texts 'clearly support a naturalistic reading' (p. 51). I would say, instead, that these texts merely support what might be called a nested naturalistic reading and do not undermine the overall metanarrative of scepticism. What seems to be lacking in Fogelin's account is a reason to think that his narrative account supports his radical perspectivist reading of Hume as opposed to a sceptical one (or a naturalistic one for that matter). In the end, then, it is not clear to me that this narrative account has delivered what Fogelin hoped that it would. Perhaps we should conclude this story with a 'to be continued'.

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The Structure of the World: Metaphysics and Representation, by Steven French. Oxford: Oxford University Press, 2014. Pp. xiii + 394. H/b £50.00.

Ontic structural realism (OSR) has become a much-discussed stance in the philosophy of science since the end of the 1990s. The present book is the most extensive and authoritative account of OSR as yet, written by one of its leading proponents, if not the leading one. Its scope is more limited than that of the well-known book *Everything Must Go: Metaphysics Naturalized*, by James Ladyman and Don Ross (Oxford: Oxford University Press, 2007), focussing exclusively on OSR as a stance in the philosophy of (fundamental) science and thereby going more into depth with regards to OSR than does the monograph by Ladyman and Ross. French's new book is both a full account of OSR and the defence of a particular version of OSR. The central idea around which the book is built can be characterized in this way: laws and symmetries are ontologically fundamental in that they are the manifestations of the structure of the world. That structure is not only manifest in the laws, but it is also what makes up the physical world. Consequently, there is no need for objects that instantiate the laws or symmetries, or that are governed by them. This central idea is developed in various ways, both with regards to the metaphysics and the epistemology of structure thus conceived, going through a very detailed and always precise and fair discussion of the extensive literature on OSR, and beyond.

   The book can roughly be divided into four parts: chapters one to four are concerned with the motivation for epistemic structural realism (ESR), the transition from ESR to OSR, and the history of structural realism. Chapters

five to seven spell out OSR in detail and in particular defend Steven French's radical version of OSR that eliminates underlying objects instantiating the structures. Chapters eight to ten go into causation and modality, elaborating on a middle way between a Humean version of OSR and one that is committed to a fully-fledged objective modality (e.g. in conceiving the structures that OSR is about as being causal or dispositional structures, thereby being committed to metaphysical necessity). Chapter eleven and twelve move the discussion forward to two different areas to which OSR has not been applied in detail as yet: the philosophy of quantum field theory (Ch. 11) and the philosophy of biology (Ch. 12). Some of the material on which chapters one to seven draws has already been published in papers elsewhere; none the less, it is very useful to see this material fully laid out in the present book, and French makes many new and illuminating points in doing so. The most important new arguments of the book come in chapters nine to twelve, notably the elaboration on a modal view of structures as well as the application of OSR to quantum field theory and to biology; whereas the former can be seen as a natural extension of OSR in quantum mechanics, the latter explores new territory for the ontic structural realist.

It is widely acknowledged in today's literature that OSR is well motivated as a stance in the philosophy of contemporary fundamental physics. General metaphysical reservations against the idea of a structural individuation of fundamental physical entities — by contrast to the traditional view of an individuation by intrinsic essences of these entities — have become rare in the contemporary literature. None the less, French's particular version of OSR as characterized above remains debatable. This debate concerns, notably, the following four aspects:

1. The method of metaphysics

French defends what he calls the Viking approach to metaphysics (in particular Ch. 3). That is to say, he regards mainstream analytic metaphysics as a toolbox that the philosopher of science can exploit. He advocates in the first paragraph of the book what he terms a 'top-down' approach to metaphysics 'which at least has the virtue of taking the relevant science seriously in the sense that it urges that we read our metaphysical commitments more or less directly off our best theories' (p. v). However, OSR — and in particular French's version of it — certainly is not a metaphysical commitment that can be read off directly from our best scientific theories, as for instance the ongoing controversy about the interpretation of quantum mechanics shows. In brief, it seems that OSR is not a stance that only exploits the metaphysician's toolbox, but a metaphysics like other metaphysical stances, there being a gradual difference between mainstream analytic metaphysics and a science-oriented metaphysics like OSR, but not a difference in kind, which would give the proponent of OSR the privilege of standing outside the usual controversies in metaphysics by relying on science.

2. Abstract versus concrete structure

As mentioned above, structures à la French are both what is traditionally conceived as abstract entities (laws and symmetries) and concrete physical entities, making up the empirical world. This is what turns the position that French defends into a radical form of OSR, because it eliminates objects altogether as entities that stand in the relations that define the structures (Ch. 7). By contrast, more moderate versions of OSR reject intrinsic essences of objects, but still recognize — structurally individuated — objects as the concrete entities that instantiate the structures, which are manifest in laws and symmetries (e.g. Michael Esfeld and Vincent Lam, 'Ontic Structural Realism as a Metaphysics of Objects', in *Scientific Structuralism* ed. A. Bokulich and P. Bokulich, Dordrecht: Springer, 2011, pp. 143–59; and most recently Kerry McKenzie 'Priority and Particle Physics: Ontic Structural Realism as a Fundamentality Thesis', *British Journal for the Philosophy of Science*, 65 (2014), pp. 353–80). The present book does a valuable service in illustrating French's take on OSR, but it does not add anything substantially new to previous publications with regards to the argument for this radical version of OSR. For instance, one crucial point is that, even if structures are to be both abstract (laws and symmetries) and concrete, one can still with good reason expect OSR to be a able to draw a distinction between (abstract) mathematical and (concrete) physical structure. Chapter eight is devoted to this issue, but remains inconclusive. French says at the end: 'Perhaps then we simply have to accept that the distinction between the mathematical and the physical has, at the very least, become blurred or that it cannot be drawn at all' (p. 230).

3. The ontology of quantum physics

One central motivation for the metaphysics of OSR is quantum mechanics, notably quantum entanglement (which, in brief, rules out the possibility to attribute states to quantum objects taken individually — so that, if these objects had an intrinsic essence, it could play no dynamical role for their temporal development). French repeats his well-known argument from quantum statistics that there is an underdetermination between quantum objects as individuals and quantum objects as non-individuals and that this underdetermination is a cogent reason to jettison the commitment to objects altogether (Ch. 2). However, OSR has not made its way into the interpretation of quantum mechanics: it is for instance unclear how it sets out to cope with the notorious measurement problem. The present book does not change anything with regards to that problem. More generally speaking, one can distinguish between two main options that are pursued in current research on the ontology of quantum physics. One option is to take the formalism of the quantum theory that one adopts to refer to the quantum state, represented by the wave-function of the universe. Since the quantum state is defined on a

very high-dimensional space — namely the configuration space of the universe — this option implies that one is committed to that very high-dimensional space being the space in which the fundamental physical reality is situated. As David Z. Albert (1996, 'Elementary Quantum Metaphysics', in *Bohmian Mechanics and Quantum Theory: An Appraisal*, ed. J. T. Cushing, A. Fine and S. Goldstein, Dordrecht: Kluwer, pp. 277–84, see p. 283, n. 7) has argued, there is in this case no motivation for OSR, since the quantum state can then be understood as attributing intrinsic properties to the points of configuration space and as developing according to a local dynamics in that space. The other option is to take the formalism of the quantum theory that one adopts to refer to matter distributed in ordinary space–time. One is committed, then, to what is known as a primitive ontology with regards to that matter. The role of the quantum state, then, is limited to the function that it has for the temporal development of the distribution of matter in physical space (see, Valia Allori, Sheldon Goldstein, Roderich Tumulka, and Nino Zanghì, 'On the Common Structure of Bohmian Mechanics and the Ghirardi-Rimini-Weber Theory', *British Journal for the Philosophy of Science*, 59 (2008), pp. 353–89). Hence, OSR then concerns the dynamics of matter distributed in space–time, and it is unclear to say the least how OSR could do away with a primitive ontology of objects whose dynamics the structures that are encapsulated in the quantum state describe. In brief, the present book does nothing to alleviate the central objection to OSR in this area: although being motivated by quantum mechanics, it falls well short of proposing a worked out ontology of quantum physics.

4. Modality

It is a central merit of this book that it sets out the first full account of the modal character of structures in OSR (Chs 9–10). French drives a middle way between a Humean OSR that repudiates objective modality and an OSR that applies the theory of dispositionalist essentialism in analytic metaphysics to structures, and thus transfers the modality built into dispositionalist essentialism to OSR. He develops forceful arguments against both these views: objections to the Humean treatment of laws in the context of OSR, as well as objections to the view of dispositional properties underlying the structures and recent attempts to consider the physical structures of OSR as being dispositional themselves, maintaining that these attempts cannot do justice to symmetries and conservation laws. French's own proposal consists in claiming a primitive modality for structures. However, it remains unclear to what extent this primitive modality of structures is distinct from the primitive modality to which both dispositionalism and primitivism about laws are committed. Moreover, despite what French takes for granted in discussing a Humean version of structuralism (e.g. p. 232), the very recent literature has made clear that if one subscribes to Humeanism, there is no reason for a commitment to structures at all, since David Lewis's thesis of

Humean supervenience can be literally true in the domain of quantum physics as well (Elizabeth Miller, 'Quantum Entanglement, Bohmian Mechanics, and Humean Supervenience', *Australasian Journal of Philosophy*, 92 (2014), pp. 567–83; Michael Esfeld, 'Quantum Humeanism, or Physicalism without Properties', *Philosophical Quarterly* 64 (2014), pp. 453–70). This again shows that there is no such thing as reading 'our metaphysical commitments more or less directly off our best theories' (p. v).

These debatable issues notwithstanding, it is evident that this book does a great service to the community in fully laying out the case for — a radical, ontic — structural realism. It is a must for everyone interested in the philosophy of physics and the metaphysics of science in general.

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Freedom, Teleology, and Evil, by Stewart Goetz. Norfolk: Continuum, 2008. Pp. 208. H/b £75.00, P/b £24.99.

The idea that choices might be uncaused has generally been regarded as deeply problematic; hence the non-causalist position has been a fringe one within the free will debate. In *Freedom, Teleology, and Evil*, Goetz provides a compelling defence of the position, demonstrating that it is worthy of deeper philosophical attention than it generally receives. Further to detailing and defending a non-causalist account of agency, Goetz defends the principle of alternative possibilities against arguments from Frankfurt-style Counterexamples (FSCs), and attempts, ambitiously, to draw on his account of freedom in developing a theodicy. I will summarise some of the core arguments addressed, before briefly exploring some philosophical concerns.

The second chapter sets out the basics of Goetz's account. He argues that fundamental data of experience support the claim that there is a basic ontological distinction between a *choice*, which is fundamentally active, and involves exercising a power, and other states, which are fundamentally passive and involve merely exercising a mental capacity. He argues that it is a basic datum of experience that a choice is intrinsically active and uncaused. It is not merely that it *feels* as if choices are uncaused, or that we cannot *detect* a cause; rather we have direct positive awareness of their non-causal nature.

While choices have no *causal* explanations, they do have *teleological* explanations: our choices are made for reasons. Goetz defends two basic