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Review of the *Oxford handbook of philosophy of economics*, edited by Harold Kincaid and Don Ross. New York: Oxford University Press, 2009, 688 pp.

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The *Oxford handbook of philosophy of economics* aims at bringing out what is *new* in the philosophy of economics—an aim that, I believe, has been successfully achieved. The introductory chapter by Don Ross and Harold Kincaid does a superb job of describing the current orientation of philosophy of economics, the result of developments in philosophy of science, in economics, and in the relationship of philosophy of economics to both fields. Throughout the 1980s and 1990s philosophy of economics was in fact mostly concerned with applying abstract philosophical rules to the case of economics, whereas nowadays it is more preoccupied with understanding and evaluating economics as it is actually practiced and with developing, in-house as it were, the philosophical tools required for these tasks.

This, according to the editors, is not only how philosophy of economics is now done, but also how it *should be* done. In order to deliver a philosophy of science that concretely engages with scientific practice, "the key for philosophers is to keep their ears as close as possible to the ground—in this case, the ground being the economics seminar rooms around the world in which the graduate students gather" (pp. 28-29). I find this valuable advice, especially for young philosophers and methodologists of economics—one of the main audiences of this *Journal*. The range of topics discussed in the *Handbook* pretty much covers the whole spectrum of interests of contemporary philosophy of economics. As such it provides a valuable resource for philosophers and methodologists of economics, not only to gain an up-to-date map of the field but also, I believe, to discover new directions of inquiry. Thanks to the practice-oriented character of many of its contributions, the *Handbook* will also interest economists, or so one hopes.

In what follows I will not discuss each contribution in detail or offer a general discussion of the book. Since virtually every author is a

renowned expert on his/her respective topic and every chapter is self-contained, readers interested in a particular theme can easily identify the chapters they wish to consult. Instead, I will give a general idea of the book's contents by briefly summarizing each chapter and then talk more extensively about a specific portion of the book.

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The volume is organized into four parts. Part I "Received views in philosophy of economics" collects partly autobiographical reflections by three of the main influential contributors to the philosophy of economics from its early days, namely Daniel Hausman, Alex Rosenberg, and Uskali Mäki. I will say more about these later. It also includes an essay by critical historian of economics Philip Mirowski, who, in his typical engaging style, aims to persuade us that the celebrated transformation of economics into a science of knowledge is in fact a "nonexistent achievement".

In line with the overall aim of the *Handbook*, the rest of the chapters mostly deal with philosophical issues that emerge from recent developments occurring within economics, namely: (i) the development of massive computing power, (ii) the rise of game theory, (iii) the increasing integration of economics with other sciences, and (iv) the turn to empirical experimentation.

Part II "Microeconomics" deals with the ways in which these developments have affected microeconomics. Cristina Bicchieri examines the potential of the experimental turn in game theory for generating models of rationality that include a social component. James Woodward assesses experimental investigations of social preferences and concludes that the non self-interested aspect of behaviour comes out as a robust result, but contemporary approaches to explaining this have so far failed to do so in a systematic, non ad-hoc way. Considering his previous work, it is not surprising that Francesco Guala's contribution discusses the methodology of experimental economics. Nevertheless the discussion is given a novel and original twist by his use of experimental economics as a case study to articulate the concepts and content of a normative methodology which takes scientific practice seriously, but also offers normative advice relevant to that practice. Anna Alexandrova and Robert Northcott examine the use of idealized economic models to construct the 1994 U.S. Federal Communications Commission (FCC) electromagnetic spectrum auctions

and their contribution to the success of those auctions. To explain the role that economic models played in this particular case, they advance their own account of "models as open formulas", and propose that progress in economics is best viewed as a variety of engineering progress. John Davis analyses the conceptions of the individual implicit in new research approaches in economics,[1] and shows the ways in which they depart from the atomistic conception presupposed by neoclassical economics. Following on his previous work, Don Ross takes recent empirical research to task in order to shed light on the relationship between people, subpersonal interests, and brain systems. Finally, Jack Vromen reviews recent developments in evolutionary theorizing: evolutionary game theory, neuroeconomics, and bioeconomics. He argues against conflating proximate and ultimate (evolutionary) causes of behaviour, but argues that knowledge of proximate causes may be helpful for construing more realistic evolutionary scenarios.

Part III "Modeling, macroeconomics, and development" includes a heterogeneous set of chapters. Paul Humphreys analyses the novel philosophical issues raised by the advent of computational modelling vis-à-vis more traditional techniques. Kevin Hoover deals with the venerable discussion about the importance of microfoundations for macroeconomics and shows why it is merely an "ideology". In her brief but insightful piece, Nancy Cartwright casts doubt on the role of both causation (at least as conceived in current accounts) and invariant relations for the purpose of reliable predictions in policy and technology planning. She concludes with an open and somewhat unsettling question: "What can we offer that is better?" (p. 421). Stan du Plessis reviews modern attempts to demonstrate that, rather than being a problem, data mining is a necessary part of a sensible modelling strategy. Harold Kincaid compares neoclassical growth theory and contemporary development economics as approaches to explaining growth and aims to make explicit and assess their unarticulated assumptions about explanation and evidence. He then argues that work in contemporary development economics is more promising because it does not rely on the suspicious assumptions crucial to neoclassical growth theory. Finally, Gary Fields's contribution is about models of labour markets in developing countries: the message (which could have been elaborated further) is that models of labour markets are context

[1] Namely, behavioural economics, agent based computational modelling, behavioural game theory, and neuroeconomics.

specific—where the plural in both 'models' and 'markets' indicates that there are different kinds of (labour) markets as well as multiple ways of modelling them.

Finally, part IV is made up of four chapters that tackle different aspects of the relationship between economics and welfare. Keith Dowding examines approaches to measuring human welfare and the way in which problems of interpersonal comparability can be solved in practice. Based on his previous work, Ken Binmore argues that the conception of utility of modern economics is compatible with making interpersonal comparisons. Erik Angner discusses measures of well-being in economics and psychology, exploring their fundamental commitments and arguing that those commitments contribute to explaining why measures of well-being are so different in the two fields and why fruitful communication is hard to come by. In his lengthy contribution, Partha Dasgupta disentangles facts and values, and argues that contemporary economists principally analyse the former and are right to do so.

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I now look more closely at the articles by Rosenberg, Hausman, and Mäki. This choice of focus is mostly a matter of taste—I found the narration of the authors' intellectual development in parallel with that of our field fascinating. Although this may not have been fully intended by the editors,[2] it turns out that these essays not only tell the story of where we come from, but also, to some degree, show us where we stand and where we should go from here.

In his contribution "Laws, causation, and economic methodology", Dan Hausman recounts the development of his views from the 1970s onwards.[3] As is well known, his early work centred on laws. He saw his task as demonstrating that economics did have laws, albeit of a particular kind. Hence, his account of the role of inexact laws in explanation and prediction, elaborated in his influential *The inexact and separate science of economics* (1992). Issues within economics as well as difficulties with the notion of inexact laws led Hausman to move

[2] Ross and Kincaid write, "Part I of the Handbook showcases the image of economics against which a majority of philosophers of science have increasingly reacted. It thus describes a platform relative to which the rest of the book's contents amount to a complex response" (p. 28).

[3] Hausman's piece also includes a nice section in which Hausman explores points of contact and divergence between his own views and those of Mäki and Rosenberg.

progressively away from questions about laws and engage with issues of causation and causal explanation. In his *Handbook* chapter, Hausman proposes a variant of the erotetic-contrastive approach to explanation, which takes explanations to be answers to why-questions that often implicitly contrast the explanandum phenomenon to another outcome (or set thereof). Explanation is thus a matter of citing causes that discriminate between the explanandum phenomenon and contrasting outcomes.

Citing discriminating causes however is not enough. Explanations should also provide accounts of how the cause produces the explanandum (i.e., they should provide a mechanism). Finally, explanations are better if they are deep: (i) an explanation is deep if it can account for many contrasts or for contrasts within a larger range; and (ii) an explanation is deep if the mechanism that links the cause and the effect is robust. On this view, it is not particularly illuminating to debate whether the inexact generalizations of economics qualify as laws. Instead, we should ask whether these generalizations identify discriminating causes (and their mediating mechanisms) and possess some degree of invariance, an attribute of generalizations that, Hausman holds, is crucial to achieving our practical ends (see Woodward 2003).

Like Hausman, Alex Rosenberg's early work concentrated on laws. But unlike Hausman, he sought to find the reasons for the predictive limitations of economics and concluded that in economics there are no laws. He identified the source of these shortcomings in the reliance on intentional states that economics shares with psychology (Rosenberg 1992). In this chapter, entitled "If economics is a science, what kind of a science is it?", Rosenberg admits that his early diagnosis was partly incorrect. Rosenberg has now come to believe that the predictive limitations of economics are due to the fact that it is a biological science and hence a historical science. As such, it constructs factual claims about historical trends with varying degrees of generality. Thus, according to Rosenberg, economics has no laws but rather spatiotemporally restricted generalizations that describe local trends that result from non-economic laws (notably natural selection) operating over local initial conditions. Economic interactions are reflexive, and this accounts for the fact that economic models have only transitory applicability even in their intended domains, i.e., why their predictive power is limited. Even though "the account of economics as a biological

science leaves its actual character both largely untouched and endorsed as scientifically responsible after all, in spite of its predictive weakness" (p. 63), Rosenberg claims there is room for improvement, and some of it is already under way. Recent developments in economics have in fact made it act more like it should if it really were a biological science (game theory, for example, allows treatment of strategic interactions and of the impact of increasing returns on various kinds of asymmetries).[4]

Unlike Hausman and Rosenberg, Uskali Mäki's early views on the philosophy of economics were never presented in an extended monograph, and hence his piece, "Realistic realism about unrealistic models", also helps us see more clearly how some of the threads in his many published articles fit together in a single systematic account. Mäki's main motivation has consistently been to show that "*[u]nrealisticness in* economic models must not constitute an obstacle to *realism about* those models" (p. 68). The other major element of Mäki's philosophy of economics is the idea of isolation: all theories and models isolate a slice of reality from the rest of it. Idealizing assumptions, though patently false, serve the strategic function of theoretically isolating the causal factors or mechanisms of interest. The message then is that theories or models can make true claims about the isolated factors or mechanism, even if they contain a wealth of falsehoods.

Over the years Mäki has further refined his view, but the basic tenets have remained the same. According to Mäki, economic models typically isolate causal mechanisms, intended as mediating causal chains between input and output phenomena. "[B]y isolating a possible mechanism that could be causally responsible for, or could have significantly contributed to, the pattern" (p. 86), models provide possible and partial explanations of patterns of some generality (the typical economics explananda). Mäki also notes that explanatory activity in economics is often driven and shaped by the ideal of unification: "the insistence on microfoundations", "the avoidance of ad hoc explanations", and the phenomenon of "economics imperialism" are all, according to Mäki, manifestations of the pursuit of this ideal (p. 86). This aspect of economic theorizing has been relatively underanalyzed. In a series of publications, Mäki has sought to rectify this situation by

[4] Other developments include evolutionary game theory, interdisciplinary engagement with theories in cognitive and social psychology and in neuroscience, experimental economics, and models of asymmetric information. These themes are only briefly explored by Rosenberg, so how these developments make economics act more like a biological science is not fully spelled out.

offering a framework for the assessment of unification as an ideal, as well as its manifestation in economics imperialism (e.g., Mäki 2001; and 2009).

Rosenberg addresses the general question of what kind of science economics is. But even though it is illuminating to recognize that economics is more like biology than previously thought, that does not get us far in coming to grips with the peculiarities of economics. As Hausman notes, "the differences between generalizations in economics and certain areas of biology are at least as important as any similarities they may have in virtue of both biology and economics being historical sciences" (p. 47). So, even after having recognized that economics is a biological and historical science, the distinctive characteristics of its generalizations and the way they are and should be used for purposes of prediction, explanation, and intervention require careful study.

Hausman and Mäki claim to be concerned with local rather than global diagnoses of economics as it is actually practiced. As far as their contributions in the *Handbook* are concerned, they have also come to share an interest in the explanatory practices of economics—though whereas Hausman's interest in explanation mainly originates from questions about causation, Mäki's emerges from his work on unrealistic models. Because models are the main tools employed to formulate causal and explanatory claims, questions about causation and causal explanation are tightly connected to the metaphysics, pragmatics and epistemology of models. The preoccupation with how to normatively evaluate causal and explanatory claims, and the tools economists employ to generate them, is more salient in Hausman than in Mäki. Yet, as in the sort of normative methodology Guala advocates, philosophical assessments and prescriptions should be grounded on accurate accounts of how causal and explanatory claims are actually generated and for what purposes.

For example, although economists often attempt a description of mechanisms (one of Hausman's requirements for a good explanation), they endorse a specific conception of what sort of mechanisms are genuinely explanatory, namely *micro-economic* mechanisms. For certain purposes reductionistic explanatory strategies are just fine, but the idea that the *only* legitimate mechanisms for the explanation of economic phenomena are at the micro level is clearly questionable (e.g., Hoover contribution in this volume). Also, the emphasis on unification to which Mäki draws attention implies that economists insist on the application

of the *same kind* of micro-economic mechanisms.[5] It is not at all clear however that the repeated application of the same kind of mechanism in different situations across domains is of epistemic value. Whether a mechanism operates in a given situation or domain needs to be determined case by case.

More generally, it remains to be established whether the research strategies and explanatory commitments of economics—which are not yet well understood—do serve well the aim of picking out the discriminating and deep causes of the phenomena to be explained. Likewise what is needed for successful planning and intervention also requires careful study, for if Cartwright is right, causation with or without invariance may not be enough. Answers to these questions are likely to depend on the kind of causal and explanatory claims we are looking at and their context of use. All in all, this suggests that in this area—and in other areas of the philosophy of economics, as the *Handbook* demonstrates—significant progress has been made, but a great deal of exciting work still awaits us. Both are good news.

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[5] The situation may be changing in favour of modelling detailed causal mechanisms according to the context of application, as stated in the "Introduction" by Don Ross and Harold Kincaid (p. 13).