Reviews

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Circle of influence

Photograph by Richard Arens, courtesy AIP Emilio Segrè Visual Archives

Philosophers in exile
Albert Einstein in 1954 with Kurt Gödel, probably the most influential member of the Vienna Circle.

Exact Thinking in Demented Times: the Vienna Circle and the Epic Quest for the Foundations of Science
Karl Sigmund
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The founder of the Vienna Circle – a polymathic and influential group of intellectuals dedicated to the philosophy of science from the late 1920s until the Nazi takeover of Austria in 1938 – was German philosopher and physicist Moritz Schlick. Born in Berlin, Schlick became professor of natural philosophy at the University of Vienna in 1922 – a position previously held by Ludwig Boltzmann and Ernest Mach. Although his name is certainly not as familiar today as theirs, he was much admired by his physics teacher Max Planck, who regarded Schlick and his friend Max von Laue (a future physics Nobel laureate) as his favourite students. He was also admired by Albert Einstein. Indeed, Schlick studied Einstein's theory of relativity as a philosopher, and sent Einstein a manuscript of his work in 1915, only to receive a congratulatory letter from the famous physicist, who said that Schlick's work was "among the best that have been written on relativity." The manuscript was published two years later in German, as a slim and lucid introductory book – titled *Space and Time* – which went through successive editions as Einstein's general theory of relativity evolved.

In 1922 Planck invited Schlick to give a talk following Einstein's forthcoming keynote address at the centennial meeting of the Society of German Scientists and Physicians. However, Einstein was forced to cancel after the German minister for foreign affairs – Walther Rathenau, a prominent Jew – was assassinated by right-wing extremists. This raised fears that Einstein, as Germany's most celebrated Jew, might be next in line; he temporarily left Germany. In Einstein's place, von Laue spoke on "The theory of relativity in physics", followed by Schlick on "The theory of relativity in philosophy".

Einstein survived the Nazi threat, of course, but only by leaving Germany for good in 1933 and emigrating, via Britain, to the US. Soon, meetings of the Vienna Circle were being held in the university while the streets outside resounded with tribal chants and the thump-thump of heavy boots. In 1936 Schlick fell to an assassin's bullet, killed by one of his former students – a mentally deranged man who had been stalking Schlick for years because of a personal grudge. Although his killer was not a political activist with Nazi sympathies, the assassination was soon supported by pro-Nazi sympathizers in Viennese academe and politics. In 1938 they arranged for the killer's release from detention after a mere 18 months, by arguing that Schlick – though not himself Jewish – was a friend and promoter of Jews and that his ideas were therefore poison to students.

During these disturbing years, key members of the Vienna Circle decamped from Austria and settled in other countries, especially the US and UK – which was already the base of Ludwig Wittgenstein, the Austrian-born philosopher who was not formally part of the Circle but vociferously argued with several of its members. The emigrants included mathematicians Kurt Gödel and Karl Menger, philosophers Rudolf Carnap and Karl Popper, physicist Philipp Frank (Einstein's first serious biographer) and the economist/social reformer Otto Neurath (who had suggested the name "Vienna Circle" in 1929).

Hence the perfect title – *Exact Thinking in Demented Times: the Vienna Circle and the Epic Quest for the Foundations of Science* – of author Karl Sigmund's latest book, which tells the story of the Vienna Circle's ideas and personalities. Sigmund himself is a professor of mathematics at the University of Vienna, and was born at the end of the Second World War. Original, often lively and attractively illustrated throughout, Sigmund's book is also idiosyncratic and sometimes disjointed. It mirrors the intellectual, personal and political conflicts it describes and analyses, including serious mental illness. As grimly noted in its concluding sentence: "The Viennese have always been remarkably talented in getting rid of their teachers." The comment is not Sigmund's, but a quotation from Viennese art-

historian and cabaret performer Egon Friedell, who jumped out of a window to his death on the day of the *Anschluss* between Germany and Austria, before he could be arrested by waiting Nazi stormtroopers.

The dominant belief of the Vienna Circle has been variously termed "logical positivism", "logical empiricism" (preferred by Sigmund), "scientific empiricism", "neopositivism" and the "unity of science" movement (favoured by Austrian mathematician Olga Hahn-Neurath, one of the Circle's few female members) – the range of terms being a clue, perhaps, to the Circle's internal dissensions. Empiricism is the philosophical belief that all knowledge is derived from sense-experience – including, of course, physical experiments. On one point, Circle members appeared to agree: pure logic is the core of human thought. Hence, controversially, the Circle's view that the act of induction – moving from specific observations to broad generalizations – had no role in science. This is "one of the silliest ideas I have ever heard", remarks cognitive scientist Douglas Hofstadter, author of *Gödel, Escher, Bach*, in his combative if highly appreciative preface to Sigmund's book. "The way I see it, induction is the seeing of patterns, and science is the seeing of patterns *par excellence*. Science is nothing if not a grand inductive guessing game, where the guesses are constantly rigorously tested by careful experiments." Even so, Hofstadter happily concedes, the Vienna Circle was "an assemblage of some of the most impressive human beings who have ever walked the planet".

True enough. Yet nowadays the importance of the Vienna Circle probably lies more in the work of these individuals than in its deliberations. Einstein scholars, for example, discuss Schlick's work, but tend to overlook the Vienna Circle. Moreover, in many cases individual members were actually unsympathetic to the Circle's dominant belief. Gödel, who is generally regarded as its most influential member given the role of his ideas in computing – via Alan Turing and John von Neumann – left behind notes that prove his rejection of the Vienna Circle. Indeed, his papers show that he was intensely interested in theology, from his student days until his death in 1978. Gödel "formalized a scholastic proof for the existence of God by means of mathematical logic", notes Sigmund, who calls him "an interloper from the baroque world of Leibnitz and Newton".

One can easily imagine Gödel and Einstein discussing mathematics and theology – rather than logical positivism – on their famous walks together between their homes and Princeton's Institute for Advanced Study in the 1940s and 1950s, after they had abandoned their birthplaces in Austria and Germany.

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