Reasoning and the Logic of Things

Charles Sanders Peirce

Edited by Kenneth Laine Ketner

With an Introduction by

Kenneth Laine Ketner
& Hilary Putnam

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The Cambridge Conferences Lectures of 1898

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Cambridge *Conferences*

REVISED ANNOUNCEMENT

Mr. CHARLES SANDERS PEIRCE

of MILFORD, *Pennsylvania*

WILL give a course of Eight Class Lectures on REASONING AND THE LOGIC OF THINGS, at the rooms of the CAMBRIDGE CONFERENCES, Studio House, 168 *Brattle* Street, on Monday and Thursday Evenings in February and March, 1898, at eight o'clock.

THE SPECIAL TOPICS AND DATES WILL BE AS FOLLOWS

1898

February 10. Philosophy and the Conduct of Life.
February 14. Types of Reasoning.
February 17. The Logic of Relatives.
February 21. The First Rule of Logic.
February 24. Training in Reasoning.
February 28. Causation and Force.
March 3. Habit.
March 7. The Logic of Continuity.

THE COURSE herein outlined will be of UNUSUAL INTEREST AND VALUE to students and teachers of Philosophy. It is hoped that many will avail themselves of the privilege of attending.

In order to render the Lectures available to all who may desire to hear them, the price of admission has been placed at less than the usual class rates:

COURSE TICKETS . . One Dollar Fifty
SINGLE ADMISSION . Twenty-five Cents

Application for admission to the Class Lectures should be made to the Director of the *Conferences*, Dr. LEWIS G. JANES, Studio House, 168 *Brattle* Street, Cambridge, Mass.

Pages i and ii: Advertisement for Peirce's lectures at the Cambridge Conferences. By permission of the Philosophy Department and the Houghton Library, Harvard University.

Walker Percy

Doctor Humanitatis

Acknowledgments

We are grateful to the Philosophy Department of Harvard University for permission to publish from the Peirce Papers held at the Houghton Library. Many of Peirce's letters cited here are from the William James papers also in the Houghton Library, and we extend our thanks to Mr. Alexander R. James for permission to use them.

Berti Ketner has given invaluable assistance in proofreading, and Arthur Stewart aided in manuscript preparation. We are grateful for the kind assistance of Ms. Margaret Wittenborg of Cambridge, Massachusetts. Both Carolyn Eisele and Max Fisch have been very generous with their advice, guidance, and encouragement, without which the project would not have progressed.

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Philosophy—provided the fiscal basis for this large and stimulating conference. This volume is in part a result of that congress.

Finally, we gratefully acknowledge the continuing support of the Institute for Studies in Pragmaticism by the Claude Ventry Bridges Memorial Fund.

K.L.K.
H.P.

Editorial Procedures

The texts here are from the Charles S. Peirce Papers and the William James Papers at Houghton Library, Harvard University. Editorial work was based upon the archival copies of the Peirce papers housed at the Institute for Studies in Pragmaticism at Texas Tech University. From these resources the lectures as presented were reconstructed. The principal secondary guide has been the Peirce/James correspondence, relevant parts of which are quoted.

A number of references internal to the lecture manuscripts themselves strengthen the hypothesis that these particular texts constitute the actual lectures more or less as delivered. Also, there are timing marks on many of the manuscripts which suggest that Peirce read them aloud against a clock to ascertain whether each piece could be delivered in one hour. Those marks have not been reproduced here.

The aim was to produce a study edition, not a critical text. Therefore, the editorial apparatus has been minimized. The following conventions have been observed. Any material in square brackets, "[ ]," is an editorial insertion, included when it seemed obvious that Peirce had made a simple oversight. Because this was a lecture series, Peirce gave no footnotes. Editorial comments appear as numbered notes and are gathered at the end of the book. No attempt has been made to show all of Peirce's deletions—only those that seem significant have been included; they appear in the endnotes and are indicated with angle brackets, "⟨ ⟩." We include in particular some of his longer deletions, which often provide useful supplemental material. Alternative drafts are available for some lectures, and extracts from those we regard as helpful are

presented in the endnotes. Dubious or garbled words are surrounded by pairs of question marks, thus: ??word??. Ampersands are transcribed as "and," but Arabic numbers are not spelled out as words. Peirce's spelling and punctuation style are followed, not modernized, but some obvious misspellings have been silently corrected.

Abbreviations

The following commonly accepted abbreviations are used to refer to the standard editions of Peirce's works.

CP *Collected Papers of Charles Sanders Peirce,* edited by C. Hartshorne, P. Weiss (volumes 1–6), and A. Burks (volumes 7–8) (Cambridge: Harvard University Press, 1931–1958), followed by volume and paragraph numbers

HP *Historical Perspectives on Peirce's Logic of Science: A History of Science,* edited by Carolyn Eisele, 2 volumes (Berlin: Mouton-DeGruyter, 1985), followed by volume and page numbers

MS Peirce manuscripts in Houghton Library at Harvard University, followed by a number identified in Richard R. Robin, *Annotated Catalogue of the Papers of Charles S. Peirce* (Amherst: University of Massachusetts Press, 1967), or in Richard R. Robin, "The Peirce Papers: A Supplementary Catalogue," *Transactions of the Charles S. Peirce Society,* 7(1971):37–57

N *Charles Sanders Peirce: Contributions to* The Nation, edited by Kenneth Laine Ketner and James Edward Cook, 4 volumes (Lubbock: Texas Tech University Press, 1975–1987), followed by volume and page numbers

NEM *The New Elements of Mathematics by Charles S. Peirce,* edited by Carolyn Eisele, 4 volumes in 5 books (The Hague: Mouton, 1976), followed by volume and page numbers

PW *Semiotic and Significs: The Correspondence between Charles S. Peirce and Victoria Lady Welby,* edited by Charles S. Hardwick (Bloomington: Indiana University Press, 1977), followed by page numbers

W *Writings of Charles S. Peirce: A Chronological Edition,* edited by Max H. Fisch et al. (Bloomington: Indiana University Press, 1982–), followed by volume and page numbers

In addition, items published by Peirce during his lifetime are referenced according to a numbering system in *A Comprehensive Bibliography of the Published Works of Charles Sanders Peirce,* by Kenneth Laine Ketner, second revised edition (Bowling Green: Philosophy Documentation Center, 1986). For instance, "On the Algebra of Logic" of 1880 is *P* 167.

Contents

Introduction: The Consequences of Mathematics

Kenneth Laine Ketner and Hilary Putnam

The general title of Charles Sanders Peirce's 1898 Cambridge Conferences lectures was *Reasoning and the Logic of Things*. If it were within our power to alter the title, we would, for several good reasons, have it read *The Consequences of Mathematics*.

The first of those reasons is that initially, when first asked to prepare a set of Cambridge Conferences lectures, Peirce wanted to use material about which he had been writing—a study of the "logic of events." For this project, a somewhat different one from the lectures as finally presented, the proposed title would be ideal.

In advance of the invitation from Cambridge, Peirce had prepared a number of provisional lectures for that other project, plus other drafts on somewhat related topics. These ultimately were not presented in 1898. A few extracts from the abandoned "logic of events" project were placed in several separate parts of *Collected Papers of Charles Sanders Peirce*. Also, parts of Lecture One ("Philosophy and the Conduct of Life"), along with some of the earlier drafts, were published in 1931 as a chapter in *CP* under the inaccurate title "Vitally Important Topics" (at 1.616–677). The editors of *CP* also inferred that Peirce gave some lectures called "Vitally Important Topics," but (as we shall see) he did not. In the somewhat disorganized way these items were presented in *CP*, they have had considerable influence—some of which has been negative, for students of the *CP* often find the material in that chapter puzzling. Their questions are understandable, because the editors omitted significant parts. Extracts from either drafts or delivered lectures in his 1898 Cambridge Conferences series appeared at *CP* 6.1–5, 185–213,

214–221, 222–237; 7.468–517. It would be useful also to publish the unused drafts from the tangled developmental period of the actual lectures in a separate volume in an accurate form, along with materials showing how they are generally related to his Cambridge Conferences project. The availability of these pieces would resolve some questions inadvertently created by the expurgated versions of the unused drafts that appeared in *CP*.

Peirce's abandonment of those drafts is related to the second reason we would, if we had our way, call the series *The Consequences of Mathematics*. When William James first proposed these lectures, Peirce wanted to present a rather technical set of topics—the "logic of events"—for which he planned to draw heavily upon mathematics and mathematical logic. That would have been second nature for him, because his most original intellectual contribution, his "special business," was "to bring mathematical exactitude, [meaning] modern mathematical exactitude into philosophy, and to apply the ideas of mathematics in philosophy."[1] But James urged that mathematics and complicated logic be sacrificed so that a larger audience could be addressed. Yet, the Cambridge Conferences lectures constitute, despite or (more likely) because of William's advice, an admirable popular introduction to Peirce's "special business"—an application of mathematics to philosophy. Nevertheless, Peirce's friend encouraged him to explain himself in a nontechnical way, insofar as possible. So the second reason for the dream title is that Peirce's philosophy is a consequence of his mathematics, and these lectures provide one with a means to enter into his way of thinking on that topic.

But, in the third place, the phrase "consequences of mathematics" has a deeper meaning. Peirce argued that, epistemologically at any rate, mathematics was an observational, experimental, hypothesis-confirming, inductive science that worked only with pure hypotheses without regard for their application in "real" life. Because it explored the consequences of pure hypotheses by experimenting upon representative diagrams, mathematics was the inspirational source of the pragmatic maxim, the jewel of the methodological part of semeiotic, and the distinctive feature of Peirce's thought. As he often stated, the pragmatic maxim is little more than a summarizing statement of the procedure of experimental design in a laboratory—deduce the observable consequences of the hypothesis.[2] And for Peirce the simplest and most basic laboratory was the kind of experimenting upon diagrams one finds in mathematics. (He understood the word *diagram* broadly, encompassing visual, tactile, or audio entities used to model a set of relations under

study.) Mathematics as a study of pure hypotheses is a study of consequences, the method of which study was used by Peirce to develop a number of wider consequences in other sciences, most notably philosophy. Thus the third sense of our ideal title could be transmitted as "the ways—which mathematicians use—of studying consequences," especially as they are exemplars of the simplest and purest instance of laboratory method.[3]

This edition, for the first time anywhere, makes available the entire set of lectures. And it is fortunate that we have them at last, for they offer a fine, somewhat popular introduction (in the sense used by James) to Peirce's overall later philosophy. We know of no other single work in the Peirce corpus of which that statement is true.

It is strange that Peirce, who is internationally regarded as among the best American intellects, is not known by the general public and only in a limited way by most academics. We agree with Walker Percy's terse prophecy: "Most people have never heard of him, but they will."[4] This set of lectures offers to both expert and layperson the most convenient and complete means for gaining access to those ideas and insights in Peirce's philosophy which are especially relevant to a number of contemporary issues.

Our goal has been to prepare a study edition of the lectures arranged so that specialists and nonspecialists alike may find them useful and accessible.

A Portrait in Miniature

The Peirce family was one of the brightest and wealthiest in Puritan Salem at the peak of its splendid commercial seafaring era. Later generations of Peirces, like many prominent families of the time, such as the Cabots and the Lowells, migrated from the "provinces" of the Commonwealth toward the orbit of the capital. Charles's grandfather, Benjamin Peirce (1778–1831), had been a member of the Massachusetts legislature and, more important for this part of the family's history, Librarian of Harvard from 1826 until his death. He also wrote a history of Harvard which was published posthumously. With his move from Salem to Cambridge and Harvard, there began a long association between the university and the Peirce family, which, as the saying goes, came to have "blood the color of Harvard Crimson."

Benjamin Peirce, Jr. (1809–1880), was a towering figure for most of his forty-nine-year career on the Harvard campus. As Perkins Pro-

fessor of Astronomy and Mathematics, he had influence throughout scientific and political circles in this country and the world. If the position of Scientific Adviser to the President had existed in the mid-nineteenth century, Benjamin Peirce, Jr., would have been the incumbent. His wife, Sarah Hunt Mills Peirce, was the daughter of United States Senator Elijah Hunt Mills, founder of a noted law school of which Franklin Pierce, the fourteenth president of the United States, was an alumnus.

Charles Sanders was the second of the Peirces' five children. His older brother, James Mills, was professor of mathematics and Dean of the Graduate School at Harvard over a long career. One younger brother, Benjamin Mills, died at age twenty-six. The surviving younger brother, Herbert Henry Davis, achieved a distinguished career as a United States diplomat after marrying into a wealthy New England family. Helen Huntington Peirce Ellis was the darling daughter within this family of overachieving men.

Charley, as he came to be known, was born 10 September 1839 in a house on Mason Street that is still standing. The Peirce home was but minutes away from Harvard Yard, closer still to what became Radcliffe Yard. But about 1844 Harvard built on University property a special house for Professor Peirce on Quincy Street, at a site where Sever Hall now stands. Here Charley's father hosted an exciting salon, the informal members of which would constitute a *Who's Who* of the leading political, intellectual, and literary figures of the time. In reflecting late in life upon growing up in this atmosphere, Peirce recalled how little he had seen in his youth of "the ordinary sort of person."

Charley's genius was recognized early by his family and their circle. Benjamin took a special personal interest in his son's education, emphasizing independent, self-directed study and sometimes keeping him up all night in exercises to develop his concentration. In spite of this training (or perhaps better, given the rote pedagogical style of the day, because of it), Peirce had a mixed academic record as he made his way through various private schools, the Cambridge High School, and Harvard, where he was graduated at the age of twenty in the class of 1859.

As an aide to his father's project within the federal Coast Survey, Charley avoided the Civil War. It was a war which the Peirce family generally opposed, contrary to the sentiment of their neighbors in Cambridge. In 1867, when Benjamin became Superintendent of the Survey, Charley acquired the low-sounding but high-placed position of Assistant in charge of gravimetric survey. Peirce had married Melusina Fay (a