Review

of

Nancy Cartwright,
**Hunting Causes and Using Them:
Approaches in Philosophy and Economics**

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Hunting Causes and Using Them: Approaches in Philosophy and Economics. By
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For the past thirty years, Nancy Cartwright has been one of the most significant

philosophers of science. Beginning with a focus on physics, she was at the forefront of

the movement to use philosophy to help to understand the practices of physics as seen

from the working physicists' point of view rather than simply to pronounce on those

practices from an Olympian, but perhaps irrelevant, perspective. Starting with her

Nature's Capacities and Their Measurement (1989), she has steadily taken in a wider

scope of sciences, including social sciences.

In Cartwright's view, economics is not some poor stepchild to physics but a

significant part of a complex world in which the sciences are not (as so often thought by

philosophers, physical scientists, and economists alike) arranged in a clear hierarchy in

which each of the "special" sciences is reducible to the more basic sciences – physics

forming the bedrock. Cartwright has also been a major player in the philosophical

analysis of causation, a role that suits her turn towards economics, which has been

undergoing a causal revival in, for example, the work of Granger in time-series

econometrics, Heckman in microeconomic policy analysis, and the program of natural

experiments in applied microeconomics. Given this background a new book by Nancy

Cartwright – particularly one that singles out economics in its subtitle – is surely a

welcome event.

Hunting Causes and Using Them unfortunately represents a missed opportunity.

It is not a systematic treatise but a compilation of occasional papers written with various

particular – and mainly philosophical – targets in view. The papers have been too lightly

edited to form coherent chapters in a unified volume. They are frequently repetitive, and notation shifts from chapter to chapter. It is often difficult to appreciate fully the point of the chapter without the full context of the debates to which they originally contributed. They are heavy sledding for an *economist* not already immersed in those debates.

Despite professing to seeing useful insights in various approaches, Cartwright's method is more critical than constructive. And she sometimes misunderstands the approaches that she criticizes. For example, I do not recognize my own position in her account of my analysis of causal order (chapter 14). She attributes causal judgments to me that straightforward application of the formal definitions of chapter 3 of my *Causality in Macroeconomics* (2001) contradict. This is unfortunate, as she is a deeply insightful philosopher with a rare connection to actual practice; and, even here, her discussion is full of genuine insights about causation and the problems of modeling it. A constructive treatise that tempered her criticism with a lucid exposition of its objects would have been exceedingly helpful.

Three themes dominate *Hunting Causes*. The first is that *cause* is a plural concept. The methods and metaphysics of causation, she believes, are context dependent. Different causal accounts seem to be at odds with one another only because the same word means different things in different contexts. Every formal approach to causality uses a conceptual framework that is "thinner" than causal reality. She lists a bewildering variety of approaches to causation: probabilistic and Bayes-net accounts (of, for example, Patrick Suppes, Clive Granger, Wolfgang Spohn, Judea Pearl, Clark Glymour); modularity accounts (Pearl, James Woodward, Stephen LeRoy); invariance accounts (Woodward, David Hendry, Kevin Hoover); natural experiments (Herbert Simon, James

Hamilton, Cartwright); causal process accounts (Wesley Salmon, Philip Dowe); efficacy accounts (Hoover); counterfactual accounts (David Lewis, Hendry, Paul Holland, Donald Rubin); manipulationist accounts (Peter Menzies, Huw Price); and others. The lists of advocates of various accounts overlap. Nevertheless, she sometimes treats these accounts as if they were so different that it is not clear why they should be the subject of a single book. And she fails to explain what they have in common. If, as she apparently believes, they do not have a common essence, do they have a Wittgensteinian family resemblance? She fails to explore in any systematic way the complementarities among the different approaches – for example, between invariance accounts, Bayes nets, and natural experiments – that frequently make their advocates allies rather than opponents.

The second theme is her distinction between schemes that deductively *clinch* causal inferences and those that inductively *vouch* for them. Her idea is that certain schemes of causal inference work by making such strong background assumptions that inductive arguments are turned into deductive arguments. She is surely right that many arguments take the form of clinchers, conditional on background assumptions. But she is wrong to imply that advocates of these forms of argument are insensitive to the tentativeness and the fallibility of those strong background assumptions. Such sensitivity means that arguments that take the form of clinchers are, in reality, always practically vouchers.

For example, with Bayes-net approaches a statistical model describes data from which probabilities are inferred; and causal order, in turn, is inferred deductively from those probabilities. The inferences are based on strong assumptions. For instance, analysts frequently assume *causal sufficiency* (i.e., there are no omitted variables of a

3

type that would confuse causal inference), the *acylicality* of causal structure, and the *linearity* of functional relationships. Serious users of Bayes-net approaches are deeply aware of the fragility of the statistics – both the quality of the data and the modeling assumptions (e.g., stationarity and homogeneity). And they are aware that the assumptions about causal structure may fail in practical cases, which is why they have investigated the implications of alternative assumptions – e.g., latent variables (relaxing causal sufficiency), nonlinearity, and cyclical models.

And what is the alternative? Absent the strategy of embedding clinchers within maintained, but criticizable, assumptions, Cartwright provides no account of how evidence vouches for causal claims.

The final theme is the distinction between hunting and using causes highlighted in the title. The distinction gets it bite in Cartwright's belief that the strategies that successfully allow the identification of casual mechanisms frequently serve policy applications ill. Building on a longstanding theme of her work, real world processes are seen as the complex composition of a variety of deeper tendencies. The function of scientific experiments is to isolate those tendencies through stringent controls so that they can be exhibited in pure form. The application of scientific knowledge in practice is frequently complicated – if not thwarted altogether – because the real world is open and, unlike in the laboratory, the complicating tendencies are uncontrolled. In such cases, it is not necessarily reliable to infer that effects found under stringent controls will play out similarly in the world.

Her insight trades on the old distinction between *internal* and *external* validity. For example, we may discover in a randomized controlled trial that a drug is effective

4

against the malaria parasite; and, yet, for a variety of social and biological reasons, the drug may prove to be practically ineffective in patients. One lesson, perhaps, is that randomized controlled trials need to be supplemented with epidemiological studies. The exact same issues can arise with respect to natural experiments in economics: can the mechanism that they isolate be carried over to other policy contexts?

The theme of hunting versus using causes is elaborated in the final chapter on the use of counterfactuals in economics. Cartwright argues that the relevant counterfactuals isolate a cause from its own causes and set it to some value come what may. Using the same *implementation-neutral* strategies counterfactually to evaluate policies typically results in "imposters" – the wrong counterfactual for the issue to hand. Genuine policy analysis typically, though not always, requires *implementation-specific* counterfactuals. (Not always because some policies need to be robust across different implementations if they are to be useful since, in some cases, targeting is practically restricted.)

Cartwright is clearly correct that good policy requires the right counterfactuals and that, naturally, economists sometimes get it wrong. Yet, as a generic criticism, her case is not persuasive. For example, a straightforward reading of the Lucas critique, which Cartwright cites in other parts of the book with other purposes, is precisely as a plea for understanding counterfactuals in a causally structured, implementation-specific manner. Implementation of policy requires the specification of conditional rules and not a come-what-may setting of particular variables.

Nancy Cartwright has once again written an intellectually challenging book, full of insights. It is too bad that the presentation is not well adapted to an audience of

econometricians and applied economists, for whom the issues that she considers are

important and not always clearly thought through.