

philosophical theories ‘beyond the status of “just-so stories”’ (p. 254). She provides the groundwork for an interesting new field and provides circumstantial evidence for her claims to point out ways in which her claims could be tested with empirical methods from interdisciplinary fields, aligning her contribution with the empirically informed philosophy tradition. However, in the scope of this book she does not explore the evidence herself, leaving that to further work. Although scientific studies are frequently referred to, the sceptic might find the loosely connected evidence insufficient to fully validate her hypotheses on an empirical basis.

Although Dutilh Novaes proposes that the use of formal languages could foster argumentation in science, her book does not employ formal methods. She acknowledges this fact herself, but she does not say more about this point. The benefit of formal logic for science and argumentation has been claimed since ancient times. Still it has never gained wide acceptance as for example place-value numerical systems for calculation. Even in mathematics, works like *Principia Mathematica*⁴ remain exceptional and the vast majority of publications use semi-formal notation and sketchy proofs. It would have been worthwhile to ask, which (cognitive) reasons lead to the disuse of formal languages and reasoning in science and scientific literature and how they might be overcome.

Dutilh Novaes’ *Formal Languages in Logic, A Philosophical and Cognitive Analysis* constitutes an interesting and novel attempt at addressing important questions concerning the cognitive status and role of formal languages and formal reasoning. It makes for a pleasant read, with the presentation being accessible to scholars from diverse backgrounds, ranging from philosophy through linguistics to cognitive science. As the book is only intended to be a first step in the field, naturally some of the presented arguments are still rather schematic, and many interesting issues are only touched upon without providing definite answers. Nonetheless, the interested reader will find inspiring ideas that may give rise to a new understanding of the role of formal languages and formal methods in different sciences.

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Tropes: Properties, Objects, and Mental Causation. BY DOUGLAS EHRLING. (Oxford UP, 2011. Pp. viii + 250. Price £37.50.)

In this fascinating book, Douglas Ehring defends a doubly controversial view: an ontology of tropes – Trope Bundle Theory – and a version of that ontology – Natural Class Trope Nominalism. Ehring’s book may be the only substantial defence of Natural Class Trope Nominalism and already this makes it significant. His arguments are systematic and it is impossible to discuss them here in any detail, but I will attempt to give an overview of the book’s most important themes.

⁴ A.N. Whitehead and B. Russell, *Principia Mathematica* (3 vols), (Cambridge UP, 1910–13).

The book consists of two parts: a general defence of Trope Bundle Theory, neutral between the different versions of the ontology, and a defence of Natural Class Trope Nominalism against its competitors, namely ‘the Standard Theory’ familiar from Keith Campbell (and D. C. Williams), and Resemblance Trope Nominalism, defended for instance by Gonzalo Rodriguez-Pereyra. Ehring’s writing is dense, and although each chapter is helpfully divided into several subsections, those unfamiliar with trope theory may find the pace quite fast. Ehring does a decent job signposting the arguments and outlines the background of trope theory in the introduction, but it is clear that the book is primarily aimed at experts.

In Part I, Ehring presents a general case for Trope Nominalism. He begins with the universal-particular distinction (ch. 1), which is required by Trope Nominalism (one of its central claims being that there is a distinction between universals and tropes). After a comparison of a number of ‘traditional’ attempts to cash out the universal-particular distinction, Ehring builds on D. C. Williams’s formulation according to which the identity of universals is grounded in their exact inherent similarity, whereas this is not sufficient for the identity of particulars: ‘Applied to properties, [the exact similarity characterisation] means that a property is a universal if and only if exact inherent similarity is sufficient for identity, otherwise it is a trope’ (p. 44). Ehring continues (ch. 2) by arguing in favour of tropes in general, focusing on *enduring* tropes. He suggests that enduring tropes are needed to explain certain causal facts if we are also committed to Humean Supervenience. Lewis’s ‘temporary intrinsics’ objection against enduring objects is also discussed: an object that is wholly present at two different times but undergoes a property-change between those times would seem to have both of those properties, but if these properties are mutually exclusive, we have a contradiction. Ehring’s reply is based on understanding tropes as temporally bounded entities in such a way that exclusive properties may be considered as ‘relative to a time.’

In subsequent chapters, Ehring turns to trope individuation (ch. 3) and bundle theory (ch. 4). Regarding the former, Ehring defends primitivism: two tropes are numerically distinct tropes if and only if they are numerically distinct. He also offers a number of arguments against a spatio-temporal individuation principle. As to bundle theory, Ehring takes bundles to be mereological sums of properties, and bundled properties to be tropes. An important aspect of this discussion concerns compresence tropes, which unify tropes into bundles. Ehring regards spatial coincidence insufficient for compresence and takes the compresence relation as primitive. His view faces an important series of objections, so called regress objections (p. 119 ff.): if compresent tropes are themselves compresent, then further compresence tropes are required, *ad infinitum*. Ehring’s solution is to consider compresence as ‘self-relating’ (p. 128), hence terminating the regress.

Part I concludes with a chapter on mental causation. Ehring argues that trope theory can be used to show that mental properties have causal powers even in the face of the causal closure argument. I find the discussion too brief to be conclusive, but Ehring does present an interesting case to the effect that causal pow-

ers associated with mental property types form subsets of the causal powers associated with physical property types. Assuming functionalism, this enables Ehring to identify mental property types with classes of tropes that belong to physical subclasses, yet these types share a set of exactly similar causal powers (while differing causally), hence: 'Mental types have causal powers as function of the causal powers of their parts' (p. 168).

In Part II, Ehring defends Natural Class Trope Nominalism (NCT). Ehring argues that NCT can withstand certain arguments against the Standard Theory, and that NCT has better prospects for explaining resemblance than Resemblance Trope Nominalism as the latter must either take resemblance to be primitive or adopt modal realism. In contrast, NCT explains resemblance in terms of natural classes: 'The nature of a trope is identical to the natural classes it is a member of' (p. 189).

Ehring also discusses objections to NCT, including the so called 'collapse' objections, according to which Natural Class tropes collapse into another ontological category (ch. 6); the 'one-over-fewer' objection, which suggests that NCT wrongly rules out the possibility of a property having fewer instances than it actually has; the 'one over more' objection, which focuses on NCT's supposed entailment that there could not have been one more instance of a given trope; and the 'causation' objection, which takes NCT to entail the causal inertness of all properties. Ehring replies to all except the first of these by adopting a counterpart theory of properties (without modal realism) (ch. 7).

The final chapter (ch. 8) deals with one more group of objections, the 'determination objections': they claim that NCT is not compatible with certain features of the determination relation. Ehring addresses these objections as well with the help of property counterpart theory. Accordingly, one challenge for Ehring is to provide independent support for counterpart theory. The only real attempt to do so is in the final section of the final chapter – in just over one page. However, it is the 'collapse' objections that I consider the most serious.

One version of the 'collapse' objections suggests that Natural Class tropes look very much like bare particulars, and hence cannot be properties. Ehring replies: 'if [NCT] is right, tropes are specific properties in so far as they are members of natural classes. And, since they are members of such classes, they are properties, not bare particulars' (p. 194). Ehring considers it relatively unproblematic that tropes are members of natural classes, but it is never made quite clear what explains a trope being a member of a natural class; Ehring considers this no more problematic than there being distinct classes of universals. That is, Natural Class tropes are members of natural classes in virtue of 'it being the case that these tropes are selectively sorted in these ways' (p. 198). But membership in natural classes is doing much more work in NCT. Specifically, NCT *requires* natural classes to get off the ground, whereas Universalism attempts to *explain* resemblance between particulars. It seems of no great consequence for Universalism if it turns out that a particular universal does not capture resemblance, but for NCT this might be devastating. Ehring does not consider this a pressing problem (p. 197), but I believe that there are some who would.

Despite the few aspects in which *Tropes* could benefit from taking a step back and re-evaluating the background assumptions, it is an important contribution to the literature and crucial reading for anyone interested in Trope Theory.

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Self-Improvement: An Essay in Kantian Ethics. BY ROBERT N. JOHNSON. (Oxford UP, 2011. Pp. I + 174. Price £27.50.)

One of the distinguishing features of Kant's ethics is its recognition of duties that are *owed to oneself*. Among such duties is the duty to develop one's natural abilities, which is the subject of Robert Johnson's recent work. *Self-Improvement* offers an extended argument for a non-derivative duty to develop oneself in non-moral respects. As Johnson describes it, 'my project is not so much concerned with what Kant's own views were on the subject as it is trying to construct a defensible position regarding such an obligation grounded in a broadly Kantian ethical theory' (p. 4).

Self-Improvement's argument takes as its starting point Kant's thoughts on the nature and extent of the obligation to develop our natural capacities, which Johnson summarises in ch. 2. Kant classifies the duty of self-improvement as a wide, imperfect duty. Johnson offers an account of the significance of this classification that is thorough and lucid. He reminds us that while the duty of self-improvement is wide enough to leave room for inclination to play a role, the duty nonetheless requires agents to choose in the context of rational reflection and deliberation about the sort of life they wish to lead (and can reasonably expect to achieve), deliberation which necessarily occurs in the context of particular cultural practices and traditions. The duty of self-development, Johnson tells us, 'is a duty to "broaden" ourselves as much as to perfect some particular ability' (p. 34).

Ch. 2 concludes with a description of five ways one might fail oneself with regard to the duty of self-improvement. Some of these examples are familiar – the idle rich, the slacker, and the self-sacrificer. However, others are less familiar and reflect Johnson's view that the duty of self-improvement is a duty to develop or improve oneself *as a person*. Johnson contends that the One-Dimensional person, who develops only those capacities necessary for a single undertaking, fails to 'take to heart the idea that their obligation is to perfect their whole self as a person,' whereas the Fool fails in his duty to himself insofar as he develops 'a mere hodgepodge or collection of capacities which are each individually and together useless for, or incompatible with, any minimally coherent plan of life' (pp. 40–2).

Ch. 3 investigates the possibility of deriving a duty of self-improvement from the first formulation of the Categorical Imperative, the formula of universal law (FUL). Johnson presents a reconstruction of the Kant's rather puzzling *Groundwork* argument for a duty of self-improvement. According to Johnson's reconstruction,