

The Silver Age of Austrian Logic

Once again, Vienna is one of the capitals of logic research, more than 80 years after Kurt Gödel wrote down his incompleteness theorems. The Vienna Circle started the golden age of logic. Now, a new “silver age” has begun.

Logic research in Austria is flourishing. Several world-class research groups have emerged; Vienna has become an international centre of logics. This is not just coincidence. In the “golden age” of logic, the first decades of the twentieth century, many of the best ideas in this research area were developed in Vienna – by philosophers and logicians like Kurt Gödel, Ludwig Wittgenstein, Karl Popper or Rudolf Carnap. The intellectual fire of this time was brutally extinguished by Austrofascism and Nazism, and even after the Second World War, Austria’s conservative scientific landscape did not make any serious attempts to rekindle the tradition of logic research. In the last few decades, however, logic has returned to the academic community of Austria and Vienna.

Logic is in the Air

“It is interesting how certain topics and concepts can remain connected with a country or a city for a long time”, says Professor Helmut Veith, from the Vienna University of Technology. “Even though logic research had almost disappeared in Vienna, it has somehow survived in the collective memory.” Veith is one of the many scientists researching logic in Vienna today, the intellectual heirs of the golden age of logic. This era ended in 1936, when Moritz Schlick was murdered on the stairs of the University of Vienna. Schlick was the central figure of the Vienna Circle, a group of philosophers and scientists trying to establish a purely rational scientific-logical world view.

It was a time in which physics was completely turned over by the theory of relativity and quantum theory. It moved away from intuitive concepts based on every-day phenomena, towards more abstract areas, which can only be understood using the tools of logic and math. At the same time, mathematicians tried to base all existing mathematical theories on sound, logical foundations. The Vienna Circle wanted to accomplish something similar for philosophy. Metaphysics was supposed to be banned and replaced by a philosophical system purely based on mathematical logic and empirically verifiable truths.

Not only philosophers like Moritz Schlick or Rudolf Carnap were members of the Vienna Circle, but also mathematicians and scientists from other fields. The Vienna Circle brought together ideas from philosophy, such as Ludwig Wittgenstein’s famous “Tractatus Logico-Philosophicus”, and from the natural sciences and from logic. Kurt Gödel, who was just a young student back then, had contacts with the Vienna Circle, which was also heavily influenced by physics professor Ernst Mach, a convinced empiricist. After Schlick’s death, the ideas of the Vienna Circle still played a formative role for the philosophy of science. Karl Popper’s critical rationalism can be seen as a response to the Vienna Circle’s logical empirism.

The Return of Logic

Viktor Kraft was the last remaining member of the Vienna Circle still teaching in Vienna after the Second World War. The famous author Ingeborg Bachmann was one of his PhD students. She published an essay in 1953, emphasizing the importance of the philosopher Ludwig Wittgenstein, who had almost been forgotten in Austria. Bachmann personifies the connection of science, art and

humanities, which may be typical of this research area: “In the 1980s, it was young intellectuals and artists around Peter Weibel and Werner Schimanovich, who rediscovered mathematical logic and its most famous representative Kurt Gödel in Austria”, says Helmut Veith.

Meanwhile, logic research has changed. It is no longer purely a fundamental research area in mathematics; it found a whole new scientific scope in computer science. A new generation, among them scientists like Georg Gottlob, Matthias Baaz and Alexander Leitsch, started working on logic as autodidacts. In Innsbruck, and later in Hagenberg, Bruno Buchberger did research on revolutionary concepts of computer mathematics. In 1987 the Kurt Gödel Society was founded, which coordinates Austrian research activities in this field. Today, many large-scale research projects and several important scientific awards underline the prominent role of logic in Austria.

Vienna Summer of Logic

80 years after the golden age of Austrian logic, a new “silver age” has begun. From July 9 to July 24 the “Vienna Summer of Logic” will take place at the Vienna University of Technology, organized by the Kurt Gödel Society. 2000 scientists will come together in Vienna, among them famous researchers such as the Turing-award winners Edmund Clarke and Dana Scott.