

David Landy. *Hume's Science of Human Nature: Scientific Realism, Reason, and Substantial Explanation.* Routledge 2017. 266 pp. \$145.00 USD (Hardcover ISBN 9781138503137).

David Landy starts his book by delineating the received view of David Hume's position on scientific explanation. He thinks that many still hold the view, thanks to the program of logical positivism and empiricism that Hume subscribes to the Deductive-Nomological (DN) account of scientific explanation. Then he assimilates the DN account with Graciela De Pierris' Newton-inspired inductivist reading. Landy has some sympathies toward the New Humean reading about explanation. The unobservable reality of causal powers and forces is productive to the manifest phenomena. Landy clarifies that he disagrees with the New Humeans, because he accepts knowledge about the 'descriptive content of such substances.' Accordingly, a central claim of his book is 'that Hume's view occupies a middle ground on the spectrum between De Pierris's "inductivist" interpretation of him and that of the New Humeans.'

For Landy, Wilfrid Sellars' philosophy of science is of the utmost importance. He emphasizes Sellars' notion of perceptible models in explanation. The example provided repeatedly in the book considers Niels Bohr's model of the atom. Bohr took the solar system as a perceptual model for the microstructure of matter. This familiar model is analogous to the postulated entity of the scientific theory. There are both determinate similarities and differences between the familiar case and the microscopic entities: electrons are kept in their orbits by electromagnetic, not gravitational forces; the orbits are circular, not elliptic; elementary particles do quantum jumps, planets do not, and so on. We need to assume some type of analogy between the observable phenomenon (emission spectrum) and the model depicting the underlying unobservable reality (the atomic structure).

Landy stresses that his Hume is a realist about the representations of the science of human nature ('nature, powers, essence, or substance of the human mind'), and posits this science uses (differentiation of 'impressions and ideas, simples and complexes, the faculties of memory, imagination, and reason'). Interestingly, Landy connects Miren Boehm's dependence argument in her foundational project reading with Sellars' scientism. Sellars' famous dictum 'science is the measure of all things' resonates with Hume's insistence that all special scientific disciplines are dependent on his science of humanity. Therefore Hume's own science arbitrates ultimately what exists and not.

After the Introduction, the book proceeds in six chapters. The first treats impression-idea and simple-complex distinctions. Landy considers both to be the *explanans* of our thinking and experiencing, the *explicandum*. He uses the distinctions as case studies of Hume's scientific realism. As our perception (e.g., visual) is always complex (mixed with other sensations, and also spatial and temporal dimensions) we do not in fact perceive perfect simples. They are instead posits or theoretical entities. Hume's science of humanity—together with a nominalist background metaphysics—explains the vast array of thoughts and experiences we have in terms of these simples. Likewise, the difference between impressions and ideas is explained by positing impressions as mental originals.

The second chapter centers around De Pierris' Newtonian-inductivist reading of Hume's philosophy of science. Landy starts with a qualified approval of her position: Lockean primary qualities and *a priori* mathematical ideal of inquiry should be discarded, but induction remains a valid form of inference. Yet, Landy disagrees that any of this amounts to an inductivist conception of science. In his view, De Pierris' work does not block in principle unobservable entities, perceptible models and the quest for ultimate explanatory principles.

In Chapter 3, Landy proceeds to Hume's qualified approval of substance, the proper language of science, and the real distinctions between imagination, memory, and reason. Hume rejects substance if it is considered as a reference 'to an unknown *something*,' in which the qualities, properties or powers putatively inhere. Landy argues that Hume subscribes to (i.e., is not agnostic about) a certain faculty psychology. This countenances legitimate differentiation between memory, imagination, and reason. Accordingly, experience is not subsumed under a somewhat irrational faculty of imagination, and reason is mixed with experience. This allows Hume to reason about the underlying causes of experiential regularities, as mere experience does not mark an end to our investigations.

The fourth chapter focuses on the problem of external existence. Landy's realist rendition must somehow take mind-independent existence on board. But he won't side with Strawson on this matter, because Landy sees him as allowing a reference to an undescribable entity. This would be against Hume's denial of substance as an unknown something. The posited unobservables need to resemble perceptual models in some determinate way. The rest of the chapter advances an intricate semantics to explain Hume on scientific representation.

Chapter 5 assesses the notions of necessary connection and substantial explanation. The initial worry is whether Hume's discarding of necessary connection leads to 'regularities all the way down,' as Landy puts it. Invoking a substantial level of explanation is consistent with manifest regularities without a need of necessity. For example, the regularly behaving gases subject to the ideal gas law are explained by the kind of beings that compose the gas, namely molecules. The intrinsic features of the compounded atoms explain the macroscopic behavior of gases—the gas law does not need to be a physical necessity. Landy adds that Hume's denial of necessary connection is not primarily based on epistemic or metaphysical considerations, but on the argument that the term 'necessary connection' does not represent anything. The words 'necessary connection' are 'words without any clear and determinate ideas' annexed to them.

The final chapter considers an exception to the otherwise explanatory successful science of humanity. Hume cannot provide a model that explains how different perceptions are connected to form a hypothetically discrete and synchronic personal identity. We have no evidence of an underlying self. In this case we have to do with mere observations. This chapter is well motivated as it corroborates Landy's main thesis. Hume is disappointed in not explaining the substance of the mind. This is precisely because his science of humanity is an explanatory, rather than merely predictive or descriptive, endeavor.

Coda. The scientific realist interpretation of Hume is truly original. The book is a great contribution to Hume scholarship, as well as to the history of philosophy of science. My evaluation of the book is hence highly positive. Let me still conclude with three critical remarks:

1. At first sight, the framing of the book strikes me as odd. Landy assimilates early positivism (the movement 'at the turn of the previous century') to the DN model. But Carl Gustav Hempel and Paul Oppenheim explicated the model in their 1948 paper *Studies in the Logic of Explanation*, much after the initial positivist credos were formulated. Early logical positivism was made considerably more moderate in its transition to logical empiricism (giving up the translation thesis, substituting the principle of verifiability for the principle of testability, considering meaning holism, etc.). The DN model certainly has largely been dismissed because, for example, it fails to account for the asymmetry problem. But this criticism is separate from the demise of early positivism. Landy goes on to claim that De Pierris' rendition of Hume rests on a type of 'DN-model-reading' of Newton. This juxtaposition also seems strange, as De Pierris is referring to Newton's inductivist scientific methodology, not to his

arguments about what explanations in natural philosophy ought to be. Newton might subscribe to some version of the DN model—Kepler’s laws are subsumed under the law of universal gravitation, for example—but this is not spelled out in the subsequent sections of the book. And even if this were true, it would not establish that any scholar is claiming that Hume is committed to the DN model.

2. I found the scientific realist reading of Hume’s science of humanity very convincing. But why not realism all the way down? The book does not explicitly make this claim, but Landy does entertain the idea that Hume accepts, among others, the explanatory role of air particles via a perceptible model (say, by picturing air particles as billiard balls) (77-78). Granted, Hume’s copy principle does not rule out a definite microscopic constitution of bodies. But Hume’s science of human nature deals with the contents of perceptions, like the difference in visual perception of distinct colors. Hume does not explain, or intend to explain, the physical composition of light. He is not committed to any determinate lengths of rays of light or light waves. This would still be requisite to explain the spectrum of colors. In turn, we would need this for an answer to why we perceive distinct colors. I agree with Landy that eschewing *explanans* like lengths of light rays or waves is an impoverished understanding of the theoretical aspects of science. But it remains unclear whether the problem is in Hume’s philosophy of science or our interpretation of it.
3. The book contains a lot of repetition. It ends up being unnecessarily long. Personally, I would have preferred a more concise exposition.

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