theological perspective, according to which we are all members of one big family, and thus hard to square with Aristotelian doctrine? Does moral discourse make for a coherent language, or is it a quilt made up from different threads? Irwin argues strongly for a coherent, evolving language that starts with Aristotelian naturalism and develops toward more sophisticated thinking as it incorporates notions that strengthen that original position. He argues brilliantly for this position, displaying an enviable scholarship, a sharp analytical account, and such a mastery of sources and texts that make this book a wonderful and indispensable reference for any work in ethics as a philosophical discipline.

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Theodore Sider, *Writing the Book of the World.*
Oxford: Oxford University Press, 2011. xiv + 336 pp.

Writing the Book of the World is masterful work. Sider offers a careful and insightful treatment of metaphysical structure (or naturalness, or fundamentality), developing a framework for metaphysical inquiry while defending the centrality of metaphysics to philosophy as a whole. There is much to admire and much to discuss. I expect Sider's book to become a touchstone for further discussion of the nature and viability of metaphysical inquiry. It is required reading.

Sider's project is a radical extension of Lewis's (1983) project in "New Work for a Theory of Universals." Lewis—building on Armstrong's (1978) defense of universals—identifies theoretical roles for a metaphysical posit of *natural properties,* while pointing out that one need not posit universals to fill these roles: tropes will do, as will a primitive status of naturalness for elite sets of possibilia. Sider's (vii, 8, 85) core innovation is to extend the Lewisian status of naturalness "beyond the predicate," allowing it to apply to any portion of the language, including quantificational phrases and logical connectives. Thus Sider (92) posits a primitive "structural" operator, which maps arbitrary portions of the language to truth if and only if that portion of the language "carves at the joints" (or "is perfectly natural," or fits "the fundamental structure of reality"). Given that a fundamental theory of reality should be cast in all and only joint-

carving terms (106–9), what Sider gives us is a device for querying whether a given portion of the language should appear in "the book of the world."

Sider's own book divides roughly in thirds. In the first part (chapters 1–5), Sider identifies a wide range of roles for his extended notion of structure. In the second part (chapters 6–8), Sider develops a positive theory centered on his primitive "structural" operator. And in the third part (chapters 9–13), Sider considers applications of his theory to first-order questions about ontology, logic, time, and modality, culminating in a sketch of a radically eliminativist worldview on which, fundamentally speaking, there are only spacetime points and sets.

I will focus on one critical point, concerning a mismatch between the senses of 'structure' in play in the first and second parts of Sider's book:

> *Mismatch*: The roles for structure are for "structural enough" and "more structural than," but Sider's primitive is "perfectly structural."

Given *Mismatch*, Sider's primitive does not play the roles it was posited for. This would be bad news for Sider since he recommends structure as "a *posit* . . . justified by its ability to improve our theories of these matters" (10).

The roles for structure are for "structural enough" and "more structural than": This is implicit in Sider's early illustrations involving colors (1–2) and chemicals (6–7) and becomes explicit when Sider speaks of reference as "joint-carving" (28) and allows that there can be substantive disputes in the special sciences (48). Evidently there can also be laws, explanations, confirmation, and induction in the special sciences as well, and presumably there is greater epistemic value in chemistry than in some gruesome counterpart ("schmemistry"). Sider explicitly acknowledges this point in passages such as (141): "Genuineness of explanation does not require *perfectly* structural notions, as we see from the special sciences." Overall, the roles Sider invokes reflect a need to distinguish predicates like 'green' from gruesome counterparts like 'grue'. One wants to say that 'green' is more natural than 'grue', and natural enough for induction on the color of emeralds, but of course 'green' is not perfectly natural.

Sider's primitive is "perfectly structural": His primitive "structural" operator is explicitly described (128) as fitting an absolute notion of perfect structurality. His operator only maps terms from fundamental physics (and perhaps mathematics) to truth. From the perspective of the book of the world, 'green', 'grue', 'helium', and 'schelium' all go equally unmentioned. Indeed this restriction to the perfectly structural is a consequence of Sider's guiding requirement of "purity" (106), on which (to speak in parables): "When God created the world, she was not required to think in terms of nonfundamental notions like city, smile, or candy."

Thus *Sider's primitive does not actually play the roles it was introduced to play.* The roles for "structure" are roles for a natural/gruesome distinction, but Sider's primitive instead draws a fundamental/nonfundamental distinction.

The problem underlying *Mismatch* is that these distinctions do not match: the natural/gruesome distinction comes in degrees and still applies in nonfundamental domains like chemistry.[1]

All might still be well *if* Sider could use his primitive notion of "perfectly structural" to define the needed notions of "structural enough" and "more structural than." Then even though "perfectly structural" would not play the roles for structure, it would still yield an understanding of the notions that do play these roles. Sider is well aware of this. Indeed matters come to a head in the space of two paragraphs on page 129, beginning when Sider acknowledges: "[W]e need a comparative notion of structure in many of the applications." He adds: "Talk of comparative structure must have metaphysical truth-conditions in terms of absolute structure." But he immediately continues: "How to give such metaphysical truth-conditions? How to define comparative structure? I do not know." This is laudably candid. But what is it but an admission that, by Sider's own lights, it is unknown whether his primitive is of use?

Three main options seem open for the metaphysician who would follow Sider in invoking structure, in order to fix *Mismatch*. First, she might revise the roles for structure, so as to find roles for Sider's "perfectly structural." Perhaps this is a useful primitive for other reasons.[2] Though, by my lights, Sider's first five chapters make a compelling case for "structural enough" and "more structural than." This first option would still leave one without an account of these needed notions.

Second, the friend of structure might devise an indirect match, by defining "structural enough" and "more structural than" in terms of "perfectly structural." This is Sider's option—the one he admits not knowing how to achieve. And how to achieve this? If one starts with just a cut between the fundamental and the nonfundamental, how can one recover any of the "structure" within the nonfundamental? How can one go on to draw any distinctions between 'green' and 'grue', or 'helium' and 'schmelium', if all get lumped together as nonfundamental from the start?

Sider does offer some suggestions toward this second option (129), starting from an extension of Lewis's idea of length of definition and encompassing several further ideas. I am skeptical. But for present purposes suffice it to say that a series of suggestions is not enough even by Sider's own lights (117). By Sider's lights, one owes at minimum "toy metaphysical truth-conditions" for "structural enough" and "more structural than" that could "convince us that

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1. *Mismatch* is in fact a problem that Sider inherits from the Armstrong-Lewis framework he would extend.

2. Of the dozen roles that Sider presents over his first five chapters, I see two that might plausibly be understood via "perfectly structural": intrinsicness (10) and spacetime structure (38–43). So perhaps "perfectly structural" is still useful for at least these two purposes.

there is a real metaphysical semantics, even if that metaphysical semantics is too complex for us to discover." It is a substantive claim that a given notion has a metaphysical semantics in certain specific terms.[3] This second option would leave one facing the task of substantiating this claim.

As a third and final option, the friend of structure might revise her stock of primitives, perhaps adding primitive operators associated with "structural enough" or "more structural than." Indeed it seems that *a primitive "more structural than" operator can go it alone.* A "more structural than" operator provides strictly more information than a "perfectly structural" operator. While the latter only induces a cut between the fundamental and the nonfundamental, the former (given plausible assumptions) induces a richer partial ordering structure, against which notions like *minimal element* and *rank* are definable. So one need only say that a notion is perfectly structural if and only if no notion is more structural than it (it is a minimal element in the ordering), and that a notion is structural enough if and only if it has a low enough rank (assuming a natural ranking function over the ordering). Then one will have recovered all of the relevant senses of 'structure'.

But Sider objects to this third option (129), primarily on grounds that it violates his purity constraint. Sider argues that the primitive must itself count as perfectly structural and should itself feature in the book of the world (138–41). But a primitive "more structural than" cannot feature in the book of the world, at least in the most straightforward way via a sentence of the form 'Φ is more natural than Ψ', without the purity of the book thereby becoming sullied by the imperfectly natural 'Ψ'.[4] So this third option would leave one needing to reconsider purity.

Putting this all together: The senses of 'structure' in the first and second parts of Sider's book are mismatched, and one who who would fix this mismatch has her work cut out for her.

Criticism aside, *Writing the Book of the World* is outstanding work, and required reading for anyone interested in the nature and viability of metaphysical inquiry. Sider's book sets the terms of the debate. Indeed, just as Sider's lauded *Four-Dimensionalism* (2001) helped set the agenda for the previous decade in metaphysics, I expect *Writing the Book of the World* to help set the agenda for the next decade.

3. Indeed Sider notes that it is a substantive claim that "causation" has a metaphysical semantics in noncausal terms (117–18).

4. Sider (2009) uses a comparative "more natural than" operator. The view in *Writing the Book of the World* thus constitutes a change in view for him, mainly driven by the demand for purity. (A second change in view: Sider's preferred mereology has shifted from the universalism of Sider 2001 to nihilism, driven by the demand for ideological parsimony, which invites the elimination of mereological terms if possible.)

References

Armstrong, David. 1978. *Universals and Scientific Realism.* 2 vols. Cambridge: Cambridge University Press.

Lewis, David. 1983. "New Work for a Theory of Universals." *Australasian Journal of Philosophy* 61: 343–77.

Sider, Theodore. 2001. *Four-Dimensionalism.* Oxford: Oxford University Press.

———. 2009. "Ontological Realism." In *Metametaphysics*, ed. David Chalmers, David Manley, and Ryan Wasserman, 384–423. Oxford: Oxford University Press.

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