

Louis Groarke

An Aristotelian Account of Induction: Creating Something from Nothing.

Montreal & Kingston: McGill-Queen's University Press
2009

467 pages

CA\$34.95/US\$32.95 (paper ISBN 978-0-7735-3596-1)

CA\$95.00/US\$95.00 (cloth ISBN 978-0-7735-3595-4)

This 49th volume of the McGill-Queen's 'Studies in the History of Ideas' is devoted to the topic of induction. More specifically, it tackles the problem of induction as this is debated in contemporary philosophy; and as the title suggests, Groarke thinks that an Aristotelian account of induction can provide a solution to it. Since David Hume is considered the one who has bequeathed this problem to contemporary philosophers, Groarke's Aristotelian solution amounts to an invitation to take a step back into the philosophical past. After presenting a summary of the book's contents, I will delve into the significance of this invitation, which may be considered either revolutionary or regressive.

After an introductory chapter, Chapter 2 presents the modern view of induction as an argument form. It outlines Hume's skeptical critiques which show the inductive argument form to be invalid, thereby generating the problem of induction. Groarke exposes the assumptions guiding both Hume and contemporary philosophers in their attempts to deal with this conundrum.

Chapter 3 offers a response to Hume's attacks through a study of Aristotle's views on inductive argumentation. Groarke examines Aristotle's example of the inductive syllogism in *Prior Analytics* B 23. Reviving the logical relation of 'convertibility' and using the device of adding hidden or implicit premises to make an argument valid (a device used by deductivists in contemporary argumentation theory), Groarke shows how there can be valid inductive arguments.

Chapter 4 further examines Aristotle's theory of induction by identifying five 'levels' of induction in his writings. By distinguishing these different levels Groarke expands the notion of induction beyond the inductive argument form to include a form of induction that involves 'a non-discursive mode of intuitive insight or intellection' (19). In fact, only the first two levels of induction involve a kind of insight, while the other three levels involve actual arguments. The value of identifying five levels—kinds, really—lies in expanding our conception of induction to include kinds other than the enumerative induction based on statistical inference and mathematical probability so prevalent in contemporary philosophy.

The topic of Chapter 5 is the nature and role of induction in moral deliberation. An examination of moral reasoning as described in relevant passages in the *Nicomachean Ethics* establishes, according to Groarke, a parallel with Aristotle's account of theoretical science (described in Chapters 3 and 4). In both cases there is an inductive-deductive model at work: the 'first principles' of both science and morality find their source in inductive reason, and the first principles constitute the starting-points of deductive reasoning.

Chapter 6 uses Sir William Hamilton's formal notation as a tool for evaluating inductive (and deductive) syllogisms. The intent is to provide a formal treatment of the concept of convertibility (introduced in Chapter 3) so fundamental to Aristotle's understanding of the inductive syllogism.

In Chapter 7, Groarke takes a historical look at a handful of selected philosophers, namely, Plato, Aristotle, Aquinas, and Pascal, with the aim of showing how each of them recognizes two kinds of rationality. The first is a non-discursive rational insight, the most proper kind of induction (first level), whereas the second is rational discourse, reasoning. The former grounds the latter by grasping the first principles from which reasoning begins. Descartes' account of the natural light of reason and Lonergan's account of insight are also described, but only for the sake of showing how they differ from the tradition represented by the other thinkers: their views of rationality lack the foundational non-discursive kind of reason associated with induction.

Chapter 8 provides an inspirational comparison between Aristotle's account of the mind's creative ability to make concepts (based on the infamous passages of *On the Soul* G 4-5) and Michelangelo's descriptions of artistic creation. The book's subtitle, *Creating Something from Nothing*, most aptly refers to this chapter, in which Groarke attempts to show how the mind 'makes' mental representations and concepts, thereby giving birth to knowledge and understanding by transforming sense experience.

The final chapter considers the epistemological status of induction and the role it plays in modern science. A variety of scientific topics are covered, including the law of non-contradiction, a fundamental first principle of thought putatively put into doubt by quantum mechanics (and by the liar's paradox), the new essentialism in biology, and the fit between contemporary theory of evolution and Aristotle's views on species or natural kinds.

As one might surmise from this summary, Groarke is ambitious. His book sweeps across a broad range of fields: logic, argumentation theory, moral theory, science, art, cognitive psychology, epistemology, and metaphysics. He informs the reader that each chapter can be read on its own, though by reading all of the chapters together one does get a better sense of the general thrust of the author's argument throughout the book. The heart of the argument is perhaps summed up best when the author states: 'The traditional

[i.e. Aristotelian] account solves the problem of induction in the following way. First, it accepts the legitimacy of human intelligence. Second, it divides the world into natural kinds' (375).

Regarding the first claim about human intelligence, Groarke argues that human rationality cannot be reduced to or identified with argumentative reasoning, for it requires another kind of rationality. All reasoning starts with first principles which are unquestioned, indubitable, infallible, and simply not argued for. These first principles are acquired by inductive reason, that is, a capacity for intelligent insight which is a non-discursive 'mental illumination,' 'a leap of understanding,' 'a radical leap of creativity,' and so on. This ability to perceive and understand first principles is human intelligence proper (348; *passim*); and according to Groarke it is missing in contemporary philosophy due to its identification of reason giving as the hallmark of human reason.

Regarding the second claim about the world, Groarke asserts that 'both ordinary experience and scientific inquiry demonstrate that [the world] has deep, abiding regularity' (375). There are relatively stable things with particular natures. Things undergo changes and motions that are relatively predictable. Nature involves the notion of 'metaphysical necessity'. The perception of this necessity grounds the insight that occurs in induction. Again, in Groarke's words: '[I]nduction is an interaction between the mind and the world. The *world* possesses a definite nature; the human *mind* possesses a definite nature; and the interaction of the two results in principles that follow necessarily' (367; italics in original).

In brief, induction is the transformation of sense perception and experience into knowledge. The inductive process is a creation of conceptual thought and universal knowledge that goes beyond the limited data of experience. This creation of first principles of thought is from nothing because the knowledge expressed by such principles depends on the mind's ability to have an intelligent insight, without which no reasoning would be possible. Yet, (some of) those first principles correspond to the natural kinds of existent things, so that our reasoning can be about the world.

Groarke's argument is polemical and partisan. His construction of an Aristotelian account of induction is both an argument against the orthodox empiricist account of induction which prevails in contemporary philosophy and an argument for an alternative account, which, ultimately, dissolves the problem of induction. Yet he avoids argument from authority. He takes the time to treat his opponents fairly, first presenting their views before criticizing them. He also avoids following Aristotle slavishly. As he puts it, his account is intended to be '*ad mentum* Aristotle' (14). His concern is not so much historical as it is critical; that is, his reliance on the history of philosophy is to find whatever is well said in the Aristotelian tradition regarding induction and constructing a viable account of it as an alternative to contemporary accounts. His dissatisfaction with contemporary approaches pushed him to this other tradition.

It is certain that scholars of the Aristotelian tradition will find Groarke's reading of Aristotle disputable and the treatment uneven at times. His interpretation of Aristotle's active and passive "minds" ('intellects' would have been better) most definitely constitutes one area for debate. However, there are many judicious and very justifiable claims regarding certain aspects of Aristotle's philosophy. I think his understanding of *Prior Analytics* B 23 and *Posterior Analytics* B, where the relationship between demonstration and definition is explained, demonstrate deep insight into the texts, although I would not accept every point made. Similar remarks could be made regarding Groarke's treatment of his opponents outside the Aristotelian tradition.

All in all, I think Groarke argues successfully both against the modern conception of induction and for a much more robust account built upon the Aristotelian tradition. At the very least, by stepping outside the modern framework initiated by Hume and the assumptions inherent to it, he has broadened the range of discussion about the problem of induction. This shift in the philosophical framework alone ought to constitute enough of a revolution to awaken some contemporary philosophers working on this problem from their dogmatic slumbers; and this is Groarke's aspiration.

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