysical explanation—to accept (6*). But (6*) is false: Humeans do *not* even *aim* for elements that are complete and minimal in Schaffer's senses. Elements of the Humean mosaic do not suffice for cosmic contents, and—crucially—this is so even though these contents globally supervene on the Humean mosaic.

4. Humean supervenience

For Humeans, concrete reality is a spatiotemporal mosaic of localized concrete elements: points or minimal regions of space-time itself, or occupants of these. External spatiotemporal relations connect distinct elements, imposing geometrical structure on the global whole. These spatiotemporal ones, though, are the *only* fundamental relations to be found: no other necessary connections coordinate the local states of spatiotemporally separated elements. Instead, each elemental part has some intrinsic character of its own, modally insulated from external factors. More specifically, Humeans restrict their non-relational perfectly natural states to purely qualitative, or freely recombinable, intrinsic properties.

[4] This is a claim about actual cosmic contents, which is sufficient for our purposes; presumably, though, Schaffer also accepts a modalized variant of (6*).

As a result, Schaffer counts Humeans' elements as minimal: *if* there are elemental entities of the sort Humeans describe, they are modally independent in the way that matters for the tiling constraint.[5] According to Schaffer, though, the antecedent of this conditional actually is, or at least very well could be, false. He takes his sub-argument from internal relatedness to show that some (actual or possible) cosmic contents defy decomposition into any minimal plurality of concrete objects; *a fortiori*, they defy decomposition into any plurality of Humean elements.

If the physical world is—or even might be—gunky, then some actual or possible cosmic contents are without any *smallest* parts of the sort Humeans take to make up their space-time mosaic (Schaffer 2010a, 61). And even *if* the cosmos does have some indivisible elements, these need not be freely recombinable in the way Humeans expect. Some (anti-Humean) causal essentialists, for example, include irreducibly modal, mutually constraining powerful qualities among the intrinsic properties of subworldly bearers (Schaffer 2010b, 362ff). If they are right, then the basic elemental decoration in one part of the world can modally constrain, and even might suffice for, that elsewhere. What goes for small elements goes for bigger complexes:

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[5] For clarity of presentation, I am granting that Humeans' elements are mutually independent and then going on to argue that such minimal elements are not complete in Schaffer's sense. The essential point, though, is that Humeans reject the tiling constraint's *conjunction* of completeness and minimality: which particular conjunct(s) they end up rejecting may vary depending on how we unpack these conditions. One interpretational choice concerns the link between the minimality condition's claims about "ways" entities can be and the completeness condition's claims about the intrinsic properties of these entities or some whole(s) subsuming them—see Schaffer 2010a, 40; cf. Schaffer 2010b.

according to the sub-argument from internal relatedness, (all) proper parts of our cosmos are or could be interdependent in a way that precludes decomposition into any complete yet minimal plurality. Thus, at least one of (1) and (1′) is true.

Moreover, even if Humeans can identify *some* minimal plurality, Schaffer takes his sub-argument from emergence to show that no such plurality will be complete (Schaffer 2010a, 50ff). Thanks to quantum entanglement, there are emergent physical systems: wholes with quantum states for which the intrinsic properties and arrangements of their proper parts do not metaphysically suffice. To cover the cosmos, then, any tessellation will need to include at least some non-elemental wholes among its tiles. According to Schaffer, in fact, our entire cosmos itself probably is, but at the very least could be, an entangled system, with some emergent global state over and above the intrinsic properties and arrangements of any subcosmic parts. In that case, the only complete tessellation selects a single, strictly maximal tile, the cosmos itself. Again, at least one of (1) and (1′) is true, and priority monists are off to the races.

Interestingly, though, we do not need any claims of actual entanglement, or either of Schaffer's sub-arguments more generally, to show that Humean elements fail to satisfy his tiling constraint. For Humeans, everything else supervenes on the spatiotemporal mosaic of freely recombinable elements, but it does not follow that "duplicating all these entities, while preserving their fundamental relations, metaphysically suffices to duplicate the cosmos and its contents" (Schaffer 2010a, 39). In fact, Humeans (at least implicitly) reject any commitment to such metaphysical sufficiency.

For Humeans, basic truths about our world attribute occurrent qualities to localized objects. Even so, there are various non-basic truths about the world, including truths about what, physically speaking, *could* or *would* happen to objects under various non-actual circumstances.

And so the cosmos includes some contents for which no proper parts collectively suffice. Among the contents of our actual cosmos C, for example, is this small, pellet-shaped object, S. S is disposed to dissolve in water: under the right wet circumstances, some of S's constituent molecules would separate and disperse. Even for Humeans, then, S's complete local physical state includes a soluble disposition.

Let e_a,…, e_l be all those elements that, for our Humeans, make up C. C's complete elemental decoration is the distribution of perfectly natural intrinsic properties across these elements. S's own local elemental decoration is the distribution of perfectly natural intrinsic properties across all and only those elements among e_a,…, e_l that are also parts of S. According to Humeans, S's elemental decoration suffices for S's complete intrinsic character. That is, let S's elemental duplicates be all metaphysically possible objects with S's same elemental decoration. Then across the space of metaphysical possibilities, all elemental duplicates of S share, say, this same molecular structure. Even so, S's elemental decoration does not metaphysically necessitate its more complete—that is, soluble—physical character.

As a matter of fact, our own actual laws link S's intrinsic structure to some soluble disposition.[6] For Humeans, then, all actual intrinsic duplicates of S, here in our world, are soluble. Indeed, all duplicates of S in worlds with laws sufficiently like our own are too. Still, there are other duplicates of S, in other metaphysically possible worlds, that are disposed to

[6] For more on Humeans' treatment of dispositions, see Langton and Lewis 1998; I also discuss this dispositional case in Miller 2019. See Shumener 2019 for a general discussion of the non-intrinsic character of Humean laws. See Schaffer 2013 for more on the role of laws in his monistic framework (cf. Miller 2014a).

behave differently—their laws link S's microphysical structure to some insoluble causal profile instead. To duplicate all of S's intuitively "local" features more broadly, then, we need to duplicate its elemental decoration *and* preserve some of our own laws.

Now for Humeans, the physical laws, like everything else, supervene on the Humean mosaic. On one account, more specifically, laws just are or express prominent patterns in the actual features of objects. It follows that all elemental duplicates of S in worlds exhibiting global patterns sufficiently like our own share S's same local physical state. One consequence is that any metaphysically possible world featuring a *cosmic* elemental duplicate of C exhibits all and only the global patterns we find in our actual one. Any such world shares our actual laws; as a result, any elemental duplicates of S in such a world share S's soluble state.

Nevertheless, even all our actual elements taken together do not metaphysically necessitate our laws. Merely duplicating e_a,…, e_l, while preserving their arrangement, does not guarantee the same global patterns, and so duplicating these elements does not suffice to duplicate S's soluble character. To see this, note that, for Humeans, the space of metaphysical possibilities includes *subcosmic* elemental duplicates of C. Consider metaphysically possible world *w*, featuring concrete whole C^*. C^* is the mereological fusion of elements e_a^*,…, e_l^*, and the distribution of perfectly natural intrinsic properties across these elements matches the distribution we find across e_a,…, e_l in C. But whereas C is maximal in our world, C^* is not the maximal concrete object in *w*. Instead, some larger whole C_w conjoins C^* with distinct concrete entities e_m^*,…, e_z^*. Since C^* has the same elemental decoration as C does in our world, e_a^*,…, e_l^* exhibit the same internal patterns we find among e_a,…, e_l in our actual world. But since e_a,…, e_l are *all* the concrete elements that exist in our world, these internal patterns are also strictly global regularities here. In contrast, C_w's own elemental decoration extends beyond the bounds of C^*.

If the decoration outside those bounds is sufficiently different from what we find among e_a^*,…, e_l^*, then *w*'s global patterns will not match—and may even be incompatible with—the lawful generalizations in our world. In that case, not everything with S's same elemental decoration will be similarly soluble in *w*. Indeed, *w*'s own laws may fail to assign soluble physical states to anything at all in C_w. But then, since C's own contents include at least one soluble pellet, not all of C's contents will be common to its elemental duplicate C^*. That is, duplicating—as in e_a^*,…, e_l^*—all the intrinsic properties of e_a,…, e_l, along with their fundamental spatiotemporal relations, will not metaphysically suffice to duplicate all C's contents, since it will not suffice to duplicate the soluble ones. Given the tiling constraint, then, e_a,…, e_l are not metaphysically basic objects in our world.

More generally, this standard Humean treatment of globally supervenient contents is incompatible with (6^*)—at least one of (2) and (6) must go. Duplicating all actual elements does not suffice to duplicate the globally supervenient laws, and so does not suffice to duplicate those cosmic contents, such as S's soluble character, parasitic on such laws. Moreover, no other plurality of non-elemental concrete objects fares any better. On Humeans' account of intrinsic properties, any subcosmic object's elemental decoration *does* necessitate its intrinsic character. But then it follows that, for any plurality of subcosmic objects, duplicating those objects' intrinsic properties, along with their spatiotemporal relations, at most suffices to duplicate *only* those cosmic contents *already* necessitated by Humeans' smallest elements. So, for Humeans, no plurality of concrete is complete in Schaffer's sense.[7]

[7] Schaffer (2010a) does not say what he takes cosmic contents to include, but he seems to assume that C's contents *make true*, in the sense of *necessitating* (grounding), physical truths about our

5. Non-piecemeal Humeanism

Initially, at least, the considerations in §4 might seem to *strengthen* the case for priority monism. In his sub-argument from internal relatedness, Schaffer contends that *if* (for instance) *anti*-Humean causal essentialism is correct, then no plurality of concrete objects satisfies the tiling constraint. §4 suggests, likewise, that *if* some standard *Humean* commitments are correct, we end up in the same situation. In the first case, Schaffer distinguishes two live options: either we give up on finding any complete but minimal basis for cosmic contents, or else—as he and likeminded reductionists prefer—we distinguish C as the uniquely basic object. And so, likewise,

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world (cf. Schaffer 2010c). On my framing, Humeans are granting that, whatever *exactly* they are, Schaffer's cosmic contents suffice for physical truths about, say, solubility—and thus include S's soluble character. As a result, our Humeans deny that any elemental plurality necessitates all C's cosmic contents: non-cosmic intrinsic duplicate C^* lacks some. Alternatively, Humeans can limit C's contents to the intrinsic features that, on their account, *are* necessitated by its elemental decoration—excluding soluble S. In that case, C's contents do have some complete monistic tessellation (and pluralistic ones too), but there are physical truths (e.g. about S's solubility) external to cosmic contents so circumscribed. The disagreement with Schaffer is then about the relation of truth-making linking these to C. For Humeans, such truths are not necessitated by, but merely supervene on, the mosaic, while Schaffer conflates *this* supervenience relation with necessitation or "entailment" (cf. Lewis 2001, MacBride 2005, Heil 2006). However *exactly* Humeans deal with familiar globally supervenient contents (or truths), the key point (in §5) is that they can use this same sort of move to respond to Schaffer's sub-arguments from internal relatedness and emergence.

we might expect §4 to present a similar choice. In fact, though, the dialectical situation is more complicated for Humeans: extending our earlier reasoning against pluralism shows that the soluble contents in §4 have no *monistic* tessellation either.

C and C^* have the same elemental decoration. For Humeans, it follows that a property is intrinsic to C *only if* it is intrinsic to C^* as well. Duplicating all of C^*'s intrinsic properties does not metaphysically suffice to duplicate S's soluble character—after all, there is nothing soluble anywhere in C_w. So duplicating *all* of C's (same) intrinsic properties does not metaphysically suffice to duplicate S's local soluble state either. That is, even a selection that includes the whole cosmos C does not count as complete in Schaffer's sense. Thus, some of C's globally supervenient contents defy decomposition into *any*—pluralistic *or* monistic—tessellation. Schaffer's tiling constraint leaves Humeans with only one option: nothing at all is metaphysically basic.

This result need not trouble Humeans: as we mentioned earlier, they already may reject Schaffer's characterization of basic objects. Still, the current consequence is stronger: in essence, Humeans—or at least those Humeans accommodating globally supervenient cosmic contents of the sort described in §4—*must* deny that anything is metaphysically basic in Schaffer's sense. Moreover, this consequence does prove problematic for *priority monists* within the context of Schaffer's broader argument, since he cites Humean supervenience to help motivate his tiling constraint.

Schaffer starts with the premise that commitment to completeness and minimality is common across various broadly reductive metaphysical frameworks, including Humean pluralism. He then goes on to argue that Humeans and other reductive pluralists cannot preserve all their antecedent commitments while *also* accommodating the metaphysical structure of our

cosmos—which does, or at least could, include internally related or emergent ingredients. More specifically, if we want to retain completeness and minimality as necessary conditions on the reductive basis, we must sacrifice pluralism about fundamental mereology.

If Humeans are not interested in Schafferian completeness to begin with, though, we undercut Schaffer's starting point. Why *should* we expect any concrete objects to count as metaphysically basic in the first place?[8] Note, too, that we might harbor doubts about Schaffer's *particular* characterization of basic objects without having reservations about metaphysical explanation more generally. Perhaps some mereologically fundamental—even ultimately *prior*—concrete elements "cover" C insofar as they collectively subvene all its contents. If they do not also jointly necessitate these contents, these elements are not complete in the sense at issue in the tiling constraint—and so, according to Schaffer, they do not qualify as metaphysically basic. But why should we expect any concrete objects to count as metaphysically basic *in Schaffer's sense*?[9]

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[8] To put it another way, Humeans might grant Schaffer this conditional claim: *if* anything at all is metaphysically basic, then the cosmos is uniquely so. For them, the antecedent is false, but the conditional (if true) is uninteresting.

[9] That is, perhaps Schaffer is right that broadly reductive outlooks do share a common conception of basic objects but wrong about the details of the conception. If so, Humean reductionists might dispute even our conditionally monistic moral from the previous note. We can trace cosmic contents to some prior plurality of basic elements properly understood—never mind that they are not "basic" by Schaffer's own (misguided) lights. In the background here are

The immediate upshot is that Schaffer fails to offer his pluralist opponents a non-question-begging argument for monism. But Humeans' distinction between global supervenience and the sort of metaphysical sufficiency at issue in Schaffer's tiling constraint also provides pluralists with resources for answering Schaffer's own positive arguments for (1) (and (1′)). There is an important possibility—one that Humeans can or should embrace—that Schaffer simply overlooks when drawing his monistic conclusion. On this alternative, roughly, the cosmic ingredients that inspire Schaffer's sub-arguments from internal relatedness and emergence are analogous to Humeans' globally supervenient contents from §4.

Consider again the sub-argument from internal relatedness. According to Schaffer, roughly, some (actual or possible) cosmic contents comprise internally related, mutually constraining concrete objects. Neither these objects, nor their parts, are minimal. To completely cover these integrated cosmic contents, we need to include some larger (even cosmic) whole among our metaphysically basic objects. For example, some anti-Humean causal essentialists deny that we can separate S's categorical base from its dispositional profile. There is not any non-soluble *duplicate* of S anywhere in the space of *all* metaphysical possibilities. Instead, S's intrinsic properties—and those of its parts—are irreducibly modal *powerful qualities*.

For such anti-Humeans, it follows that S is not relevantly recombinable with other cosmic contents. There is no metaphysically possible world in which some intrinsic duplicate of S is submerged in water, nothing interferes, and yet no subsequently dispersed sodium and chloride atoms are to be found anywhere in space-time. The causally potent intrinsic properties of S and

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questions about what precisely (Humean) reductionism comes to (cf. Beebee 2000, MacBride 2005, Wilson 2015).

our water, plus their initial arrangement, metaphysically constrain our cosmic contents elsewhere.

According to our Humeans, in contrast, the perfectly natural intrinsic properties of S's elemental parts are purely qualitative. The space of metaphysical possibilities includes some duplicate of S in a world entirely devoid of soluble contents. In fact, such a world might include duplicates of all of e_a,…, e_l. To duplicate our actual soluble contents, then, we need some further addition. According to some *non*-essentialist anti-Humeans, what we need are external, constraining physical laws over and above the categorical decoration of space-time. The laws at a world are not entailed by, and do not even supervene on, the intrinsic decorations and arrangements of objects in space-time: they impose some additional external constraint on these.

As we already have seen, though, this is not the only option. Humeans agree that S's elemental decoration does not metaphysically suffice for its own soluble physical character. Moreover, the elemental decoration of C itself does not either: we can duplicate all of e_a,…, e_l and yet fail to duplicate any soluble cosmic contents. So it is not the case that these elements are both minimal and complete in Schaffer's sense. For Humeans, though, this is no cause for alarm: laws, and any cosmic contents parasitic on these laws, can and do still supervene on the elemental mosaic.

Humeans still can accommodate some of the data inspiring causal essentialists: they can grant that S in fact bears some intuitively *local*—though not strictly intrinsic—constraining, soluble disposition. They can and do even accept a sort of *cosmic* causal essentialism: while each of e_a,…, e_l individually is modally inert, their cosmic combination is not. Any similarly *maximal* intrinsic duplicate of C ties S's categorical basis to this soluble character. Crucially, though,

there are no necessary conditions between distinct existences.[10] Intuitively, any connections between S and other parts of their cosmos trace to necessary connections between each of these subcosmic individuals and one subsuming *non*-distinct existence: the cosmic whole of which each is a part.

Humeans can develop a similar response to Schaffer's sub-argument from emergence. According to Schaffer, distinct entangled wholes, with importantly different quantum states, can have, as parts, particles with all and only the same intrinsic properties arranged in the same way. For example, duplicating the intrinsic properties of particles p_1 and p_2, while preserving their spatiotemporal relations, does not metaphysically suffice to duplicate the (singlet) quantum state of the pair. According to Schaffer, then, Humeans' Democritean base fails to meet the completeness condition (Schaffer 2010a, 51-52). That is, (i) we can find an elemental duplicate of our p_1-p_2 pair with a triplet whole state instead; and so (ii) duplicating the intrinsic properties of *all* elemental parts of the cosmos, while preserving their spatiotemporal relations, does not metaphysically suffice to duplicate our whole's (singlet) quantum state.

Now, strictly speaking, (ii)'s claim of global incompleteness does not follow straightforwardly from (i)—not unless we also stipulate that p_1 and p_2 are the *only* elements in C. But regardless, even (ii) does not get us to (iii) the (singlet) quantum state of our whole does not globally supervene on the distribution of perfectly natural intrinsic properties across, and spatiotemporal relations among, all elements of the mosaic. But (iii) is what we need to get

[10] See Wilson 2015 for discussion of this Humean dictum. See also MacBride 2005 for an argument that there is still a tension between Humean commitments and Lewisian truthmaking understood in terms of global supervenience.

Humeans worried: we need the space of metaphysical possibilities to include some cosmic duplicate of C that does not also feature our singlet pair.

In order to get there, though, we need some argument to show that Humeans cannot treat the coordinated dispositions and behaviors of individual singlet and triplet particles, and thus the entangled quantum states of subsuming wholes, as they do our globally supervenient dispositional profiles from §4.[11] On that sort of proposal, any elemental duplicate of our p_1-p_2 pair within a global mosaic relevantly like our actual one has this same singlet pair state. But Humeans need not grant, for instance, that some cosmic elemental duplicate of our p_1-p_2 pair will have that same state. As a result, they antecedently reject some key modal intuitions that help to motivate Schaffer's premise of (possible) cosmic emergence. What they need is some non-question-begging argument as to why these intuitions are worth accommodating.[12]

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[11] I offer more detailed discussions of this strategy in Miller 2014b and Miller 2018.

[12] In fairness, Schaffer does offer two other considerations to support of his claim that the cosmos is or could be entangled (Schaffer 2010a, 52ff). First, he claims that the space of all functions we could in principle use to represent C's quantum state contains many more entangled candidates than unentangled ones: as a mathematical matter, our actual universal wave function is more likely entangled than not. Without some measure over the space of possible functions, however, this point is not compelling. Second, he quotes physicists who claim that all or most objects likely have interacted with one another—and so have undergone some entanglement interaction—throughout the course of history, justifying their inclusion in some universal system. I suspect the term 'entanglement' is being used in (at least) two senses in this discussion. Interactions between objects may well give us various grounds for considering them as parts of

Humeans who adopt the sort of approach I have been sketching reject a piecemeal conception of worldly structure. In general, they deny that we can cut out and preserve the contents of some proper part of the cosmos while freely varying its external accompaniment. Most of the time, preserving the elemental decoration of some proper part of our cosmos does not metaphysically suffice to preserve its more complete contents: thus, some lonely or maximal elemental duplicate of some actual subcosmic object may have some different local features. Likewise, non-piecemeal Humeans deny that we can duplicate all our actual elements in C^*, paste this alongside *any* addition we choose in C_w, and still perfectly replicate all actual contents of C^*. The space of metaphysical possibilities may well include some non-cosmic duplicates of C

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some larger causal system of interest. But whether such a system's wave function exhibits and preserves the entangled mathematical character at issue here is a separate matter—one that also intersects with ongoing debates over the interpretation of quantum theory (cf. Ismael and Schaffer 2016, Miller 2018). Schaffer's remaining consideration is the one I have been focusing on: he supports (1′) with the intuition that (a duplicate of) some actually sub-cosmic entangled system (with all the same contents) is *maximal* in another metaphysically possible world. Our Humeans will resist this general move, at most accommodating some instances (or their appearances). Perhaps Schaffer thinks that Humean reductionists must or ought to accommodate some more general modal intuition here, but we need some further argument for that. The dialectical situation is a familiar one for Humeans, who are frequently criticized for failing to accommodate their opponents' (anti-Humean) modal intuitions (cf. Beebee 2000).

with many or all of our same contents, but these are duplicates whose own accompaniments conform to the same global patterns we see here.

Likewise, some possible maximal object may share many of the contents that actually belong to some proper part of our cosmos. Nevertheless, such contents may be underwritten by another array of subvening elements. The resulting situation parallels the one that arises for priority monists when they try to accommodate some possible non-maximal whole that, intuitively, replicates C's actual contents. Despite their similarity in contents, such a whole will not count as a duplicate of C if, for monists, intrinsic duplicates must have the same grounds. In that case, our possible sub-cosmic whole will have an intrinsic property (of being grounded in some larger cosmos) that C lacks. Like our non-piecemeal Humeans, then, priority monists will need to distinguish the local contents of some part from those strictly intrinsic to it.[13]

6. Taking stock: non-local basing without monism

Schaffer claims to turn "on its head" Hume's prohibition against necessary connections between distinct existences (Schaffer 2010b, 350). According to the Schafferian monist, there are or could be necessary connections all over the place; thus, no localized concrete objects are thoroughly distinct. Underwriting the interconnections between actual objects is a subsuming whole that *is* or *could* be over and above them all—and thus *is* and *must* be ultimately prior to each one. Nothing is distinct from the global base, so there is no need to balk at top-down necessitation from cosmic whole to proper parts. According to Schaffer, there is no need to balk

[13] Monists confront a general challenge when it comes to distinguishing intrinsic properties: see Sider 2007 and 2008, Trogdon 2009, and Fisher 2015.

at necessary connections among separate proper parts either: they stand related by mutual dependence on a common base.

Schaffer's initial instinct, I think, is sound: coordination between parts reflects mutual connection with a broader subsuming base. Since the base is not entirely distinct from these parts, we can accommodate—and even expect, in the form of supervenience—some top-down modal connections within our structure. Schaffer is also right to insist that the global base is not a mere conjunction of independent elements. Our world is not a thoroughly "disconnected pluralistic heap" (Schaffer 2010b, 350). Some contents here—this pellet's soluble disposition, or its component particle's singlet state—are local manifestations of a more global basis.

Nevertheless, Schaffer goes wrong when he assumes that, if it is to *supervene* on some plurality of elements, then the Humean mosaic must be a mere piecemeal *conjunction* of them. The same sort of mistake appears in various guises across anti-Humean critiques of Humean supervenience. We find it in depictions of Humeanism as a worldview on which we can freely "'cut and paste' parts of different worlds together, where the pieces being cut are given by a spatiotemporal boundary" (Maudlin 1998, 59). Likewise, we find it in characterizations of the Humean mosaic as—or as exhaustively "described" by—"a long conjunction" of particular facts, and in the slogan that, for Humeans, laws are mere conjunctions of—rather than *generalizations* over—their actual instances (Lange 2013, 259).

More generally, anti-Humeans often move from the premise that—if we want to be *realists* about laws or causes or dispositions or quantum states—we should not conceive of the world as a mere conjunction, to the conclusion that we need some additional ingredients, over and above any Humean conjuncts, to furnish some necessary connections. Non-piecemeal Humeans resist precisely this move. In doing so, they highlight an important question for both

sides: What is it for some contents to be both *locally manifest* but *globally based*? In what sense can, some globally supervenient or even cosmically *grounded* features or facts belong entirely to this particular part?[14]

Both non-piecemeal Humeans and priority monists face versions of this question, and this seems to me to be where the real work is to be done. Perhaps, ultimately, monists will turn out to be at some advantage when it comes to answering it. So far, though, I see no reason to think that Humeans' commitment to global supervenience should make it more difficult for them—Schaffer, certainly, does not offer any. If anything, in fact, I think the odds may be in Humeans' favor here: arguably, at least, priority monists' variety of non-local basing comes at too steep a cost.

Non-piecemeal Humeans accommodate indirect, globally mediated coordination between separate parts of the world: these parts' non-basic, locally manifest contents supervene on—and in that way constrain the general character of—the mosaic that subsumes them. In principle, Schaffer's priority monists can accommodate more direct, dramatic interdependence between parts. Again suppose that, for monists, any duplicate of R must share its actual intrinsic property of being grounded in C. C is a whole that counts both R and its actual concrete accompaniment as parts. Thus, duplicating R suffices to duplicate not only C but R's accompaniment in C. In other words, one proper part already necessitates all the others.

Priority monists may want to be able to accommodate this sort of radical interdependence between parts, at least in principle. Presumably, though, they should not *have* to incorporate such

[14] Or even more generally: What is the relationship between spatiotemporal and metaphysical structure?

interdependence, at least in any widespread manner, when characterizing our own world.[15] Indeed, priority monists also may want to accommodate the intuition that, at least in some cases, we could find these same localized happenings within a cosmos that is otherwise very different from our own. The challenge, then, is to distinguish local features that—while in fact deriving from some prior cosmic state—are comparatively insensitive to external factors from those that belong to one part somehow *more robustly* in virtue of its relations to another. After all, the sub-arguments from internal relatedness and emergence are supposed to highlight some *distinctive* interdependence between particular parts of our world.

In short, priority monists, like our non-piecemeal Humeans, need to distinguish between locally manifest states that are more or less sensitive to external happenings. It is simply not clear, though, how monists can and should do so if all local states are grounded in some prior cosmic character. Non-piecemeal Humean pluralists, in contrast, have a ready answer. The mere conjunction of elements in this part of the world does metaphysically suffice for its strictly intrinsic, modally insulated core. But we also can find within it what we might suggestively characterize as locally holistic contents, over and above the local elemental decoration here. These contents supervene on the more global mosaic, and so are modally sensitive to basic elements elsewhere in space-time. Nevertheless, this sensitivity is not a manifestation of necessary connections between distinct existences. It merely reflects internal coordination

[15] In fact, Schaffer (2010b) canvasses various characterizations of internal relatedness partly in order to distinguish more limited, intuitively plausible kinds of interdependence from this radical sort.

between some localized part and a broader basis subsuming this—the elemental mosaic on which its contents, with all else, supervene.[16]

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