

## BOOK REVIEW

*Peirce's Theory of Scientific Discovery: A System of Logic Conceived as Semiotic* (Peirce Studies No. 3, Institute for Studies in Pragmatism, Lubbock, TX). By Richard Tursman. Bloomington and Indianapolis: Indiana University Press, 1987. 160 pp. \$25.00.

My introduction to abductory principles was through Donald Brenner at Texas Tech (ca. 1975) when he referred me to Stephenson's "Philosophical Credo" (1961) and Fann's *Peirce's Theory of Abduction* (1970). Now, more than a dozen years later, I suspect that most of us are aware of the importance of Peirce's principles (e.g., abduction) in Q methodology and in future discoveries in sciences studying self and subjectivity.

Tursman's book had already sat several months on my shelf, unread, preliminary to an intended thorough study of logic (abductory principles), Peirce, *Pragmatism*, and quantum theory, when I was asked to review it. As it turns out, it was a pregnant place to begin my study.

Tursman asserts in the Preface that Peirce's system was not a philosophical system, but a system of logic, intended by Peirce to encompass the burgeoning world of scientific discovery and to bridge any gaps between prior forms and classifications of traditional logic and the world of scientific discovery. Next, in his Introduction, Tursman biographically summarizes and lists some of the milestones in Peirce's studies up to 1885, when Peirce flatly declared his major purpose in life "to set forth the true nature of logic, and of scientific methods of thought and discovery" (Tursman quoting Peirce from *The New Elements of Mathematics* by Charles S. Peirce,

C. Eisele, ed. (1976)). This book was cited often by Tursman, in addition to Peirce's *Collected Works* and Peirce's manuscripts, which are kept at the Institute for Studies in Pragmaticism at Texas Tech University, Lubbock.

Tursman notes also that Peirce completed portions of a treatise, proposing the title *Reason's Conscience: A Practical Treatise on the Theory of Discovery Wherein Logic Is Conceived as Semiotic*. At this juncture, Tursman begins a thorough description and explanation of Peirce's tri-categorical system of logic (speculative grammar, critical logic, speculative rhetoric), including Peirce's modal, alternative classification (originalian logic, obsistent logic, and transuational logic, which concern possibilities, actualities, and probabilities, respectively). Tursman's book contains eight chapters with three devoted to speculative grammar, two to critical logic, and three to speculative rhetoric.

Even though Peirce did not use the modal terms after around 1902, it is suggested that he had doubts about whether his system of logic should be conceived as semiotic. Tursman provides a thorough, informative chapter, "Speculative Grammar (1)," in which he shows the evolution from "retroduction" and "abduction" to originalian logic, mentioning that at some point between 1883 and 1906 Peirce made a transition toward a more accurate position, and that his focus turned to the "emergence of new ideas." Tursman then shows how, according to Peirce, "colligations" of ideas occur in the three areas of science to produce new ideas.

Tursman does a commendable job in showing how Peirce derived the logical categories, the 10 categories of signs, and his semiotic theory which includes abduction. This derivation begins with Peirce's concept of an exact logic and his theory of relations, wherein the *illative relation*, rather than the identity relation, is central. Peirce's diagrammatic logic is then employed to show how he derived the notions of thirdness and how he employed the process of *prescission* in developing his theory of signs. I cannot adequately summarize all the major points here. The book should be read by those interested in clarifying their understanding of Peirce's theories or seeking an introduction to them.

Tursman argues throughout as a logician, and he includes some of his and Peirce's examples of mathematical and "diagrammatic logic." Tursman also includes examples to describe how Peirce arrived at the concepts of further determination, prescission, the degeneration from thirds to seconds and firsts in his exact logic and theory of relations; corrolarial, probable and theorematic deduction; qualitative and quantitative induction; semiotic constraints on natural laws; constraints on the mind-body interface; and constraints on the neighborhood of the atom.

Peirce intentionally developed his systems so that physicists might be able to view the unseen world (of atoms) by indirectly viewing them through the world of ideas. Hence Peirce developed phaneroscopy and phanerochemistry to study the system of ideas and its ordering. Tursman interprets or restates Peirce's results in the following chapters on "Speculative Grammar" in terms of phanerochemistry and semiotic.

Tursman distinguishes originalian logic (which merely recognizes three forms of reasoning--deduction, induction, abduction) from Peirce's critical logic (which further determined that there were three kinds of deduction, two kinds of inductions, and one kind of abduction). Tursman's chapter on "Critical Logic (1)" compares, contrasts, and functionally describes these classifications. This chapter also has a good treatment of the significance and place of the *illative relation* in Peirce's system.

Tursman's chapter on "Critical Logic (2)" covers qualitative and quantitative induction as weaker arguments in the hierarchy which has to be supported by presuppositions. Tursman's final three chapters on "Speculative Rhetoric" deal with the use of originalian logic and abduction to map general constraints on ideas, using truth indicators from application of critical logic. He then takes this as a basis where "semiotic action is dominant," and then considers constraints on the manifestations of mind to discover isomorphisms between thought and nature.

In the chapters on "Speculative Rhetoric," Tursman takes Peirce's system, which now includes the numerous constraints Peirce determined for the system of ideas and relations, and makes the transition to discovery in the unknown and unexperienced,

which are "conceivable...within the natural classes of signs." Tursman's last chapter contains five sections on constraints which have been placed on nature, including considerations of constraints on quantum mechanics and the atom. Tursman ends the text with suggestions for the future that calls for thorough review of Peirce's system of logic, mathematics, and the "idioscopic sciences," and for hypotheses to be generated by adherence to Peirce's system, which, if not used, may result in failure to discover such hypotheses.

In the penultimate paragraph, Tursman speculates that the reader may be "astonished at the conjecture" that isomorphisms "might obtain between thought and the world of quantum mechanics." For those Q methodologists who are already well into the understanding of quantum theory, this speculation may indicate that the book does not have the sophistication they require. The ultimate sentence (paragraph) asserts that the best name for Peirce's theory of discovery, logic or semiotic is *Pragmatism*. This is the book's *only* reference to *Pragmatism*.

Tursman refers the reader to many other sources for information on subjects he did not cover. He indicates that K-O. Apel's *Charles S. Peirce: From Pragmatism to Pragmaticism* (1981) might interest readers seeking more information on *Pragmaticism*, the concept of "communities of interpretants," and social applications of Peirce's system of logic. For his own part, Tursman does not vary from the premises and topics of his chapters.

Tursman has authored a readable, succinct, cohesive, and instructive book consistent with the focus indicated by the title. Scientists studying self and subjectivity may find this book useful for purposes of developing a method or system of logic for their efforts, or as a starting point in studying or emulating Peirce, one of whose epigrammatic quotes (in Tursman) is of particular salience: "This is the age of methods, and the university which is to be the exponent of the living condition of the human mind must be the university of methods."

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