

Book Review

David Lewis, *Parts of Classes* (with an appendix by John P. Burgess, A. P. Hazen, and David Lewis). Basil Blackwell, Oxford, 1991. 165 pages.

In *Parts of Classes* David Lewis starts from one simple suggestion, namely that a subclass is a part of a class. Using this, he provides us with a detailed account of classes and sets, as well as an interesting synthesis of set theory with arithmetic. It should come as no surprise that he manages to pack an immense amount into in a mere hundred and twenty pages, and that he does this in his usual accessible and lucid style, without unnecessary technicalities. In addition there is a fascinating appendix in which some crucial results due to Burgess and Hazen are discussed.

I shall first provide a brief exposition of *Parts of Classes*. Later I shall make a couple critical remarks. Let us begin, then, with Lewis' notion of a class, as that which has members. He contrasts a class with an individual – that which has no members. Given this contrast, not only are there the proper classes which are not sets, but there is also a set, the null set, which is not a class, because it has no members. With this clarification of the notion of a class, Lewis is able to state his First Thesis, namely that one class is part of another iff the first is a subclass of the second (p. 4). He then argues for the strengthening of this to his Main Thesis, namely that the parts of a class are all and only its subclasses (p. 7).

One of the things we need to think about is just how plausible is the First Thesis and hence the Main Thesis. But even if we have some misgivings about it, it is surely of considerable interest to see the development of set theory based on the Main Thesis. And the first issue which Lewis tackles here is the null set. He resists the suggestion that there is no such thing as the null set, largely because he endorses the orthodox set-theoretic construction of mathematical entities. Within that orthodoxy there are good reasons, which Lewis expounds, for relying on the null set. He suggests that *any* individual will do for the null set (p. 13). In fact he takes the null set to be the individual which is the fusion of all individuals, but he grants that this is an arbitrary choice. As he acknowledges, an arbitrary choice of null set hardly differs from not making a choice. And Lewis could have adopted an explicitly structuralist position, in which no choice is made, and the phrase 'the null set' is permissibly interpreted as referring to any individual whatever. In that case he would adopt van Fraassen's supervaluation

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