



Understanding Philosophy of Science

James Ladyman

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Few can imagine a world without telephones or televisions; many depend on computers and the Internet as part of daily life. Without scientific theory, these developments would not have been possible.

In this exceptionally clear and engaging introduction to philosophy of science, James Ladyman explores the philosophical questions that arise when we reflect on the nature of the scientific method and the knowledge it produces. He discusses whether fundamental philosophical questions about knowledge and reality might be answered by science, and considers in detail the debate between realists and antirealists about the extent of scientific knowledge. Along the way, central topics in philosophy of science, such as the demarcation of science from non-science, induction, confirmation and falsification, the relationship between theory and observation and relativism are all addressed. Important and complex current debates over underdetermination, inference to the best explanation and the implications of radical theory change are clarified and clearly explained for those new to the subject.

Understanding Philosophy of Science Details

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Author : James Ladyman

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K says

That's more like it. I had the pleasure of going through several introductory books for a course in the philosophy of science and I quickly realized that few of them were able to provide a comprehensive overview of the relevant issues. Quite often, I felt that either these books overlooked the important matters, or they made these matters appear as a waste of time given that foundational questions were rarely included. This isn't the case with James Ladyman's book, however. In fact, I'd argue that Ladyman has written an impressive introductory textbook, one that's unapologetically philosophical and that goes well beyond the basics.

Take his discussion on the problem of induction for example. Most authors who wish to provide a basic idea of the problem would simply mention some instance of inductive reasoning and then simply assert that Hume acknowledged that induction cannot be rationally justified. Ladyman on the other hand starts at the beginning by going through Hume's distinction between relations of ideas and matters of fact, and then explaining Hume's views on causality - that makes all the difference given that inductive reasoning is grounded on causal relations. Having done that, Ladyman presents the problem in all its glory and sophistication.

Similar tactics are employed throughout the book. Prior to discussing Popper's views on falsification, Ladyman provides a quick overview of the inductivist understanding of the scientific method that preceded him. Moreover, the part on realism and antirealism regarding observable/ unobservable entities does not begin with the logical positivists, but rather with epistemological insights and the realist/ anti-realist debate in the philosophy of perception. Such sophisticated manoeuvres allow Ladyman to emphasize the importance of particular critical positions in the philosophy of science (like the underdetermination problem or Laudan's pessimistic meta-induction, for example), that would lose much of their force if treated lightly.

Rory Švarc says

An accessible introduction to the subject. Ladyman's book essentially revolves around introducing the reader to the question 'what is the nature of science, and how should we interpret the theories science gives us?', with the focus being pretty much entirely on natural science. To emphasise how much this is so, he does not even introduce the debate around whether the social sciences can be counted as 'science' in the same way as the natural sciences. That said, there are definite benefits to this approach, as it allows for a greater foray into the history of science, as well interesting and comprehensive sections on the views of Kuhn and van Fraassen, with slightly more new ideas, such as Cartwright's 'idealisation', at the end of the book. The two section split between the methodology of science and the realism/anti-realism debate makes for smooth reading, and is written in an easy to follow way. Some knowledge of philosophy, science and the history of science would probably be useful for understanding this book, though are not essential. I'd recommend this as a starting place for anyone interested in the area, though I'd also recommend combining it with Stanford articles and such, as the wider reading sections given aren't terribly helpful.

P says

From the introduction: "To be a [scientific] realist about Copernicus' theory is to think that it should be taken literally and to believe that the Earth really does orbit the Sun."

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Aside from oversimplifications of what scientific realism entails and an explicit bias toward scientism, yeah, I mean, a fine introduction to the relevant epistemological and metaphysical issues in the philosophy of science in the Anglo-American tradition.

Armin Mohammadi Asl says

[illegible]

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Marc says

A classic textbook on the discipline. It does a good job of covering all the various philosophical positions and challenges to what science can know. It exposes the warts to the ad hoc-ery too. I am nearly finished ...

Leo Horovitz says

I'm too tired to write anything substantial about this right now. It's a good (not great) book about the philosophy of science, at the introductory level but probably presupposing some familiarity with basic philosophical terminology and some understanding of related fields such as logic and epistemology. It is divided into two parts: the first one dealing with the scientific method (inductivism, falsificationism, theories and observations, the underdetermination problem) both also discussing the debate about scientific change, dealing with Kuhn and his "revolutions" and "paradigms" among other things; the second one dealing with scientific realism, its subtleties and variants and its critics. The second part also connects, naturally, to other issues not falling directly under the subject of scientific realism but being relevant in a discussion of it such as: underdetermination (again), theory change (which at least touches upon the issues raised in the earlier chapter on scientific change) and the role of explanation in scientific theories, all discussed in the context of how they are relevant in the debate regarding the viability of scientific realism.

Another thing I should mention is that something that makes it stand out at least a little bit is that each chapter is ended by showing a fragment of an ongoing discussion between two persons (apparently not

highly knowledgeable in philosophy, sometimes espousing very naive views, seemingly an attempt to give the novice reader someone to identify with). It is a bit original, but I never felt that these very brief fragments contributed anything to the discussion or the understanding of it. It's a nice introduction to the subject, definitely a good book, but not excellent.

Brendon says

Good introduction.

Amirsaman says

ההקדמה היא פשוטה וברורה. היא מנסה להסביר את המושגים העיקריים בצורה קצרה וקולחת. זהו ניסיון טוב להקדים את הנושא, אבל לא מרגיש שיש כאן עומק או חשיבות אמיתית. ההקדמה היא פשוטה וברורה, אבל לא מרגיש שיש כאן עומק או חשיבות אמיתית. ההקדמה היא פשוטה וברורה, אבל לא מרגיש שיש כאן עומק או חשיבות אמיתית. ההקדמה היא פשוטה וברורה, אבל לא מרגיש שיש כאן עומק או חשיבות אמיתית. ההקדמה היא פשוטה וברורה, אבל לא מרגיש שיש כאן עומק או חשיבות אמיתית.

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Jibran says

Excellent explanation to philosophy of science.

Hélio Steven says

This is a great introduction to the philosophy of science, and it remains quite contemporary even though it's already 16 years old. James Ladyman goes through the main discussions in philosophy of science in a very clear, accessible and engaging way. The book covers the famous problem of induction and of Baconish naive inductivism and the attempted responses to it, as well as Popper's account of the logic of science and its problems, closing the first part, which is about the scientific method, with Kuhn's historical challenge to the rationality of the dynamics of theory change in science.

The second part of the book is dedicated to introduce the still very alive debate between scientific realism and antirealism, and here Ladyman is very wise to break down the different requirements (these are the semantic, metaphysical and epistemological requirements) involved in the scientific realist position, since by making them explicit it's much easier to understand how there are different ways to be a scientific antirealist, not all of which equally plausible. A great feature of the book, in my opinion, is the attention given to a specific kind of antirealism, which is Bas van Fraassen's constructive empiricism. Unlike certain popular types of antirealism, constructive empiricism concedes that science is an epistemically privileged enterprise and that it constitutes a paradigm of rational inquiry, but goes on to deny that we ought to go beyond the empirical adequacy of scientific theories that postulate unobservable entities (e.g., electrons), thus promoting agnosticism about these entities and thereby denying the epistemological requirement of scientific realism. To my mind, van Fraassen is successful in putting a good deal of pressure on realism about unobservables, showing in the process how antirealism can be a perfectly intellectually respectable position to hold after paying close attention to actual scientific practice. One of the most interesting things about the discussion around constructive empiricism in the book is van Fraassen's criticism of abductive reasoning (also known as "inference to the best explanation"), which is a valuable tool for scientific realists. The other problem that was given a more extended attention was the so called "pessimistic meta-induction" against scientific realism, which is one of the most important arguments in the realism x antirealism debate together with the "no-miracles argument", as well as the underdetermination problem. The second part, and along with it the book itself, closes with a very brief overview of structural realism, a pretty recent and increasingly important contender in the debate, and it felt like Ladyman should have extended this section a little more.

As any good introduction, it leaves many problems open and avoids taking sides as much as possible. At the

same time, though, Ladyman doesn't shy away from offering his own critical evaluations of some arguments here and there, which isn't a bad thing at all since he manages to keep as much impartiality as possible even then. At the end of every chapter we find a very useful list of further reading suggestions, as well as some somewhat amusing dialogues between two fictional characters, Thomas (who plays the role of a skeptic about scientific rationality and scientific realism; I wouldn't be surprised if the name choice was a clever reference to Kuhn) and Alice (who is committed to the rationality of science and to scientific realism), which have a triple function: the dialogues sum up what was discussed in the chapter and, secondly, give the reader a hint about the problems to be discussed in the following chapter; the third function is more subtle and I'm not sure whether it's easily recognizable: Alice claims certain things that are not explicitly presented in the book's chapters and some of them hint at what Ladyman himself might think about what is the best direction to take relative to a given issue (this was most obvious to me when Alice tells Thomas that maybe the demarcation problem has more to do with the institutional context where scientists trade information and debate ideas than with a set of distinctive procedures and attitudes held by individual scientists). To be sure, I might be completely off here, but by being familiar with some of Ladyman's work I was left with this impression.

The only thing that really bothered about the book is that it ended quite abruptly, like another reviewer has pointed out. A nice summary/conclusion would be in order for a book like that. But anyway, again, the book is an amazing introduction today as it was when originally published. I highly recommend it to anyone interested in getting to know what philosophy of science is about, and it's likely that I will re-read it (if not all, a good portion of it) in the future!

WarpDrive says

A good and pretty comprehensive introduction to the subject, at undergraduate level.

All main philosophical positions are explored with precision, concise clarity and competence.

All classical issues in traditional philosophy of science (*the problem of induction, falsificationism, the demarcation problem, under-determination, theory change, inference to the best explanation, the role of explanation in scientific theories etc.*) are treated in a succinct, nuanced and engaging manner.

I agree with the author's sympathy towards scientific realism, although I would have appreciated a much deeper analysis of structural realism, which is only touched at the very end of the book, and which is in my view the most promising position in the light of the findings of contemporary science. On the other hand, I liked the detail with which the author addresses the constructive empiricism challenge of van Fraassen, which I reckon is the most comprehensive and credible criticism of scientific realism, at least of its more naive forms. I also liked how extensively the issue of "pessimistic meta-induction" is discussed in a balanced and comprehensive manner; it is the most critical issue faced by scientific realism, and as such it does deserve a deep analysis.

The author is one of the best modern philosophers of sciences, but like most philosophers he occasionally does show only an approximate (at best) scientific understanding of contemporary science, for example when he implicitly accepts a teleological reading of the least action principle.

Overall, it is a fairly good treatment of the subject at introductory level, fairly balanced and comprehensive, highly accessible and informative.

3.5 stars rounded up to 4.

Mahmood666 says

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Stinger says

Thorough and well organized, Ladyman goes through the challenges to scientific realism methodically. At times, I thought this book might be better labeled "An Apologetic for Scientific Realism." The author does not shirk any challenges to realism, but his bias is clear. I enjoyed the back and forth of the fictional characters who are pro and anti scientific realism; this was a useful and witty literary device. The author ends the book abruptly, seeming to have run out of steam upon the topic which I as the reader shared.

Ioannis Savvas says

Ε?ναι ?σως το αρτι?τερο βιβλ?ο επιστημολογ?ας που ?χω διαβ?σει. Αναλυτικ?, απλ?, κατατοπιστικ?. Τρεις ε?ναι οι παρατηρ?σεις μου:

- Ο υποκαθορισμ?ς στις θεωρ?ες της επιστ?μης υποψι?ζομαι ?τι ε?ναι ?να φιλοσοφικ? κατασκευ?ασμα και εξυπηρετε? μ?λλον τον υποκαθορισμ? των φιλοσοφικ?v εννοι?v. (Κ?που μ?λιστα το υπαιν?σσεται και ο ?διος ο συγγραφ?ας.)
 - Η αναφορ? στις νευροεπιστ?μες ε?ναι ελ?χιστη ?ως αν?παρκτη. Η σ?λληψη και η αν?πτυξη των επιστημονικ?v θεωρι?v δεν μελετ?ται ποτ? απ? τη σκοπι? του ανθρ?πινου εγκεφ?λου και της εξελικτικ?v του πορε?ας στην ιστορ?α.
 - Το βιβλ?ο αναφ?ρεται σχεδ?v αποκλειστικ? στη Φυσικ?. Η αναφορ?ς στη Βιολογ?α ε?ναι ελ?χιστες.
-

Andrew Langridge says

Science is such an important part of our lives, and yet we find it so difficult to explain what gives it its power. We have so many examples of scientific advance in operation and yet we seem unable to tell something apparently so simple about it; namely whether reality is being uncovered by science or whether it is being constructed. A proper humility is required to approach this debate. Entrenched positions are routinely undermined, and Ladyman's admirable book does plenty of undermining. He sets out the arguments in a fair, lucid and logical style, thereby making a difficult subject seem ever so slightly simpler. Always the mark of a good book.

