BOOK REVIEW

The Vienna Circle and the Epic Quest for the Foundations of Science

A Review by John W. Dawson Jr.

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Exact Thinking in Demented Times: The Vienna Circle and the Epic Quest for the Foundations of Science

By Karl Sigmund

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The phenomenal cultural and intellectual efflorescence that began in Vienna during the last years of the nineteenth century and continued during the interval between the two World Wars, amidst the economic and political chaos that ensued in the wake of the disintegration of the Habsburg empire, has been the subject of numerous studies, including Carl Schorske's *Fin-de-siècle Vienna: Politics and Culture* and Allan Janik's and Stephen Toulmin's *Wittgenstein's Vienna*. Most of those studies, however, have focused on developments in literature and the arts rather than in mathematics and the philosophy of science. Much has also been written about the empiricist philosophy (logical positivism) proclaimed in the manifesto *Wissenschaftliche Weltauffassung—Der Wiener Kreis* (The Scientific Worldview — the Vienna Circle). To my knowledge, however, the present work is the first to provide a collective biography of all of the central and many of the peripheral participants in that Circle and to place their lives and work within the context of those tumultuous

times—a daunting task, given the sheer number of individuals involved and the complexity of their interactions.

It is a pleasure to say that Sigmund has succeeded brilliantly in that endeavor. As he remarks in the Afterword, “it was almost inevitable” that he be the one to do so, for he grew up in the shadow of the Circle: A lifelong resident of Vienna, he was enchanted as a schoolboy with Wittgenstein's *Tractatus*, frequented coffeehouses where the Circle met, and, as a student and later professor at the University of Vienna, studied and worked in the same environs as the Circle's leaders had. In addition, he edited the collected works of Hans Hahn and was co-curator of the exhibitions *Gödel's Century* and *The Vienna Circle*, held at that university in 2006 and 2015, respectively.

The work under review is a rewritten expansion by Sigmund of his German original, *Sie nannten sich der Wiener Kreis: Exaktes Denken am Rand des Untergangs* (They Called Themselves the Vienna Circle: Exact Thinking on the Brink of Destruction). In the final stages of its preparation he was assisted by Douglas Hofstadter, who also contributed a short Preface. The result is an absorbing account, written in an informal and engaging style, that provides detailed portraits of a diverse group of thinkers brought together to discuss matters of common philosophical interest through the mediation of the Circle's leader, Moritz Schlick.

Around 1910 such discussion circles, focused on the works of particular thinkers or artists and led by prominent scholars and reformers, were quite common in Vienna. What became the Vienna Circle began inauspiciously as a small group of newly minted PhDs, members of the Philosophical Society of Vienna, who gathered for discussions in the city's coffeehouses. As Sigmund notes, “little

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Figure 1. Karl Sigmund, pictured here outside the University of Vienna, grew up in the shadow of the Vienna Circle.

is known” about that short-lived *Urkreis* except that its main participants were Otto Neurath, Phillip Frank, and Hans and Olga Hahn. According to Frank, although their interests ranged widely, their principal concern was to effect a *rapprochement* between philosophy and the natural and social sciences. Their outlook was anti-metaphysical, influenced by the views of the physicists Ernst Mach and Ludwig Boltzmann, both of whom, later in their careers, had taught philosophy at the University.

The members of the *Urkreis* soon dispersed. Hahn left Vienna to take up a position in Czernowitz; Frank was appointed to a professorship in Prague; and, after marrying Olga Hahn in 1912, Neurath moved about between Vienna, Leipzig, Heidelberg, and Munich. World War I, however, brought Hahn and the Neuraths back to Vienna. Czernowitz fell to the Russians in 1914, forcing Hahn to flee back to Austria-Hungary, where he was drafted into the imperial army. Discharged after being wounded on the Italian front, in 1917 he was appointed to a professorship in Bonn and three years later was offered a chair in mathematics at the University of Vienna. Meanwhile Neurath, because he had served briefly as head of an agency for central economic planning in Munich, was arrested during the turmoil that erupted in Bavaria at the end of the war and, according to Sigmund, “was sentenced to eighteen months in prison for having been an accessory to high

treason.” Shortly thereafter, though, through the intervention of Austrian Chancellor Karl Renner, he was furtively repatriated to Austria.

In 1922, due in large part to Hahn’s lobbying on his behalf, Moritz Schlick was appointed to one of three vacant chairs in philosophy at the University of Vienna. A student of Max Planck, Schlick had become, to use Sigmund’s designation, an “evangelist” for Einstein’s theory of relativity and was widely respected by both physicists and philosophers. A popular lecturer, he soon attracted a coterie of talented students, among whom were Friedrich Waismann and Herbert Feigl, who persuaded Schlick to organize a private seminar.

Beginning in 1924 the seminar met every second Thursday evening in a small lecture room in the mathematics institute. Attendance was by invitation only and usually involved ten to twenty individuals. Schlick, Waismann, and Feigl, together with the Hahns and Neurath, constituted the core group. Frank often visited from Prague, and Kurt Reidemeister participated briefly before moving to Berlin. Others who joined in included Viktor Kraft, Rudolf Carnap, Edgar Zilsel, Felix Kaufmann, Rose Rand and, somewhat later, Karl Menger and Kurt Gödel (both of whom, after a while, drifted away). Initially the discussions centered on the works of Einstein, Hilbert, and Bertrand Russell. Soon, however, Hahn and Schlick became enthralled by Wittgenstein’s *Tractatus Logico-philosophicus*, and the focus of the seminar “shifted from the analysis of sensations to the analysis of language.” Not once but twice the *Tractatus* was dissected line by line in the sessions of the Schlick Circle, whose slogan (with unwitting irony) became the final sentence of that work: “*Wovon man nicht sprechen kann, darüber muss man schweigen*” (Whereof one cannot speak, thereof one must be silent).

Wittgenstein himself played cat and mouse with the Circle. For though he talked privately with Schlick and certain others in the group, he insisted that his own views not be regarded as aligned with theirs; and, for their part, some members of the Circle, especially Gödel and Menger, did not have high regard for Wittgenstein’s ideas. On that and on many other issues the participants engaged in heated debates. In Sigmund’s words, “In no way was the Circle the intellectual collective that a few of its members had hoped it would become It teemed with vociferous controversies How can it be otherwise when philosophers meet?”

The Schlick Circle first sought publicly to promulgate “the scientific worldview” in November 1928, when Schlick, Hahn, Carnap, and Neurath organized the Ernst Mach Society in Vienna. The manifesto that gave the group the name by which it would henceforth be known was then issued the following September at a conference of mathematicians and physicists in Prague. It declared that the aim of the Circle was the unification of science through a collaborative effort to clarify the meaning of scientific assertions.

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The scientific worldview it advocated was not, it said, characterized by particular theses, but rather by a “basic attitude, point of view and methodology.” In particular, the scientific worldview was distinguished by two fundamental tenets: that all knowledge is empirical, resting on what is directly given to us through our senses; and that the meaning of scientific assertions is to be determined through logical analysis. Thus, no matter to what branch of science an assertion may belong, its meaning must be elucidated by tracing the concepts employed in it back through a stepwise regression of simpler concepts to concepts at the most basic level, which themselves refer to what is given to us directly through sense perception.

Authored by Hahn, Carnap, Neurath, Feigl, and Waismann, the manifesto was intended as a tribute to Schlick on his return from a summer spent at Stanford. But Schlick was not consulted about it and was not pleased with its dogmatic and self-promotional tone. Nevertheless, the pamphlet achieved its aim of drawing widespread attention to the Circle’s ideas, whose subsequent impact on the philosophy of science extended through much of the remaining years of the twentieth century.

It was fortunate that the manifesto appeared when it did, as the Circle itself continued to function for less than a decade afterward—in part due to the rising tide of fascism and anti-Semitism, which precluded Jews and anyone with socialist or pacifist leanings (such as Carnap, Neurath, and Zilsel) from finding an academic appointment; in part due to conflicts between members themselves (especially Schlick and Neurath); and in part to a series of fortuitous events. Schlick suspended meetings of the Circle in the winter of 1933 because he felt that “some of [its] elder members [had] become too dogmatic and could discredit the whole group.” Sessions resumed in the fall of 1934, but by then the Ernst Mach Society had been disbanded by police order, as a consequence of the civil war that broke out in February 1934; Neurath, to escape arrest

in its aftermath, had emigrated to the Netherlands; and Hahn had died unexpectedly of stomach cancer in July. In 1935 Carnap emigrated to America, and the following

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year, on his way to the final lecture of the summer term, Schlick was assassinated on the Philosophers’ Staircase in the main building of the University of Vienna (Figure 2) by Johann Nelböck, a psychopathic former doctoral student who had stalked Schlick for years.

In the wake of Schlick’s death a few more sessions of the Circle were held in the apartments of Waismann, Zilsel, and Kraft. But soon, most of those who could escape the

Figure 2. “Moritz Schlick, central figure of the Vienna Circle, was murdered on this spot on June 22, 1936. A spiritual climate poisoned by racism and intolerance contributed to the act.” (Translation of German inscription on the University of Vienna staircase.)

Figure 3. Dawson with Franz Alt, a member of Karl Menger’s mathematical colloquium, who emigrated to the United States in 1938.

coming *Anschluss* did: Menger to Notre Dame in 1937, Waismann to Cambridge in 1938, and Zisler to England that year and to America the next. Feigl had emigrated to America in 1931, and Gödel finally did so in 1940, at almost the last opportunity. Only two of the original members of the Circle managed to live through the war years in greater Germany: Reidemeister and Kraft.

Synopses of the later careers of all those figures are given in Sigmund's book, along with those of the principal participants in the mathematical colloquium that Karl Menger established in 1929 at about the time that he and Gödel became disaffected with the Schlick Circle's fixation on Wittgenstein. In addition to Menger and Gödel, prominent members of that colloquium were Georg Nöbeling, Abraham Wald, Franz Alt (Figure 3), and Olga Taussky. Like the Schlick Circle, Menger's colloquium was founded at the request of students, and it too dissolved not long after its leader was gone. Taussky moved to England in 1935, and both Alt and Wald emigrated to the United States in 1938. Nöbeling, in contrast, moved to Erlangen in 1933, where he accommodated to the Third Reich and in 1940 was appointed a professor at the university there.

Of the Schlick Circle's principal figures, Herbert Feigl was the last to die, in 1988; the longest-lived was Viktor Kraft, who died in 1975 at age 94. Two members of Menger's colloquium, however, lived on into the twenty-first century and died at age 100: Nöbeling in 2008 and Alt in 2011.

A review such as this can only hint at the wealth of detail contained in Sigmund's book. The achievements of the Circle as a group and of its members as individuals deserve such an accounting, and the book's title, with its allusion to *Götterdämmerung*, makes clear the relevance of the Circle's history to America today, where the scientific worldview and rational thinking in general is once again under assault by an extreme right-wing establishment.

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ABOUT THE REVIEWER

One of the editors of Kurt Gödel's *Collected Works*, **John W. Dawson Jr.** is the author of *Logical Dilemmas: The Life and Work of Kurt Gödel* (A.K. Peters, 1997) and *Why Prove it Again? Alternative Proofs in Mathematical Practice* (Springer, 2015). Apart from his mathematical endeavors he is an avid amateur mycologist.

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