PHD THESIS SUMMARY:
Models in science: essays on scientific virtues, scientific pluralism and the distribution of labour in science.

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In my dissertation I have been concerned with the existence of multiple models of the same phenomenon. A common explanation for this multiplicity is that different models serve different virtues, so the multiplicity disappears once the virtues that are required for a given purpose are made explicit (the consensual view) and the existence of multiple models does not undermine the possibility of a single standard for scientific assessment. I indicate two complications for this view, respectively demonstrating that this view is neither necessary nor sufficient for analysing all scientific controversies.

The first controversy is drawn from economics: neoclassical economics' a priori preference for generality, regardless of the purpose at hand. The second concerns a debate in history, the *Historikerstreit*, from which I drew the conclusion that if the political views and personal interests of scientists coincide with the different sides in a debate, then the question of what virtues should be served by a model is no longer given, but becomes an integral part of the debate.

The shortcomings of the consensual view (Rawls, Giere) in providing adequate guidance in dealing with multiple models have led me to the literature on pluralism in philosophy of science and political science. From that literature, I distilled two additional views on the interplay between different models, an agonist (Mouffe, Rescher) and an antagonist (Kuhn, Lawson) view. In contrast to consensualism, both views hold that multiplicity will not eventually disappear: multiple standards for scientific assessment remain possible at all times. As a consequence, the dynamics of such a scientific community has a complexity not captured in traditional (consensualist) models of the distribution of labour in science.

On the consensual view a scientific community will tend toward consensus, which is a single, optimal equilibrium. In order to find

out what the dynamics of a community under multiple standards for scientific assessments would look like, I teamed up with Matthias Greiff, a German economist specialising in network economics. We developed a model describing the dynamics of standards competing for adoption, in analogy to the models used to describe the dynamics of technological standards competing for adoption which were used during the Microsoft antitrust trial. In our model, the consensual model is retained as a special case. Our main finding was that the insights derived from consensual models (single standard models) are not robust against an increase in the number of standards. Most importantly, such systems boast multiple equilibria which are not necessarily optimal.

Rogier De Langhe obtained his PhD at the Centre for Logic and Philosophy of Science, at Ghent University, Belgium. He was supervised by Erik Weber and Jeroen Van Bouwel. He is currently a PhD fellow of the Research Foundation—Flanders (FWO), at the Centre for Logic and Philosophy of Science, Ghent University, Belgium.
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