

REVIEW

SAM ROBERTS. *Pluralities as Nothing Over and Above*. *Journal of Philosophy*, vol. CXIX (2022), no. 8, pp. 405–424.

The slogan ‘Some things are nothing over and above the individual things they comprise’ animates important uses of plural quantification in philosophy. Yet, the thought remains elusive. Sam Roberts investigates the extent to which it may be captured model-theoretically and axiomatically for the language of plural modal logic. He asks what is for a Kripke model to conform to the slogan, which may seem a vague matter, but remarkably, he is able to squeeze the informal condition between two formal *necessary* and *sufficient* conditions for conforming to the slogan. Since the two formal conditions turn out to be equivalent, they result in a precise articulation of the informal condition.

The necessary condition is the satisfaction of four formal constraints. Two of them speak to the interaction between the modal profile of a plurality and that of the individuals it comprises. Very roughly, *Downward Dependence* requires the members of a plurality to exist and remain members of it at each world at which the plurality exists. On the other hand, *Upward Dependence* requires a plurality to exist at each world at which the members do. Two more constraints concern identity and existence conditions for pluralities. *Extensionality* requires pluralities to be extensional, and *Comprehension* posits for each subset of the first-order domain, a plurality that comprises its members. Call a Kripke model K a *DUEC-model* if it verifies all four constraints. Roberts argues that being a DUEC-model is a necessary condition for conforming to the slogan.

R1 K conforms to the slogan only if K is a DUEC-model.

The sufficient condition for conforming to the slogan is being isomorphic to a Boolos model, which is one on which plural variables are directly assigned some individuals in the first-order domain. Since there is nothing more to the value of a plural variable than the individuals assigned to them, Roberts argues:

R2 K is (isomorphic to) a Boolos model (over the first-order fragment) only if K conforms to the slogan.

The crucial observation is that the necessary condition entails the sufficient condition:

R3 K is a DUEC-model only if K is isomorphic to a Boolos model over its first-order part.

The precise model-theoretic articulation of the slogan provides a heuristic towards an elegant axiomatization of the view. One axiom gives voice to Downward Dependence, and, given a modicum of plural comprehension, another axiom corresponds to a combination of Upward Dependence and Extensionality. Comprehension motivates one last axiom.

There are many strands to the slogan. There is the thought that plural quantification is *ontologically innocent*; plural variables carry no *additional* commitment beyond that of the singular variables. And there is the thought that the plural *supervenes* on the singular; a difference in the plural domain requires some difference in the singular domain. These do not by themselves require Upward Dependence or Extensionality. Consider the admittedly



unorthodox distinction between Melesha, Nadia, and Dylan, on the one hand, and Melesha, Nadia, and Dylan *as they form a queue*. Unlike the former, the latter track the individuals as they queue. Once brought into the fold, these plural embodiments conform to Downward Dependence but not to Upwards Dependence or Extensionality. Melesha, Nadia and Dylan *as they queue* may fail to exist even if Melesha, Nadia, and Dylan do. Nor are they *qua queue* the same as them *qua a committee*. Yet, these plural embodiments require no further commitment beyond that of the singular variables as they satisfy certain conditions. Nor do they underwrite differences in the plural domain without some difference in the domain of individuals. On the other hand, Upward Dependence and Extensionality are required to make sure there is no gap between some objects taken individually and the plurality they comprise. For there is indeed a gap between Melesha, Nadia, and Dylan taken individually and Melesha, Nadia, and Dylan *as they queue*. Unlike the latter, the existence of the former is automatic given that of the individuals.

Comprehension is delicate. Consider the heterodox formulation of plural logic Salvatore Florio and Øystein Linnebo develop in *The Many and the One. A Philosophical Study of Plural Logic* (2021), Oxford University Press. There is, for them, no plurality of all the objects that exist. Instead, they take the fact that some objects conform a plurality to automatically make them eligible for membership into a set. As a consequence, they replace plural comprehension with weaker principles designed to generate pluralities that correspond to properly circumscribed conditions. But they are careful not to conflate a plurality of some objects with the set of objects they comprise, since, unlike the set, the plurality is nothing over and above the individual objects they comprise. That invites the question whether the first three constraints may capture a *local* version of the nothing over and above conception of pluralities. From a model-theoretic perspective, if two models of Downward and Upward Dependence and Extensionality share a common first-order fragment, then they should be isomorphic if they agree on what pluralities can exist. On the other hand, a modicum of comprehension for conditions of the form $\diamond(x \prec yy)$ would still seem to be required for the second axiom to capture Upward Dependence and Extensionality.

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